TEMPERATE RHODODENDRONS

Julian Taylor-Whall

- Volume Five -
Subgenus Lepidorrhodium

Temperate Rhododendrons:

- the species and hybrids established outdoors in the leading woodland gardens of England, Scotland and Wales;

- the species curated in accordance with scientific advances and field study evidence published in the three decades since the 1996 Edinburgh revision of the classification;

- the hybrids selected and assessed with the benefit of hindsight rather than hype, disposition and floral beauty the key determinants for inclusion, not their commercial availability.

The texts are illustrated with over 3000 photographs taken by the author.

Volume One reviews and amends the classification of Genus *Rhododendron* to conform with the molecular phylogeny studies of 2005 and 2010, as well as taking account of recent work on polyploidy. A visual guide to help identify the various species follows this updating, along with a glossary of the scientific terminology and a listing of the various seed collecting expeditions.

Volume Two considers Subgenus *Therorhodion* and the species placed within Subgenus *Azaleastrum*.

Volumes Three and Four document the taxa assigned to Subgenus *Hymenanthes*.

Volume Five examines the rhododendrons within the three sections of Subgenus *Lepidorrhodium*.

Volume Six evaluates the Natural Hybrids, plants that have arisen in the wild from undirected pollination and established stabilised populations, as well as the host of seed pan rogues germinated in cultivation.

Volumes Seven and Eight survey the Azaleodendrons, Deciduous and Evergreen Azaleas, Lepidote and Elepidote Hybrids created through directed pollination.

TEMPERATE RHODODENDRONS

Julian Taylor-Whall

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Julian Taylor-Whall has asserted the moral right to be identified as the author of this work.

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Section Choniastrum

Section *Choniastrum:*


R. stamineum



Taxa:

R. championae
R. latoucheae
R. moulmainense
R. stamineum

Taxonomic Revision:

Phylogenetic analysis of the rhododendrons assigned to Section *Choniastrum*
places them within the Subgenus *Lepidorrhodium* grouping,
yet a lack of scales on the leaves makes them morphologically aberrant,
especially as all the other members of the clade display this major characteristic.

The lateral flower buds had previously allowed a morphological association
to be made with the plants of Subgenus *Azaleastrum,*
but reinstating this linkage would be contrary
to the actual evolutionary development that took place,
as evidenced by their genetic sequencing in the scientific paper
The Molecular Systematics of Rhododendron (Ericaceae):
A Phylogeny Based Upon RPB2 Gene Sequences
(*Systematic Botany,* 30(3): pp. 616-626, 2005).

The authors of the study, Loretta Goetsch, Andrew Eckert and Benjamin Hall,
took the decision to up the ranking and establish Subgenus *Choniastrum,*
which they thought was a practical solution to the problem,
even though both groupings become paraphyletic as a result of the change
(home to some but not all of the descendants of a single ancestor).

As this placement effectively makes a mockery of the science,
it has been revoked herein and the *Choniastrum* species placed back
under the umbrella of Subgenus *Lepidorrhodium,* despite their lack of scales.

Elsewhere within the classification and no more outlandish, is the Subgenus *Hymenanthes*
association of species with deciduous and evergreen foliage,
which the genetic evidence then places in separate sub-clades.
This state is mirrored within the Subgenus *Lepidorrhodium* phylogeny,
where scaly and non-scaly individuals also occupy discrete residences.

Section *Choniastrum* encompasses around twenty species,
these endemic to Southeast Asia and southern China.
The majority have not been introduced into UK cultivation as they come from
low elevations and would be unable to cope with the rigours of a British winter.

However, although restricted to the mildest gardens in the south and along the west coast,
the four species listed above have proved hardy enough to survive outdoors
all year round, albeit only tenuously.
For long-established and mature specimens have still been lost to exceptional cold spells,
such as those experienced in the winters of 2009-10 and 2010-11.

Section Morphology:

Shrubs or small trees, bushy through erect, 1 to 15m high;
young shoots glabrous, pubescent or glandular-setose;
bark smooth, reddish-brown, often peeling.

Leaf scales absent.

Leaves evergreen, large and shiny, often tinged red when immature,
elliptic-lanceolate through elliptic to oblong-lanceolate and obovate,
5 to 18.5cm long by 1.4 to 6.3cm wide,
indumentum when present, consisting of simple or glandular hairs.

Leaf anatomy comprises a single-layered upper epidermis;
the cuticle is as thick as the cells are deep; water tissue is absent;
the lower epidermis cells are not prolonged into papillae.

Petiole 0.8-2.4cm long, glabrous, or bristly, glandular or eglandular.

Inflorescence 1-8-flowered,
the buds lateral in the axils of the top 1 to 3 leaves,
the vegetative growth continued by terminal buds on the main shoots.

Pedicel 1-3.8cm long, usually glabrous,
sometimes with setose or setose-glandular hairs.

Calyx lobes minute to well-developed, ciliate or glabrous.

Corolla 5-lobed, narrowly funnel-shaped to campanulate,
white or rose through purple,
glabrous, sometimes fragrant, the tube narrow.

Stamens 10, usually unequal and shorter than the corolla;
the filaments occasionally pubescent towards the base.

Ovary slender, tapering into the style,
usually glabrous, but sometimes hairy or bristly.

Style glabrous, as long or longer than the stamens,
expanding smoothly into the ovary,
contiguous and valved on the upper part at maturity.

Capsule cylindrical or oblong-cylindric, grooved,
beaked at the lower end of the style, often slightly curved,
glabrous or puberulent, rarely glandular-setose.

Seeds elongate, unwinged, with short caudate appendages at both ends.



R. moulmainense (Tran 5)

R. championae

Hardiness:
H1b-2.
Flowering Period:
April-May.
Distribution in the wild:
Fujian, Guangdong, Guangxi, Hong Kong, Hunan, Jiangxi & Zhejiang, China.
Growing in shady ravines and alongside streams, amongst rocks,
in open valley-side woodland and in thickets on mountain slopes,
from near sea level to 200m on Hong Kong, at elevations of 500-1,300m on the mainland.

Identification:
Shrub or small tree, spreading through upright, 2 to 8m high;
branchlets stiff, moderately to densely setose or setose-glandular;
the bark non-peeling.
Leaf bud scales deciduous.
Leaves coriaceous,
elliptic through oblong-lanceolate to obovate,
7 to 18.5cm long by 2 to 6.3cm wide,
often tinged reddish-purple at first,
apex acuminate;
upper surface rough, often bullate, dark green at maturity, not shiny,
sparsely short-setose,
the midrib grooved, the margins densely setose, sometimes slightly recurved;
lower surface pale green, sometimes pubescent,
usually loosely setose, especially on the midrib and lateral veins,
rarely setose-glandular.
Petiole 0.8-2.4cm long, grooved above, densely setose or setose-glandular,
sometimes moderately through densely pubescent.
Inflorescence axillary, 2-6-flowered;
the bud scales viscid, sometimes persistent.
Pedicel 1.5-3cm long,
moderately through densely setose or setose-glandular,
sometimes pubescent.
Calyx often large, 0.3-1.3cm long, the 4 or 5 lobes lanceolate or linear;
their outer surface densely ciliate,
or moderately through densely setose-glandular;
their margins densely setose-glandular or setose, or glabrous.
Corolla tubular-funnel-shaped, 4.3 to 5.6cm long,
pink or rose becoming white,
with or without either or both a yellow blotch at the base or ochre-coloured spots,
slightly fragrant.
Stamens 10, shorter than the corolla;
filaments pubescent along the lower half or at the base.
Ovary moderately through densely yellowish-brown setose or setose-glandular.
Style longer than the stamens,
setose-glandular or setose, or glabrous at the base.
Capsule cylindric, 25-55mm long,
densely setose or setose-glandular and pubescent.

Seed Collections:

Valder I51a	1974/1975
AC 5145	2002
JN 12408	2012



R. championae (Patrick Collection)

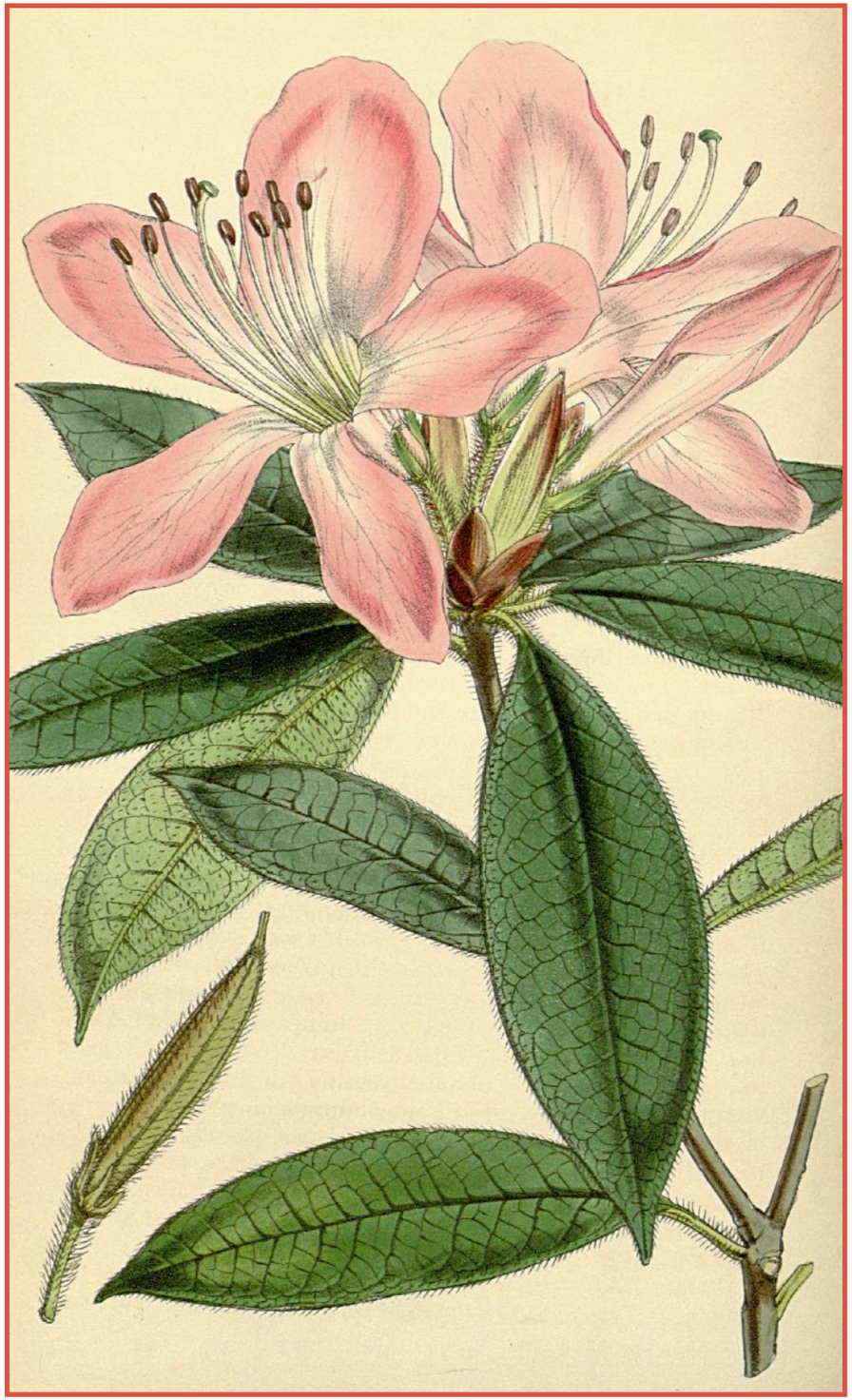
R. championae was discovered in a ravine near Fort Victoria on the Crown Colony of Hong Kong by Captain and Mrs John George Champion, during April of 1849, some five years after the island was ceded in perpetuity to the United Kingdom under the Treaty of Nanking. The species was described by William Jackson Hooker, writing in Volume 77 of the *Botanical Magazine,* this published in 1851, a task aided by the 350 or so herbarium specimens Champion collected for the British Museum while his unit, the 95th Regiment of Foot, was assigned to the colony between 1847 and 1850.

The rhododendron is unique amongst the members of Section *Choniastrum* in having bristles along the branchlets, on the leaves, petioles and pedicels, as well as on the calyx, ovary and capsule, which are often sticky. The matt, often bullate, leaves are also key morphological identifiers.

Introduced into British gardens during 1881, with a first flowering in the greenhouses at Kew occurring some seven years later, *R. championae* will only succeed outdoors in the mildest of areas, restricting its presence, sans glass, to those favoured sites along the west coast and in Cornwall, and even here, prolonged, longterm survival is not guaranteed unless additional protection can be put in place to overwinter plants through the coldest spells. However, when the flower buds do escape damage from any malicious frosts, on opening, the blooms are reportedly exquisite.



R. championae (Patrick Collection)



R. championae, illustrated in *Curtis's Botanical Magazine,* Volume 77, t. 4609.

R. moulmainense

Hardiness:
H1b-2.
Flowering Period:
March-May.
Distribution in the wild:
SE Tibet; S Yunnan and throughout all of S China; Arunachal Pradesh, NE India;
Myanmar; Cambodia; Thailand; N Vietnam; Ryukyu Islands, Japan; Taiwan;
W Malaysia; N Sumatra, Indonesia.
Growing in deciduous, evergreen and mixed forests, in thickets and scrub,
on open hillsides, cliffs and rocky, gravelly slopes,
from near sea level to elevations of 3,700m.

Identification:
Shrub or small tree, 1.5 to 15m high; branchlets slender, glabrous;
the bark red to yellowish- or greenish-brown with purple tints,
finely striate, smooth or peeling.
Leaf bud scales deciduous.
Leaves coriaceous,
elliptic-lanceolate through elliptic to oblong-lanceolate,
5 to 17cm long by 1.7 to 6.3cm wide,
apex acuminate,
sometimes decurrent on the petiole;
upper surface green through olive-green, matt or moderately shiny, glabrous,
the midrib grooved,
the margins slightly recurved, usually glabrous,
sometimes moderately setose at first, but with few bristles remaining at maturity,
or more rarely pectinate-ciliate;
lower surface pale green, glabrous.
Petiole stout, 0.8-2cm long, grooved above, glabrous,
sometimes narrowly winged on both sides or at the margins.
Inflorescence axillary, 2-8-flowered;
the bud scales usually glabrous, but sometimes moderately puberulous,
the margins also usually glabrous, but sometimes densely puberulous,
or more rarely ciliolate.
Pedicel 1-3.2cm long, glabrous.
Calyx minute, 0.5-1mm long, 5-lobed, glabrous.
Corolla tubular- through narrowly-funnel-shaped, 3.5 to 6cm long,
white through pink to lilac-purple,
with or without a yellow or pale green blotch at the base,
sometimes fragrant.
Stamens 10, rarely 8-11, unequal, shorter than the corolla;
filaments pubescent along the lower half, sometimes densely so at the base.
Ovary dark brown, glabrous.
Style longer than the stamens, but shorter than the corolla, glabrous.
Capsule cylindric, slender, 25-70mm long, glabrous.

Seed Collections:

F 7673	1912/1914	R 11200	1923/1924	RV 69/219	1969
F 15756	1917/1919	F 26047	1924/1925	RV 8829	1970
F 15998	1917/1919	F 26418	1924/1925	RV 73/104	1973
F 16084	1917/1919	KW 8326	1927/1928	Valder I49a	1974/1975
F 17819	1917/1919	KW 135	1938/1939	CP 10230	1975
F 17832	1917/1919	KW 250	1938/1939	CP 10276	1975
F 18475	1917/1919	KW 433	1938/1939	Tran 5	1993
F 18908	1917/1919	KW 18540	1949	KR 2935	1994
Farrer 801	1919	KW 20629	1953	Valder I12	1994/1995
F 19869	1921/1922	KW 20679	1953	Valder I42a	1994/1995
F 21691	1921/1922	KW 21525	1953	DGEY 067	2001
KW 5425	1922	RV 681108	1968	C&G 5709	2006



R. moulmainense (CP 10230)

R. moulmainense was described by William Jackson Hooker in Volume 82 of the *Botanical Magazine,* published in 1856, from flowering specimens seen at the Veitch Nursery greenhouses during January of that year. Thomas Lobb had found the species on his second collecting trip for the gardening emporium, this expedition visiting Myanmar, India, Nepal, the Philippines, and Sarawak - one of two Malaysian states located at the top of the island of Borneo - between late 1848 and 1853, with the rhododendron in question discovered in Myanmar sometime around 1850, on the Gerai Mountains near the city of Mawlamyine (previously Moulmein), on the Salween River delta.

The species has a very wide geographic range, extending across much of Southeast Asia and southern China, and consequently its features vary considerably. The taxon currently includes more than a dozen rhododendrons previously awarded specific status that fell victim to the Synonymy Aurors, but whose fate was, some would argue, decided on a less than representative collection of herbarium specimens and without the input of up-to-date on-the-ground fieldwork, namely: *R. ellipticum, R. klossii, R. laoticum, R. leiopodum, R. leptosanthum, R. leucobotrys, R. mackenzianum, R. nematocalyx, R. oxyphyllum, R. pectinatum, R. siamensis, R. stenaulum, R. tanakai* and *R. westlandii*. These do indeed share many of the characteristics of *R. moulmainense,* but also show marked differences in their leaf hairs, petiole wings, flower bud scales, corolla shape and stamen filament hairs.

In Volume 3 of *The Rhododendron Species,* published in 1992, H. H. Davidian maintains the specific status of four of these subsumed species - *R. ellipticum, R. mackenzianum, R. pectinatum* and *R. siamensis* - this assessment based on clear feature differences.

On the other hand, Peter and Kenneth Cox, in their 1997-published *Encyclopedia of Rhododendron Species,* gift Group status to *R. ellipticum, R. leiopodum, R. stenaulum* and *R. westlandii,* their choices based on specimens seen in cultivation.

DNA cladistic analysis, in concert with a detailed study of the various populations in the wild, will of course indicate which, if any, actually merit specific, subspecific, varietal or group status, but this is still awaited

R. moulmainense can most easily be distinguished from its closest botanically extant relative, *R. stamineum,* by the larger corolla size - 3.5 to 6cm long, compared with 2.5 through 3.7cm. Another key identifier is the style and whether it is exserted or not, for if shorter than the corolla, the plants being examined will be *R. moulmainense;* if longer and exserted, then *R. stamineum*.

The Thomas Lobb gathering was the first introduction of *R. moulmainense* into British gardens, with many other plant hunters finding the species over the years. Most recently, the endemic range has been extended into northern Vietnam with collections on the Hong Lien Son Mountains of Lào Cai Province being made by Tran Van On, Keith Rushforth, Alan Clark and Vaughan Gallavan. UK cultivation outdoors is restricted to the Gulf Stream protected gardens of the west coast and Cornwall, though Vietnamese plants may prove hardier than the previous collections and allow the species to be more widely grown. Where successful, *R. moulmainense* matures into a compact dome or occasionally a small tree, though it never reaches the 15m-tall heights attained in the wild. Plants are usually free flowering from quite a young age, the white flowers nicely scented and the colourful stem bark an added bonus.



R. moulmainense, illustrated in *Curtis's Botanical Magazine,* Volume 164, t. 9656.

R. stamineum

Hardiness:
H2-3.
Flowering Period:
April-May (-July).
Distribution in the wild:
SW, S & C China; NE Upper Myanmar.
Growing in and at the margins of open mixed forests, in thickets on mountain slopes, and in rocky, shady ravines, at elevations of 350-1,500m.

Identification:
Shrub or small tree, 1 to 13m high;
branchlets slender, glabrous; the bark smooth.
Leaf bud scales deciduous.
Leaves coriaceous, elliptic through oblanceolate,
6 to 14cm long by 2 to 5.5cm wide,
often pendulous, apex acuminate;
upper surface green, shiny, glabrous,
the midrib grooved, the margins slightly recurved;
lower surface pale green, glabrous.
Petiole 0.8-2cm long, grooved above, glabrous.
Inflorescence axillary, 3-8-flowered;
the bud scales puberulous at the apex and on the margins.
Pedicel 2-3.8cm long, glabrous.
Calyx minute, *c.* 0.5mm long, 5-lobed, glabrous.
Corolla narrowly tubular-funnel-shaped, 2.5 to 3.7cm long,
white through pink to rose,
with or without a yellow to orange blotch at the base, or yellow flecking on the upper lobes,
often fragrant.
Stamens 10, much longer than the corolla;
filaments pubescent along the lower half or at the base.
Ovary glabrous.
Style longer than both the stamens and the corolla, glabrous.
Capsule cylindric, 25-48mm long, glabrous.

Seed Collections:

W 887	1900
W 1809	1903/1905
W 567	1908
W 4268	1910
R 7866	1923/1924



R. stamineum

In 1882, the French priest and plant hunter Jean-Marie Delavay was at the start of his second posting to China for Missions Etrangères de Paris when he found *R. stamineum* on the hills of northeast Yunnan. Specimens were included in his next dispatch to the Muséum National d'Histoire Naturelle and subsequently, a botanic description for the new species was written by Adrien Franchet, this appearing in Volume 33 of the *Bulletin de la Société Botanique de France,* which was published in 1886. Over the course of his three postings to China, Delavay would send back a total of over 200,000 herbarium plates, of some 4,000 plant species, 1500 of which were new to science. He died in Yunnan in 1895 from a recurrence of bubonic plague, having survived his first brush with the disease seven years earlier in 1888.

Chinese botanists report forms of *R. stamineum* with a white, powdery leaf under surface when dry, and these have also been found with quite short bristles towards the base of the blade. Others may possess glandular, short-stalked bristles on the petiole; have a grey-white tomentum on the pedicel and ovary at first, though this is soon lost; or have ovaries that are densely hairy. *R. cavaleriei* and *R. feddei,* both too tender for cultivation outdoors in UK gardens, share some of these morphologic traits, characteristics that had previously been used to distinguish both species from *R. stamineum*. The synonymists will likely be taking note.

The long-exserted stamens and style are features that clearly key *R. stamineum* from the other three Section *Choniastrum* species that can be grown outdoors in UK gardens and, apart from the two rhododendrons mentioned above, from all other members of the section. Additionally, when comparing the species with *R. moulmainense,* the corolla size will be found to be much smaller; whereas with *R. latoucheae,* the tube size will be much longer.

R. stamineum was an Ernest Wilson introduction into British gardens, the first four documented collections of seed the result of his explorations in China. The primary gathering occurred in 1900 and was delivered to the Veitch Nurseries who had sponsored the expedition to western Hubei, while 1908 and 1910 saw seed batches arrive at the Royal Botanic Garden, Kew, from Hubei and Sichuan respectively, courtesy of Boston's Arnold Arboretum and its first director Charles Sprague Sargent, who had taken over the bankrolling of Wilson's trips. Plants flowered for the first time in the UK at Caerhays Castle during 1914, the premier collection responding to the green fingers of J. C. Williams. Away from Cornwall however, cultivation outdoors is restricted to the most well-sheltered venues along the west coast, and if tried elsewhere, the protection of a heated greenhouse will be needed to get a plant safely through the frosts of winter. But once established in one of those choice locales, specimens will prove to be free flowering, with the blooms pleasantly scented, the plants themselves growing to around 3m in height.

A form of the species established outdoors at Wakehurst Place, while matching the botanic description, produces few flowers, with these in sparse trusses of 1 or 2 rather than the usual 3 to 8. It also succeeds much further north, in the woodland garden at Glendoick, for instance, this the Cox family residence located between Perth and Dundee. Whether an aberrant, or a gathering from the highest reaches of the species distribution is unclear, but Peter and Kenneth have extended the known range upwards to an altitude of 2,700m in their 1997 *Encyclopedia of Rhododendron Species*.



R. stamineum, illustrated in *Curtis's Botanical Magazine,* Volume 141, t. 8601.

R. latoucheae ‘Wilsonae Group’

R. latoucheae

Hardiness:
H1b-3.
Flowering Period:
March-May.
Distribution in the wild:
C, S & E China; S Ryukyu Islands, Japan; Taiwan.
Growing in and at the margins of evergreen forests, in open mixed woodland,
in thickets on rocky mountain slopes, and in heavily shaded ravines,
at elevations of 100-2,700m.

Identification:
Shrub or small tree, spreading through upright, 2 to 7m high;
branchlets stiff, glabrous.
Leaf bud scales sometimes persistent.
Leaves coriaceous, stiff,
elliptic-lanceolate through oblanceolate to ovate-elliptic,
5 to 13cm long by 1.4 to 5.5cm wide,
apex acuminate;
upper surface green and shiny, often reticulate, glabrous,
the midrib grooved, the margins sometimes slightly recurved;
lower surface pale green, glabrous.
Petiole 0.5-1.5cm long, grooved above,
glabrous or with a thin, white, tomentum.
Inflorescence axillary, 1-2-flowered;
the bud scales persistent and often viscid.
Pedicel 1.5-3cm long, stout, glabrous.
Calyx usually minute, 0.5-1mm long,
the 5 lobes obscure or triangular, rarely to 10mm long, the lobes then linear;
their outer surface and margins glabrous,
or their apex and margins sometimes finely ciliate.
Corolla widely tubular-funnel-shaped, 3.5 to 4.8cm long,
pink through purplish-mauve, or white,
sometimes with darker spotting on the upper lobes,
fragrant.
Stamens 10, unequal, shorter than the corolla;
filaments puberulent along the lower half or at the base.
Ovary glabrous.
Style longer than the stamens, glabrous.
Capsule cylindric, 23-45mm long, glabrous.

Seed Collections:

W 317	1900
W 886	1900
AC 5107	2002
AC 5136	2002
JN 12372	2012
JN 12377	2012
JN 12412	2012



R. latoucheae ‘Wilsonae Group’

R. latoucheae was first found in Fujian Province, south eastern China, during 1898 by Madame de la Touche, after whom the plant is named. Specimens were swiftly despatched off to France, where Adrien Franchet completed the botanic description in 1899 (*Bulletin de la Société Botanique de France,* Volume 46).

The following year, while exploring the western reaches of Hubei Province on his first Veitch-sponsored trip, Ernest Wilson found a very similar rhododendron, gathering dried material and seed from a species that would later be named for his wife, but which today is considered synonymous with *R. latoucheae,* namely *R. wilsonae.* The honorific epithet, coined by William Hemsley and the plant hunter for their joint 1910 botanic description in Kew's *Bulletin of Miscellaneous Information,* survives today as *R. latoucheae* Wilsonae Group, this defining plants that are much hardier than the type species. Another, Amamiense Group, identifies plants growing on Amami Ōshima, a semi-tropical island in the Japanese Ryukyu Archipelago midway between Okinawa and Kyushu. These plants have more narrowly oblong leaves and are 2-flowered rather the 1-flowered norm.

The species differs from its closest relatives *R. moulmainense* and *R. stamineum* in that - apart from the membership of Amamiense Group - it is single flowered. The corolla tube is also shorter, to around 1cm long, and stamen length too can be an identifier, when comparing *R. latoucheae* with *R. stamineum,* the filaments respectively shorter than the corolla, as opposed to longer. Recent field studies by Chinese botanists have shown that even within single populations, leaf and calyx sizes vary considerably, and that plants with longer calyx lobes are more numerous within those individual communities than previously thought. *R. moulmainense* and *R. stamineum* will consistently be found to have minute calyx lobes between 0.5 and 1mm in length, so whenever these exceed that maxima, and providing there are no bristles present, the subject to hand will be *R. latoucheae*.

Until 2012, when Jens Nielsen's name was added to the listing, only two collectors had been documented as introducing seed of *R. latoucheae* into British gardens: Ernest Wilson in 1900; and, a touch more than a hundred years later, Alan Clark in 2002. Wilson's introduction flowered for the first time in 1912, at Caerhays Castle, a few hundred yards from the sea on Cornwall's southern coast, with other individuals later following suit in sheltered southern and west coast gardens. But all these plants are members of Wilsonae Group and as stated, considerably hardier than the true species, individuals of which will require overwinter protection in a cool greenhouse. Along the east coast, even Wilsonae Group plants should be considered tender regardless of one or two extra-rugged individuals that just about scrape through each year, although the winters of 2009-10 and 2010-11, the coldest on record for some time, probably proved calamitous even for those diehards. The species is therefore a rare find in UK rhododendron collections, but the new 2012 Jens Nielsen gatherings - made in the north of Guangxi and in southern Hunan - may increase the number of specimens in cultivation if their hardiness proves better.



R. latoucheae 'Wilsonae Group'



R. latoucheae 'Wilsonae Group'

R. latoucheae ‘Wilsonae Group’

Section
Lepipherum

Section *Lepipherum* Subsection *Boothia:*



R. leucaspis



Taxa:

R. boothii
R. chrysodoron
R. dekatanum
R. leptocarpum
R. leucaspis
R. megeratum
R. sulfureum

Taxonomic Revision:

The placement of Subsection *Boothia* remains as designated in the 1996 Edinburgh Revision classification.

Subsection Morphology:

Shrubs, 0.2 to 3m high; terrestrial or epiphytic;
young growth lepidote, often moderately through densely setose, but occasionally without bristles;
bark reddish or brown, sometimes smooth or peeling.

Leaf bud scales deciduous, rarely semi-persistent or persistent.

Leaves evergreen, coriaceous,
elliptic through ovate, obovate and oblong to oval or near orbicular,
1.3 to 13cm long by 0.8 to 7cm wide,
apex usually rounded or obtuse, rarely acuminate, mucronate;
upper surface bright-, olive- or dark-green, shiny or matt,
lepidote or without scales,
usually glabrous, rarely ciliate-setose, or with bristles on the midrib and veins,
the margins often recurved and ciliate-setose;
lower surface whitish-papillose, pale glaucous-green or glaucous,
densely lepidote, the scales often rimmed, sometimes vesicular,
variably sized, usually deeply sunk in pits on the surface,
golden yellow to brown or dark brown,
half to twice their own diameter apart, rarely contiguous.

Leaf anatomy comprises a 2-, 3- or 4-layered upper epidermis,
with the cells in the top layer being smaller than those in the bottom layer;
cuticle thickness varies, being both thick and thin; water tissue is absent;
the lower epidermis cells are prolonged into papillae.
Sclereid cells are present in the leaf tissue of each species.

Petioles 3-16mm long, lepidote,
moderately through densely setose, but occasionally without bristles.

Inflorescence terminal, 1-13-flowered, rarely terminal and axillary;
the bud scales deciduous, rarely semi-persistent or persistent.

Pedicels 6-25mm long, rarely to 40 or 50mm, lepidote, rarely without scales,
moderately through densely setose, but occasionally without bristles.

Calyx usually well-developed, leafy, 5-lobed, 1-15mm,
these occasionally reduced to an undulate rim,
their outer surface lepidote, but sometimes without scales,
their margins ciliate, setose or glabrous.

Corolla broadly campanulate to near rotate, 1.3 to 4cm long,
yellow or white, rarely greenish or reddish, sometimes spotted,
usually 5-lobed, occasionally 4-lobed,
the outer surface moderately through densely lepidote on both the tube and the lobes,
occasionally sparsely pubescent at the base,
the inner surface usually pilose.

Stamens 10, radially arranged,
not declinate, unequal, usually shorter than the corolla;
filaments pubescent at the base or along the lower third, half or two-thirds,
the hairs rarely villous.

Ovary 5-6-celled, densely lepidote.

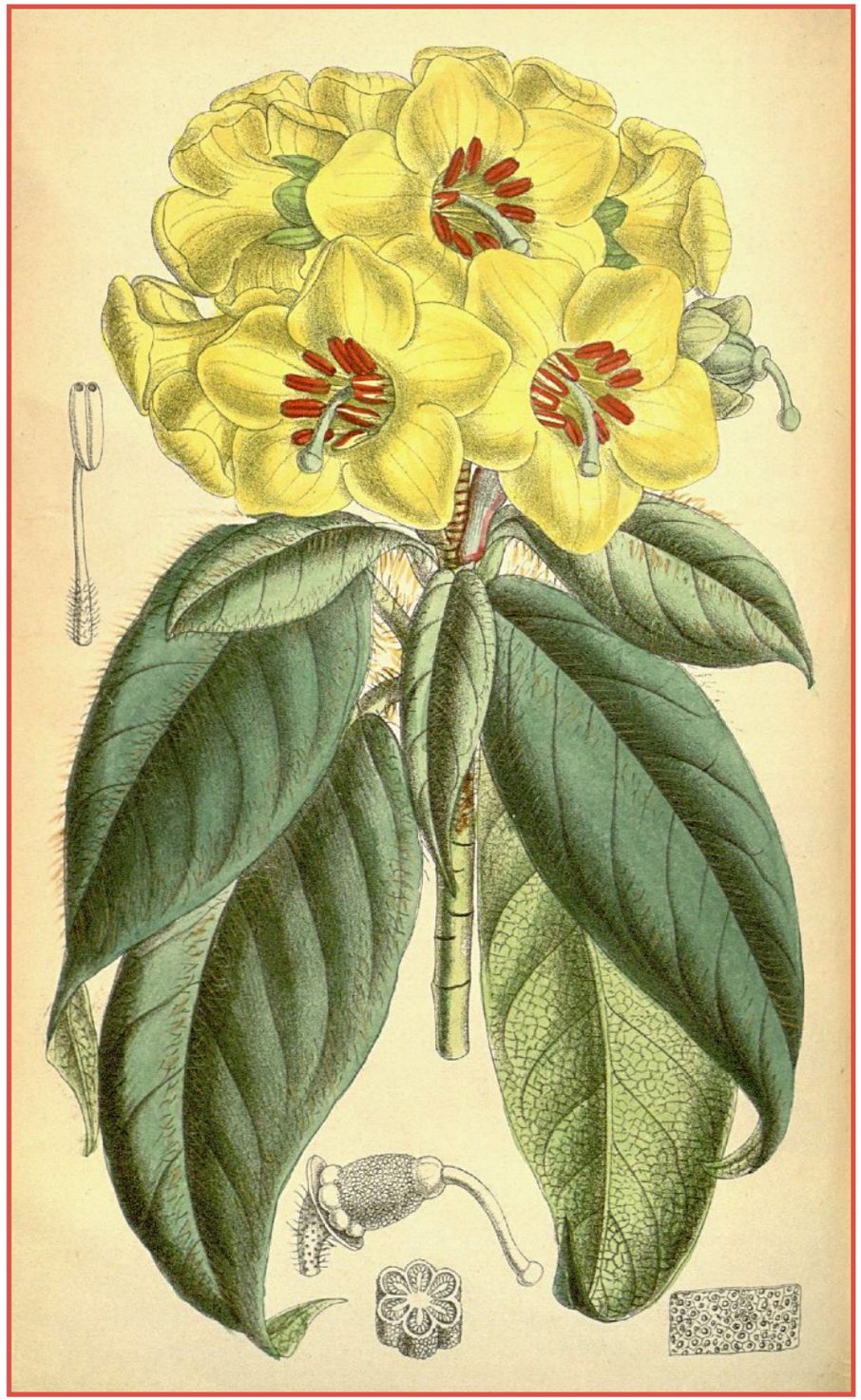
Style short, stout, sharply deflexed, tapering into the ovary,
lepidote only at the base or without scales,
rarely puberulous at the base.

Capsule ovoid to cylindric-ovoid, 6-17mm long, moderately through densely lepidote.

Seeds elongate, prominently winged, and each end with appendages.


R. dekatanum (L&S 1360)


R. boothii (HECC 10031)



R. boothii, illustrated in *Curtis's Botanical Magazine,* Volume 116, t. 7149.

R. boothii
Hardiness:
H1b-2.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; Assam & Arunachal Pradesh, India.
Growing as an epiphyte on oak and *Abies* trees and on rocks,
at elevations of 1,500-3,000m.

Identification:
Shrub, upright through rounded, often straggly, 1.5 to 2.5m high, rarely to 3m;
branchlets densely setose, the hairs twisted and matted together.
Leaves thick, narrowly ovate through ovate-oblong,
7 to 13cm long by 3 to 7cm wide,
apex acuminate;
upper surface often bright green, without scales, moderately shiny,
the midrib and veins usually densely setose, the hairs matted,
the leaf margins usually ciliate;
lower surface pale glaucous-green, lepidote, the scales dark brown,
unequal but of roughly the same medium size and approximately their own diameter apart,
set in pits on the surface with upturned rims.
Petiole 6-10mm long, the hairs twisted and matted together.
Inflorescence 3-10-flowered.
Pedicels stout, 10-20mm long, the hairs twisted and matted together.
Calyx green, leafy,
the lobes large, 7-15mm long, fully enclosing the mature capsule,
their outer surface sparsely through moderately lepidote,
their margins ciliate or not.
Corolla campanulate, 2 to 3.1cm long,
dull to bright yellow,
with or without spots.

Seed Collections:

KW 8113	1927/1928
KW 10142	1931
LS&E 13618	1946/1947
HECC 10007	2002
HECC 10031	2002
KR 10365	2012
KR 10687	2012
KR 10716	2012

Thomas Booth discovered the rhododendron that would later be named for him in 1849, while exploring the Gascherong Hills of Assam in the employ of Kew Gardens. The species botanic description was written by the collector's uncle, Thomas Nuttall, who clearly held his nephew in high esteem, the text appearing in William Jackson Hooker's *Journal of Botany and Kew Garden Miscellany,* Volume 5, which was published in 1853. A flower truss comprising between 3 and 10, unspotted corollas was detailed in that outline.

Seventy-five years later in April 1928, at Chibaon, in the Mishmi Hills of Assam, northeast India, Frank Kingdon-Ward encountered *R. mishmiense*. Volume 16 of *Notes from the Royal Botanic Garden, Edinburgh,* published in 1931, contains the botanic description for the find, a jointly penned treatise by Kingdon-Ward and John Hutchinson. It details a plant with 3-4 flowers in the truss and corollas that are always spotted.

Yet apart from that variance, *R. mishmiense* is morphologically identical to *R. boothii,* such uniformity allowing the Edinburgh Revision botanists to merge the former in synonymy with the latter, although for horticultural purposes only, such plants may still be identified and referred to as *R. boothii* Mishmiense Group.

The acutely pointed leaves should identify *R. boothii* from each of its six subsection relatives, while from its closest allies, *R. chrysodoron* and *R. sulfureum,* the species can be further distinguished by, respectively, a larger calyx, and bristles on the leaf upper midrib and veins.

Thomas Booth's collection duly arrived back on British shores during 1852 and horticulturalists soon discovered that the plants germinated from that seed required the protection of a heated greenhouse across virtually the whole of the UK for successful cultivation. Only in the most well-sheltered gardens along the western seaboard, or in a handful of Cornish wooded valleys along the southern coast that ran down to the sea, could *R. boothii* be successfully grown outdoors, and even here, a spring hoar frost will sometimes decimate the new growth, as the photograph opposite indicates. Peter and Kenneth Cox are doubtful if any of those original plants still survive today, reporting in their 1997-published *Encyclopedia of Rhododendron Species* that they had been unable to find any living specimens anywhere in the UK. That was remedied in 2002 when Peter and his son, along with Peter Hutchison and Philip Evans, reintroduced the species from Arunachal Pradesh, though the freezing winters of 2009-10 and 2010-11 would certainly have seen off any plants left un-protected and at the mercy of the elements.



R. boothii (HECC 10031)

R. leptocarpum

Hardiness:
H2-3.
Flowering Period:
April-June.
Distribution in the wild:
E Nepal; S Tibet; Sikkim & Arunachal Pradesh, India; E Bhutan;
NW Yunnan, China; NE Myanmar.
Growing in mixed and evergreen woodland,
rhododendron forest, on cliff ledges and rocks, mostly epiphytically,
at elevations of 2,400-3,400m.

Identification:
Shrub, laxly upright, straggly or spreading, 0.9 to 2m high, rarely to 3m;
branchlets glabrous;
bark peeling, dark mahogany-brown when mature.
Leaves narrowly elliptic through elliptic to oblong-lanceolate or oblong-obovate,
3 to 8cm long by 1.5 to 3.6cm wide;
upper surface bright green, somewhat matt, lepidote or without scales;
lower surface greenish-grey, papillose,
densely lepidote, the scales yellow or brown, unequal, small through large,
half to one-and-a-half times their own diameter apart,
the smaller scales sunk in pits with upturned rims.
Petiole 5-10mm long.
Inflorescence 3-10-13-flowered, terminal,
but occasionally terminal and axillary in the upper one or two leaves.
Pedicel thin, flexuous, 20-42mm long,
longer than the corolla and extending to 50mm or more in fruit.
Calyx 2-5mm long, the lobes usually reflexed, sometimes spreading,
their outer surface lepidote.
Corolla rotate-campanulate, 0.8 to 1.4cm long,
white (rarely) through greenish-yellow to yellow,
sometimes with greenish spots.
Stamens as long or shorter than the corolla;
filaments sometimes pubescent from base to tip.

Seed Collections:

F 21811	1922	R 22214	1932	LS&H 21289	1949	AC 5321	2004
F 22856	1922	L&S 590	1934	KW 21007	1953	AC 5342	2004
R 11167	1923/1924	L&S 1751	1936	C&H 420	1965	AC 5348	2004
F 25588	1924/1925	L&S 2108	1936	ESIK 151	1992	KR 8068	2005
F 25612	1924/1925	L&S 2857	1936	CCHH 8205	1997	KR 8152	2005
F 26636	1924/1925	KW 13645	1937	BASE 9640	2000	KR 8497	2006
F 27686	1924/1925	Yu 22101	1937	DGEY 143	2001	KR 8519	2006
KW 6251	1924/1925	Yu 22925	1937	HECC 10029	2002	KR 9312	2008
KW 6848	1926	LS&T 3736	1938	KCSH 0355	2003	KR 9892	2010
R 18475	1929	LS&T 6633	1938	AC 5314	2004	KR 9952	2010
KW 10129	1931	LS&H 20825	1949	AC 5319	2004	KR 10086	2010



R. leptocarpum (ESIK 151)

R. leptocarpum was first described by Thomas Nuttall in 1853 when writing in Volume 5 of Hooker's *Journal of Botany and Kew Garden Miscellany.* However, the epithet he chose, *R. pumilum,* had previously been assigned to another species - by none other than Sir William himself - so the current moniker was conceived and the correction published the following year in Volume 6. Officially, the rhododendron was first found in Bhutan, high up on the Oola Hills, by Nuttall's nephew, Thomas J. Booth, sometime around 1850, but contemporary evidence suggests the actual location may have been within the borders of the Indian state of Arunachal Pradesh.

R. micromeres, discovered on the Salwin Kiu-Chiang Divide by George Forrest during his 1922 exploration of southern Tibet, was described by Harry Tagg in 1931 - *Notes from the Royal Botanic Garden, Edinburgh,* Volume 16 - from a plant collected by Frank Kingdon-Ward that flowered at Bulstrode Park (the Gerrard's Cross garden of Sir John Ramsden) earlier that same year. This species is unique amongst rhododendrons in that it was considered the only one not worth growing by Ward himself, although that distinction was not enough to save it from synonymy in 1987 when David Long, a botanist working at Edinburgh Botanic, compared the herbarium specimens of *R. micromeres* with those of the earlier-described *R. leptocarpum* and found them to be identical.

Prior to that finding however, *R. leptocarpum* seems to have fallen off the map.

There is, for instance, absolutely no mention of the species in H. H. Davidian's four-volume saga *The Rhododendron Species,* the 1982-published first opus of which covers the lepidotes. That tome does detail a still-specific-ranked *R. micromeres,* places it within the Glaucophyllum Series and the Genestierianum Subseries, where it is described as being 'somewhat aberrant', but any reference to *R. leptocarpum* is completely absent.

Nor does the plant appear in the first edition of *The Larger Rhododendron Species* by Peter Cox, though the revised edition, published in 1990, picks up David Long's finding that 'the herbarium specimen labelled *leptocarpum* equals *micromeres*'.

The 1978 paper *A Preliminary Synopsis of the Genus Rhododendron,* authored by James Cullen and David Chamberlain - *Notes,* Volume 36 - moved *R. micromeres* into Subsection *Boothia,* where morphologically, it is a slightly better fit, though no mention of *R. leptocarpum* was made in the text. Cullen's full revision of the lepidotes, which occupied the entirety of 1980's *Notes,* Volume 39, Number 1, filed *R. leptocarpum* under a 'Doubtful And Imperfectly Known Taxa' heading, a conclusion 'based on fruiting material collected by Booth in Bootan'. This evidences the fact that that 1850 gathering of dried material was the only one tagged to the species prior to the *R. micromeres* finds, the sheets filed away and long forgotten by the doyens until they were finally unearthed by Doctor Cullen.

Within the subsection, the reflexed calyx lobes of *R. leptocarpum* are distinctive, as are the long pedicels, which lengthen even more as the capsules mature. The flowers are the smallest borne by any of the seven *Boothia* species and are accurately described in *The Larger Rhododendron Species* as 'sickly yellow'. Yet *R. leptocarpum* is the most commonly found epiphytic rhododendron throughout its wide endemic distribution.

UK cultivation outdoors is restricted to those sheltered woodland environments along the west coast and in Cornwall, overwinter protection under glass a requirement elsewhere. For those taking up the outdoor challenge, drainage must be exemplary, fertiliser is abhorred, and plants do best when pot-bound terrestrially or given aerial perches in hanging baskets. However, the floral reward for such enervations is simply not worth the trouble, as the hybridising fraternity have made abundantly clear, with not a single cross involving *R. leptocarpum,* or its synonym *R. micromeres,* ever registered with the IRRC despite those forty-plus gatherings of seed.

So clearly, Frank Kingdon-Ward had a point.



Thomas Booth's herbarium collection of *R. leptocarpum,* held at the Royal Botanic Garden, Kew.

R. sulfureum (F 15782)

R. sulfureum

Hardiness:
H2-3.
Flowering Period:
March-April.
Distribution in the wild:
SE Tibet; W Yunnan, China; NE Myanmar.
Growing on cliffs, rocks and boulders, in open scrub, and epiphytically in forests,
at elevations of 2,100-4,000m.

Identification:
Low shrub, compact and rounded, straggly or broadly upright, 0.3 to 1.6m high;
branchlets setose at first, but the bristles soon lost;
bark brown, smooth, occasionally peeling.
Leaves broadly obovate through elliptic to narrowly elliptic (rarely),
2.6 to 8.6cm long by 1.3 to 4.5cm wide;
upper surface bright or dark green, shiny, glabrous,
sparsely lepidote or without scales,
margins ciliate-setose at first but soon glabrous;
lower surface glaucous-green,
densely lepidote, the small brown or dark brown scales unequal,
with crenulate edges and upturned rims, half to their own diameter apart, sunk in pits.
Petiole 3-14mm long,
often setose, but sometimes without bristles.
Inflorescence 3-8-flowered.
Pedicel stout, 6-13-20mm long, sometimes ciliate-setose.
Calyx 3-6mm long, the lobes ovate through oblong,
their outer surface moderately through densely lepidote and glabrous,
their margins often ciliate-setose.
Corolla 1.3 to 2cm long, campanulate,
greenish- through bright to deep or sulphur-yellow,
without spots,
the outer surface often sparsely pubescent on the tube.
Stamens 10, unequal, shorter than the corolla;
filaments densely pubescent near the base, or along the lower half.

Seed Collections:

F 6777	1910	F 25852	1924/1925	SBEC 532	1981
F 11910	1912/1914	F 26113	1924/1925	KR 2279	1992
F 13512	1912/1914	F 26422	1924/1925	KR 2319	1992
F 15589	1917/1919	F 26447	1924/1925	CNW 867	1994
F 15594	1917/1919	F 27458	1924/1925	CNW 893	1994
F 15770	1917/1919	F 27622	1924/1925	KR 3025	1994
F 15782	1917/1919	R 18395	1929	P&M 78	1994
Farrer 813	1919	LS&T 3641	1938	P&M 79	1994
R 7651	1923/1924	LS&T 3644	1938	CCHH 8052	1997
F 24131	1924/1925	LS&T 6580	1938	CCHH 8236	1997
F 24229	1924/1925	KW 21001	1953	KR 7473	2002
F 24235	1924/1925	SBEC 103	1981	C&N 5953	2007
F 25340	1924/1925	SBEC 210	1981	JN 11062	2011
F 25631	1924/1925	SBEC 249	1981	MH 369-04	2018



R. sulfureum (SBEC 249)

R. sulfureum was first found by the French missionary priest Abbé Jean-Marie Delavay in April of 1886. He was exploring on Mount Tsang-chan, part of the Cangshan mountain range to the west of Dali in Yunnan Province and one of China's most diverse botanic hot-spots, when the plant was encountered. As with all of Delavay's finds, specimens were sent back to the Muséum National d'Histoire Naturelle in Paris for Adrien Franchet to describe, the species citation appearing in Volume 34 of the *Bulletin de la Société Botanique de France,* this published in 1887. Officially, twenty-three years later, at the conclusion of his second plant-hunting trip to Southeast Asia in 1910, George Forrest introduced the rhododendron into British gardens. However, two field numbers from his first expedition to Yunnan and eastern Tibet - F 951 and F 4143 - are recorded as herbarium specimens in the Ludwig Diels-penned *Plantae Chinenses Forrestiannae: plants discovered and collected by George Forrest during his first exploration of Yunnan and Eastern Tibet in the years 1904, 1905, 1906* (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 7, 1912).

Any seed collected would, however, have gone to the expedition's principal sponsor, A. K. Bulley, of Bees Limited, and not to Edinburgh Botanic, who only received the dried material. Historical company records of what was successfully germinated and whether the respective field numbers accompanied any sold plants or seed that left the nursery premises are now scant to non-existent, with only the front page artwork of some of the plant catalogues surviving, so it is possible that *R. sulfureum* might have been introduced earlier, before the official date, sometime between 1904 and 1906, but unlikely, given the competence levels of the staff employed.

A transcript of the Presidential Address given to the Royal Institute of Cornwall by F. J. Williams in November 1998 titled *J. C. Williams: An Enthusiast* (now available on the Caerhays Castle website) cites A. K. Bulley as 'not having the resources to deal with so much new material'. Moreover, two first-hand observations made on a visit to the nursery premises by J. C. Williams himself are quoted in the text:

One states that Williams was 'quite sad to see stuff so knocked about'.

The other reports that 'thousands of things are dead through sheer ignorance of how to handle them'.

On a less morbid note, within the subsection, *R. sulfureum* is most closely related to *R. chrysodoron,* indeed, many botanists continue to maintain that in flagrante delicto with a certain *R. ciliicalyx, R. sulfureum* is actually one of the parents of *R. chrysodoron*. Be that as it may (and current field studies do not support such a contention) when in bloom, corolla and calyx size can quickly be used to distinguish the two, the *R. sulfureum* flowers being half the size and its calyx twice as large as those of *R. chrysodoron*. The consistently small yet unequal brown scales on the leaf under-surface, each with an upturned rim, serve to separate the pair at all other times, and in fact, this characteristic keys *R. sulfureum* from all its Subsection *Boothia* cohorts.

The species flowered for the first time in UK cultivation at Caerhays Castle in Cornwall during April 1920 and although the blooms were quite small, the glowing deep yellow bell-shaped corollas were captivating and long-lasting. But despite their appeal, *R. sulfureum* is a rare find in British gardens today even though some forms are hardy enough to survive outdoors in the south and along the east coast if given a favoured spot. Most other locales will need to overwinter plants in a cool greenhouse, however, and even in west coast woodlands, established specimens will often be hidden away in a sheltered nook, and so be overlooked by the casual visitor. Drainage, as with all the *Boothia* species, is crucial to longterm success.



R. sulfureum (F 15782)



R. sulfureum (F 15782)

R. megeratum

Hardiness:
H3.
Flowering Period:
March-April.
Distribution in the wild:
SE Tibet; Arunachal Pradesh, India; NW Yunnan, China; NE Myanmar.
Growing on and amongst rocks and boulders, on ledges and crevices in cliffs,
on rocky slopes, and epiphytically within forests,
at elevations of 2,400-4,200m.

Identification:
Dwarf to low shrub,
prostrate through compact and rounded, or broadly upright,
0.1 to 1m high;
branchlets moderately through densely setose,
the bristles persisting into the following season.
Leaf bud scales persistent through semi-persistent.
Leaves elliptic through to near orbicular,
1.3 to 4cm long by 0.8 to 2cm wide;
upper surface dark green, shiny, glabrous, without scales,
the midrib setose at the base, the margins revolute, usually setose;
lower surface glaucous, whitish-papillose, densely lepidote,
the brown scales unequal, small through medium-sized, vesicular,
half to one-and-a-half times their own diameter apart and sunk into pits.
Petiole 3-11mm long.
Inflorescence 1-3-flowered.
Pedicel 8-11mm long,
usually without scales, but sometimes sparsely lepidote.
Calyx 6-10mm long, green,
the lobes obovate or rounded, fully enclosing the mature capsule,
their outer surface usually without scales, but sometimes sparsely lepidote,
their margins sometimes sparsely ciliate.
Corolla 1.6 to 3cm long, broadly through rotate-campanulate,
yellow through pale lemon-yellow,
sometimes with darker purple-coloured spotting,
or creamy-white with a yellow blotch,
5-lobed, but occasionally 4-lobed,
the inner surface glabrous.

Seed Collections:

F 12942	1914	R 18341	1929	LS&T 3657	1938
F 14059	1917/1919	KW 9569	1931	KW 227	1938/1939
Farrer 938	1919	R 22120	1932	R 95	1948/1949
KW 3095	1919	R 23483	1932	KW 21559	1953
F 19570	1921/1922	KW 11464	1935	CC 7527	1996
F 20332	1921/1922	L&S 1361	1936	AC 3601	1997
F 20906	1921/1922	L&S 1666	1936	HECC 10036	2002
F 21701	1921/1922	L&S 2505	1936	KCSH 0361	2003
R 11006	1923/1924	L&S 2759	1936	AC 5299	2004
KW 6250	1924/1925	L&S 2761	1936	AC 5307	2004
KW 6819	1926	Yu 21071	1937	AC 5594	2004
KW 8225	1927/1928	Yu 22955	1937	KR 9426	2008



R. megeratum

Near the end of his second expedition to China and Myanmar, during August 1914, George Forrest became the first Western explorer to encounter *R. megeratum*. He found a population of the plants on the Kari Pass, in a mountainous area of north-western Yunnan that divides the gorges of the Mekong and the Yangtze rivers. The Scotsman introduced his find into cultivation on his return to Britain later that year, writing the botanic description for the species that was published in Volume 12 of *Notes from the Royal Botanic Garden, Edinburgh,* jointly with Sir Isaac Bayley Balfour.

By the time their text appeared in 1920 however, another three collections of seed had been made: by Frank Kingdon-Ward and Reginald Farrer from separate sites in Upper Myanmar during 1919; and a second Forrest gathering from northwestern Yunnan, made during his 1917-19 expedition. In total, thirty-six documented introductions have occurred to date, from populations across the entire wild distribution range, with plants consistently maturing into either well-filled domes around 1m high and wide, or smaller spreading shrubs to half that height, but often with larger flowers. The prostrate forms of the species, although collected, do not remain creeping dwarf plants in the UK's more benign climate.

Identifying *R. megeratum* is straightforward as the vesicular scales on the leaf lower surface distinguish the species from all the other Subsection *Boothia* residents except for *R. leucaspis.* At present, flower colour can be used to distinguish the cultivated forms from each other - yellow as opposed to white - but in future more reliance will have be placed on the presence or not of bristles on the leaf and the pedicel - a setose upper leaf surface indicating *R. leucaspis;* a moderate to dense presence of stiff hairs on the pedicel, *R. megeratum.* That keying change is the result of recent field study findings and collections made in the southeast of Tibet, where on the ground, expedition teams have found plant populations of *R. megeratum* that display white corollas with a yellow blotch, which of course, are very similar to the flowers of *R. leucaspis*. It is therefore highly likely that the two species will be shown to merge and already, salivating at the prospect no doubt, many experts are now advocating a reduction of the specific status of *R. leucaspis* to that of a subspecies or variety of *R. megeratum*. Post the millennium, seed from those white-flowering plants was introduced into British gardens, thus the ability to key from flower colour alone will be gone once these have reached flowering size.

In Latin, the species name can be translated as 'passing lovely' or 'lovely to the highest degree', and a free-flowering clone of *R. megeratum,* smothered in yellow blooms is a captivating vision. But some forms of the species are more timorous, opening only a few trusses each year, so provenance should be checked before purchase. The same is true for hardiness, so east coast gardeners need to be aware that some introductions are prone to bark split, can be killed outright if subject to extended periods of freezing temperatures, and are slow growing, finicky subjects to please. All forms require perfect drainage and are best grown on a bank or in a raised bed, especially in areas where rainfall is plentiful to excessive. Containerised cultivation will also gift those plants frost-free winter protection under glass should the thermometers really plunge.

But however grown, *R. megeratum* has a reputation for being difficult, which is fully justified. Yet unlike *R. leptocarpum,* this is one *Boothia* species where the floral rewards are most certainly worth all the horticultural hassle.



R. megeratum

R. megeratum

R. chrysodoron

Hardiness:
H2-3.
Flowering Period:
February-April.
Distribution in the wild:
SE Tibet; NW Yunnan, China; NE Myanmar.
Growing amongst and on rocks, and in mixed woodland, often epiphytically,
at elevations of 2,000-2,800m.

Identification:
Low shrub, upright or bushy, 0.2 to 1.8m high;
branchlets setose at first, the bristles long and slender, becoming glabrous;
bark reddish, peeling.
Leaves obovate through oblong-elliptic to broadly-elliptic,
4 to 9cm long by 2 to 5cm wide,
distinctly mucronate;
upper surface bright through dark-green, shiny,
sparsely lepidote or without scales,
the margins sometimes bristly at first, soon glabrous;
lower surface pale glaucous-green, papillose,
densely lepidote, the scales golden-yellow or brown, unequal, medium to large,
between one and two times their own diameter apart and slightly sunk in pits.
Petiole 6-16mm long,
sometimes setose, with the bristles long and slender.
Inflorescence 3-6-flowered.
Pedicel 7-10mm long, rarely to 20mm, without bristles.
Calyx minute, saucer-like, the lobes 1-3mm long,
their outer surface densely lepidote,
their margins moderately through densely setose, these bristles long and slender,
the rim undulate.
Corolla campanulate, 1.5 to 4cm long,
canary yellow, without spots,
the outer surface pubescent at the base.

Seed Collections:

KW 9371	1931
KW 251	1938/1939
KW 354	1938/1939
KW 395	1938/1939
KW 20878	1953
CCHH 8109	1997
CCHH 8116	1997
CCHH 8126	1997
DGEY 136	2001

George Forrest is due the credit for discovering *R. chrysodoron,* even though initially there was some doubt regarding the plant's provenance. Encountered during 1924 in the west of Yunnan, seed arrived mixed with that of another rhododendron species under a single collection number - Forrest 25446 - with the corresponding herbarium specimen clearly *R. ciliicalyx*. Early in 1931, germinated plants flowered for the first time at Castle Kennedy, a near frost-free woodland garden close to Stranraer in southwest Scotland, and the bright yellow flowers were immediately recognised as something different. Lord Stair, the owner, swiftly despatched a plant to Edinburgh Botanic where it was assessed by Harry Tagg and given a name that in Latin means 'Golden Gift'.

Although a species botanic description, written by Tagg and John Hutchinson, appeared in 1934 - within Volume 95 of *The Gardeners' Chronicle* - doubts remained over the plant's veracity until several years later, when a 1931 collection made by Frank Kingdon-Ward in the Adung Valley of northeast Upper Myanmar flowered in the Edinburgh glasshouses. The blooms and all its other parts proved a perfect match with *R. chrysodoron* and meant that *R. butyricum* was consigned to synonymy. In 1953, Kingdon-Ward found a second population of plants, these in the Triangle of northern Myanmar (an area to the southeast of Putao), which were introduced under KW 20878, and these again matched perfectly with the two previous collections. Yet some botanists still hold to the view that the species is actually a natural hybrid between *R. sulfureum* and *R. ciliicalyx,* this contention currently awaiting input from the geneticists.

Calyx size is the key distinguishing feature, the minute lobes usually around 1mm long, but occasionally to 3mm, identifying *R. chrysodoron* from all the other members of the subsection.

Unless winter protection under glass is available, *R. chrysodoron* will only be grown successfully outdoors in gardens along the west coast, where Gulf Stream enhanced microclimates exist. The species flowers early, often during February, so any degree of frost would simply decimate the stunning yellow trusses, a harsher exposure cause bark split or even kill a plant dead to the ground. But if over-wintering space in a cool conservatory can be found, *R. chrysodoron* will thrive in a container provided the drainage reflects the plant's epiphytic nature.



R. chrysodoron



R. chrysodoron (CCHH 8107)



R. chrysodoron (CCHH 8107)

R. leucaspis

R. leucaspis

Hardiness:
H3-4.
Flowering Period:
Late February-April.
Distribution in the wild:
SE Tibet.
Growing in shady moist thickets and scrub, sometimes epiphytically,
on grassy slopes, and on cliff faces, at elevations of 2,100-3,300m.

Identification:
Dwarf to low shrub, wider than high, rounded and bushy, 0.3 to 1m high,
but becoming straggly in shade;
branchlets densely hairy and bristly; bark smooth, silver-brown, flaking.
Leaf bud scales sometimes persistent.
Leaves broadly elliptic through obovate,
3 to 6cm long by 1.5 to 3cm wide;
upper surface dark green, shiny, densely hairy and bristly,
moderately through densely lepidote, but sometimes without scales,
the margins recurved, densely hairy and bristly;
lower surface glaucous,
densely lepidote, the brown scales vesicular, small to medium-sized,
half to their own diameter apart and sunk in pits.
Petiole 4-9mm long, hairy and bristly.
Inflorescence 1-2-3-flowered;
the bud scales often persistent.
Pedicel thick, 6-10mm long, often hairy, but rarely with bristles.
Calyx 6-8mm long, green or reddish,
the lobes obovate or rounded, partially enclosing the mature capsule,
moderately lepidote at the base, but rarely so on the lobes,
their margins densely hairy.
Corolla 2.3 to 3.2cm long,
rotate-campanulate through rotate to near saucer-shaped,
white, often slightly tinged pink.
Stamen anthers dark brown or chocolate-coloured.
Style sometimes puberulous at the base.

Seed Collections:

KW 6273	1924
KW 6291	1924
KW 7171	1926
LS&E 13549	1946/1947
KC 0113	2001
KC 0120	2001
APA 42	2005

The undoubted star of Subsection *Boothia, R. leucaspis,* was a Frank Kingdon-Ward find and introduction. Over the course of two expeditions, three collections of the species were made in total, all from within the Tsangpo Gorge in south-eastern Tibet - KW 6273 and 6291, during November of 1924; KW 7171 in 1926 - and these remained the only gatherings of this stunningly beautiful rhododendron for nigh-on eighty years, for while Frank Ludlow, George Sherriff and Henry Elliot are reported to have collected the species in 1947 - under the field number LS&E 13549 - only herbarium specimens can be traced to this gathering today and it is only recently that plant populations of the species have been re-discovered and viable seed secured, Kenneth Cox solely responsible for the 2001 re-introduction and also a member of the Arunachal Pradesh-Abroka Expedition of 2005.

The species flowered for the first time in UK cultivation during the spring of 1928, this allowing Harry Tagg at Edinburgh Botanic - writing in the 1929-published Volume 85 of *The Gardeners' Chronicle* - to complete his species description, because Frank Kingdon-Ward's end-of-year pressed selections were all of plants in fruit.

Unique characteristics distinguishing *R. leucaspis* within the subsection are the white flowers with their distinctive chocolate-brown anthers and the dense covering of bristles across the whole of the upper leaf surface. The bladder-like vesicular scales on the lower leaf surface are shared with *R. megeratum,* to which the species is most closely related. Field reports show that in the wild these two rhododendrons are likely to merge, which has prompted the botanists to consider a status change, reducing the ranking of *R. leucaspis* to either a subspecies or a variety of the earlier-described *R. megeratum,* though until conclusive evidence is presented, the status quo is being maintained.

Mature specimens of the species will be found in the majority of rhododendron gardens across the British Isles, both public and private, for despite the early-appearing flowers often getting frosted and the foliage showing a susceptibility to the powdery mildew fungus, *R. leucaspis* is prized for flower, leaf and form, and a mature plant, completely covered with white flowers, is an arresting sight. The young leaves that follow, first opening reddish-brown and covered in white hairs, are equally attractive, with the habit, a low domed bush well filled with foliage, perfectly proportioned and ideal for placement in a rock garden setting or at the front of a shrub border.

However:

West coast gardeners should be aware that their specimens will develop into more upright plants, often exceeding 1.5m in height, a consequence of the higher rainfall and increased humidity. Any plant grown in too shady a spot will also quickly become straggly, garnering an unkempt appearance, especially in more northern environs. And hardiness can be problematical, not every winter, but when a cold snap extends into a lengthy spell, bark split or worse can occur, with even mature plants lost to the conditions experienced in 2009-10 and 2010-11, a trait documented in the equally exceptional winters of 1948 and 1963. So in the UK's colder gardens, choosing the correct planting position is critical unless additional protection is readily to hand to thwart a return of 'The Beast From The East'.




R. leucaspis (KW 6273)


R. leucaspis (KW 7171)


R. leucaspis (KC 120)

R. leucaspis



R. dekatanum (L&S 1360)

R. dekatanum

Hardiness:
H3-4.
Flowering Period:
February-March.
Distribution in the wild:
S Tibet; Arunachal Pradesh, India; NW Upper Myanmar.
Growing in rhododendron and bamboo forests at elevations of 3,400-3,500m.

Identification:
Low shrub, rounded, 0.6 to 1.5m high;
bark pale reddish-brown, peeling.
Leaves ovate through obovate-oblong to oblong,
3 to 6cm long by 2 to 3.5cm wide;
upper surface olive green, matt, without scales,
the margins slightly recurved, often ciliate at first, but soon glabrous;
lower surface pale glaucous-green,
densely lepidote, the scales brown through dark brown,
very unequal, medium through large, contiguous to their own diameter apart.
Petiole 5-6mm long.
Inflorescence 2-3-flowered.
Pedicel thick, 6-8mm long.
Calyx 6-8mm long,
the outer surface of the lobes sparsely through moderately lepidote,
their margins usually glabrous.
Corolla broadly campanulate, 2 to 2.6cm long,
bright lemon yellow.
Stamen filament hairs villous not pubescent.

Seed Collections:

L&S 1360	1936
BE 12-49	2012

Until very recently, only one confirmed collection of *R. dekatanum* had ever been made: that by Frank Ludlow and George Sherriff on April 27th, 1936, at Chayul Chu, during their second expedition to southern Tibet. The species was described the following year in Volume 19 of *Notes from the Royal Botanic Garden, Edinburgh,* by John Cowan, but then, mirroring the fate of *R. leptocarpum,* the plant seems to have vanished without trace. Not the herbarium specimens, of course, which can still be examined at the Natural History Museum in London, but any live plants. For until quite recently, expert opinion was agreed that the rhododendron had not been successfully introduced into cultivation.

That seed, gathered up under L&S 1360, was presumably divided into lots for the expedition sponsors and despatched to gardens across the UK. Whether germination then proved problematic, or the resulting seedlings were lost to disease or the vagaries of the British climate is unknown, but apparently all succumbed.

Except for one plant.

In one garden.

For on a visit to Muncaster Castle's renowned rhododendron collection in 1984, Peter Cox spotted an unlabelled, low-growing shrub that intrigued him. The plant had been grown from Ludlow and Sherriff seed, but the collection number and name were missing. Cox bought the plant from the Pennington family, who own the castle, transferred it to a sheltered nook in the woodland garden at Glendoick, and was delighted with the lemon-yellow flowers that opened the following season. The Cox family's commercial nursery also began to propagate a few scions each year, selling them to their customers as either *R. sulfureum* 'affinity' or *R. sulfureum* 'round-leaf form'.

But while the shrub did resemble *R. sulfureum,* there were significant differences: the leaf, calyx and corolla were bigger; the flowers opened wider, but there were fewer of them in the truss; and the lower leaf surface scales despite being the same colour, were larger, with a goodly proportion of them contiguous (touching).

By 2002, those minor niggles had transformed into a major rankle, the reference books were dusted off and a requirement to examine those long-forgotten herbarium specimens became pressing.

And the result of Peter Cox's investigative work?

Seventy years after it was first encountered and collected, *R. dekatanum* finally shrugged off obscurity and emerged into the limelight.

One salient feature quickly keys the species from each of its Subsection *Boothia* allies: the contiguous scales. No other member of the subsection displays a lower leaf surface where a large percentage of these butt up against each other.

Relabelled plants can now be found in a number of UK gardens open to the public (plus a few still stuck with an old label), along with younger specimens acquired post the L&S 1360 unveiling. *R. dekatanum* moreover, is proving to be relatively hardy, on a par if not slightly hardier than *R. leucaspis* or *R. megeratum.* The February-March bloom time still mans good frost protection is needed and excellent drainage is essential.

A 2012 gathering of seed made by Bent Ernebjerg, a member of the Danish Chapter of the American Rhododendron Society, extended the species range into northwestern Upper Myanmar, with the plants found along the northern border with Arunachal Pradesh. Confirmation of this can be found in a 2014 documentary by Lovita Morang: 'Rhododendron Forest - Where Highest Rhododendrons Bloom'. Posted on YouTube, the video documents the species rhododendrons that grow in Arunachal Pradesh and features *R. dekatanum.* Drop the link - https://www.youtube.com/watch?v=tRTp2naGlo0&list=WL&index=3 - into your browser and sit back for 36 minutes of informative visual spectacle.



R. dekatanum (L&S 1360)



R. dekatanum (L&S 1360)

Section *Lepipherum* Subsection *Camelliiflora:*



R. camelliiflorum (TSS 33)



Taxa:

R. camelliiflorum

Taxonomic Revision:

The placement of the monotypic Subsection *Camelliiflora* remains as designated in the 1996 Edinburgh Revision classification.

Subsection Morphology:

Shrubs, compact, rounded and bushy to upright and laxly-straggly,
often epiphytic, 0.6 to 3m high;
branchlets densely lepidote, the scales quite large;
bark reddish, peeling.

Leaves evergreen, coriaceous, narrowly elliptic through oblong-elliptic,
4.8 to 12.3cm long by 1.5 to 3.8cm wide,
apex obtuse or acute, mucronate, retained 1-2 years;
upper surface dark green, shiny, without scales or sparsely lepidote at first,
the scales soon lost and any remnants appearing 'dried-out';
lower surface pale green, densely lepidote,
the large but unequal rust- or brown-coloured scales broadly-rimmed,
slightly overlapping, contiguous or between half and their own diameter apart,
sometimes with larger, darker brown scales, these widely scattered.

Leaf anatomy comprises a 2-layered upper epidermis,
with the cells in the top layer being smaller than those in the layer below;
the cuticle is around half as thick as the top cells are deep; water tissue is absent;
the lower epidermis cells are prolonged into papillae.

Petiole 3-12mm long, grooved above, densely lepidote, the scales quite large.

Inflorescence terminal, 1-3-flowered.

Pedicel 4-8mm long, thick, moderately through densely lepidote, the scales quite large.

Calyx conspicuous, 5-11mm long, deeply 5-lobed, oblong through oblong-oval,
their outer surface sparsely through moderately lepidote at the base
or fringed along the edges, the scales quite large,
their margins glabrous.

Corolla thick and waxy, 1.4 to 2.5cm long,
broadly-tubular with spreading lobes to openly-campanulate,
white, white tinged pink, pink or wine-red through deep rose,
the tube short,
the outer surface sparsely lepidote, the scales quite large,
the inner surface densely villose.

Stamens 11-16, unequal, radially arranged or nearly so;
filaments densely pubescent towards the base.

Ovary 5-10-locular, densely lepidote.

Style stout, shorter than the stamens, sharply deflexed, tapering into the ovary, without scales, glabrous.

Capsule stout, ovoid or oblong, 8-13mm long, densely lepidote, the scales quite large, glabrous.

Seeds elongate, conspicuously winged, with an appendage at both ends.



R. camelliiflorum - juvenile leaf



R. camelliiflorum - maturing leaf



R. camelliiflorum - mature leaf

R. camelliiflorum (TSS 33)

R. camelliiflorum

Hardiness:

H3-4.

Flowering Period:

May-July

Distribution in the wild:

E Nepal; SE Tibet; Bhutan; Sikkim & Arunachal Pradesh, India.
Growing on and amongst rocks and boulders, at cliff edges, and in dense woodland,
often epiphytically on the trees, at elevations of 2,700-3,700m.

Identification:

Shrubs, rounded and bushy to upright and laxly-straggly,
often epiphytic, 0.6 to 3m high;
branchlets densely lepidote; bark reddish, peeling.
Leaves narrowly elliptic through oblong-elliptic,
4.8 to 12.3cm long by 1.5 to 3.8cm wide;
upper surface dark green, shiny, sparsely lepidote at first or without scales;
lower surface pale green, densely lepidote,
the large but unequal rust- or brown-coloured scales broadly-rimmed,
slightly overlapping, contiguous or between half and their own diameter apart,
sometimes with larger, darker-brown scales, these widely scattered.
Petiole 3-12mm long, densely lepidote.
Inflorescence terminal, 1-3-flowered.
Pedicel 4-8mm long, thick, moderately through densely lepidote.
Calyx conspicuous, 5-11mm long, the lobes oblong through oblong-oval,
their outer surface sparsely through moderately lepidote at the base or fringing the edges.
Corolla thick and waxy, 1.4 to 2.5cm long,
broadly-tubular with spreading lobes to openly-campanulate,
white, white-tinged-pink, pink, wine-red through deep rose,
the outer surface sparsely lepidote,
the inner surface densely villose.
Stamens 11-16, unequal;
filaments densely pubescent towards the base.
Ovary 5-10-celled, densely lepidote.
Style stout, shorter than the stamens, sharply deflexed, tapering into the ovary,
without scales.
Capsule 8-13mm long, densely lepidote.

Seed Collections:

Cooper 2922a	1914	KR 1233	1987
Cooper 3959	1915	KR 1253	1987
Cooper 4083	1915	KR 1277	1987
L&S 190	1933	KR 1289	1987
L&S 253	1933	KR 1291	1987
L&S 589	1934	KR 1296	1987
L&S 1181	1936	KR 1298	1987
L&S 1183	1936	Bowes-Lyon 6	1987/1989
L&S 1209	1936	CHM 3008	1988
L&S 2760	1936	CHM 3050	1988
L&S 2765	1936	CHM 3076	1988
L&S 2845	1936	CHM 3116	1988
L&S 2849	1936	EGM 59	1988
L&S 2850	1936	AC 106	1990
L&S 2852	1936	AC 128	1990
L&S 2853	1936	C&S 1581	1990
L&S 2855	1936	C&S 1602	1990
L&S 3267	1937	Fox 45	1990
L&S 3324	1937	Kinmouth 82	1990
LS&H 16927	1949	McBeath 2529	1990
LS&H 17531	1949	EMAK 730	1991
LS&H 19277	1949	Heasman 50	1992
LS&H 20488	1949	Sinclair 1739	1993
TSS 19	1961/1962	GR 5032	2003
TSS 20	1961/1962	KCSH 0349	2003
TSS 33	1961/1962	KR 9416	2008
TSS 39	1961/1962	KR 9426	2008
TSS 49	1961/1962	TDA 366	2013
Bowes-Lyon 15018	1969	TDA 368	2013
BLM 153	1971	TDA 369	2013
Beer 662	1975	TDA 371	2013
S&L 5696	1984	TDA 840	2016
KR 1078	1987	TDA 852	2016

Discovered by Sir Joseph Dalton Hooker in 1848 while on his fabled exploration of the mountains of Sikkim, the future director of Kew Gardens described *R. camelliiflorum* in the third part of his equally mythical botanic treatise on the expedition *The Rhododendrons of Sikkim-Himalaya,* the trilogy published between 1849 and 1851. The seed he collected at the same time was also successfully germinated and those plants established the species in UK cultivation.

R. lucidum was a Thomas Booth discovery that was allegedly found on the mountains of Bhutan - although his expedition is now believed to have (knowingly or unknowingly), focused its attention on the adjoining hills of Arunachal Pradesh - which his uncle, Thomas Nuttall, described in an 1853 contribution to Volume 5 of William Jackson Hooker's *Journal of Botany and Kew Miscellany*. Morphologically, only a somewhat more acuminate leaf tip, plus scales on the lower leaf surface that are consistently their own diameter apart, separate *R. lucidum* from *R. camelliiflorum,* such differences nowhere near significant enough to deter the Edinburgh Revision Synonymy Aurors. Which meant the fate of *R. cooperi* and *R. sparisflorum* followed a similar trajectory into obscurity.

R. camelliiflorum is clearly related to the species in Subsection *Boothia,* sharing the distinctive characteristics of a short, sharply declinate style, and flattened small corolla, but the growth habit, leaf size and shape, the large scales on the densely lepidote leaf under-surface, the 11-16 stamens, and an ovary with twice as many cells, indicates a similar affinity with the members of Subsection *Maddenia*. In combination however, such attributes will identify *R. camelliiflorum* from all the other lepidote rhododendrons.

Over sixty documented gatherings of *R. camelliiflorum* have been introduced into British gardens since Hooker's premier collection of seed, yet despite this, the species remains rare in cultivation. Plants are best suited to gardens along the west coast and in the south, but will thrive outdoors along the east coast if a well-sheltered site can be found, this evidenced by specimens thriving at Glendoick, near Perth, in Scotland, which are protected not only by the surrounding woodland, but also by the walls of an old water mill. Epiphytic in nature, fast drainage is essential, a waterlogged soil the quickest way to kill off a mature specimen or prevent a juvenile one from establishing. Most forms are free-flowering and relatively fast-growing, but plants will frequently be overlooked, even when in bloom, as the small corollas are often hidden away in-amongst the foliage.



R. camelliiflorum (Bowes-Lyon 6)



R. camelliiflorum (TSS 33)



R. camelliiflorum

Section *Lepipherum* Subsection *Campylogyna:*



R. campylogynum (F 27357)



Taxa:

R. campylogynum

Taxonomic Revision:

The placement of the monotypic Subsection *Campylogyna* remains as designated in the 1996 Edinburgh Revision classification.

Subsection Morphology:

Shrub, prostrate or mounding to rounded and erect, 0.6 to 1.8m high;
branchlets usually sparsely lepidote,
glabrous or sometimes sparsely pubescent.

Leaf bud scales usually persistent, rarely deciduous.

Leaves evergreen, coriaceous, obovate through oblanceolate,
0.6 to 3.7cm long by 0.3 to 1.8cm wide,
apex obtuse through subacute, mucronate, base tapering;
upper surface dark through mid-green, usually shiny, rarely lepidote,
pubescent along the midrib, the margins crenulate, recurved and usually lepidote;
lower surface whitish- or silvery-papillose, rarely pale green,
glabrous but with small, scattered vesicular scales,
these one to six times their own diameter apart,
but often becoming deciduous except around the margins.

Leaf anatomy comprises a 1- or 2-layered upper epidermis,
with the cells in the top layer when present smaller than those in the layer below;
the cuticle is around half as thick as the top cells are deep; water tissue is present;
the lower epidermis cells are not prolonged into papillae.
Sclereid cells are absent.

Petiole 1-4mm long, usually lepidote.

Inflorescence terminal, umbellate, 1-3-5-flowered;
the bud scales persistent or not.

Pedicel 18-50mm long, elongating and hardening to 75mm in fruit,
sparsely lepidote and pubescent.

Calyx 1-7mm long, pink- or plum-purple through yellowish-green,
undulate or 5-lobed, these oblong or obovate in shape,
their outer surface and margins glabrous, usually without scales, sometimes glaucous.

Corolla 5-lobed, fleshy, often pruinose, campanulate,
0.8 to 2.4cm long,
pink through claret to red or purple, rarely black-purple or creamy-white,
the outer surface without scales and glabrous,
the tube sparsely pubescent within.

Stamens 8-10, radially arranged, unequal,
alternately short and long, but all usually shorter than the corolla;
anthers yellow-brown;
filaments pubescent towards the base, along the lower half, or more rarely base to tip.

Ovary conoid, 2-4mm long, variably lepidote.

Style glabrous and without scales,
sharply deflexed at the base, tapering into the ovary but thickening towards the top;
sometimes slightly longer than the corolla;
crimson, plum-rose or purple.

Capsule 5-10mm long, ovoid, sparsely through moderately lepidote.

Seeds elongate, unwinged, each end with a minute appendage.



R. campylogynum



R. campylogynum

R. campylogynum

R. campylogynum

Hardiness:

H3-4.

Flowering Period:

May-June.

Distribution in the wild:

S & SE Tibet; N & SW Yunnan, China; Arunachal Pradesh, N India; NE Upper Myanmar.
Growing in open alpine moorland, on cliffs, boulders and rocks,
at the margins of rhododendron thickets, amongst scrub,
and carpeting the summits of granite mountains above the bamboo and timber line,
at elevations of 2,400-4,900m.

Identification:

Shrub, prostrate, mound-forming or upright, 0.6 to 1.8m high.
Leaves obovate through oblanceolate,
0.6 to 3.7cm long by 0.3 to 1.8cm wide;
upper surface dark through mid-green, usually shiny, rarely lepidote,
the margins crenulate, recurved and lepidote;
lower surface whitish- or silvery-papillose, rarely pale green,
glabrous but with small, scattered vesicular scales,
one to six times their own diameter apart,
these often soon deciduous except around the margins.
Inflorescence 1-3-5-flowered.
Pedicel 18-50mm long,
elongating and hardening to 75mm in fruit.
Calyx 1-7mm long,
the lobes oblong or obovate, glabrous and usually without scales,
pink- or plum-purple through yellowish-green.
Corolla fleshy, often with a waxy bloom, campanulate, 0.8 to 2.4cm long,
pink through claret to red or purple, rarely black-purple or creamy-white,
the tube sparsely pubescent within.
Stamens 8-10, unequal, shorter than the corolla;
anthers yellow-brown;
filaments pubescent towards the base, along the lower half, or more rarely base to tip.
Style glabrous and without scales, sharply deflexed at the base,
tapering into the ovary but thickening towards the top,
crimson, plum-rose or purple.

Seed Collections:

F 4152	1910	F 29937	1930/1931	LS&E 13181	1946/1947
F 13303	1912/1914	F 30883	1930/1931	LS&E 13276	1946/1947
F 13518	1912/1914	F 30967	1930/1931	LS&E 14029	1946/1947
KW 793	1913	KW 9414	1931	LS&E 14295	1946/1947
F 14004	1917/1919	KW 9790	1931	LS&E 14297	1946/1947
F 15908	1917/1919	KW 9810	1931	LS&E 15171	1946/1947
F 18030	1917/1919	KW 9815	1931	R 105	1948/1949
Farrer 1046	1919	KW 10140	1931	R 132	1948/1949
Farrer 1196a	1919	KW 10121	1931	KW 20928	1953
KW 3172	1919	R 22289	1932	KW 21130	1953
KW 3303	1919	R 23560	1932	KW 21481	1953
KW 3391	1919	R 23648	1932	SBEC 519	1981
F 22300	1921/1922	R 25459	1932	SBEC 587	1981
R 6354	1923/1924	KW 10870	1933	EN 2452	± 1985
R 11160	1923/1924	L&S 2654	1936	C 6095	1992
R 11305	1923/1924	L&S 1882	1936	SSNY 369	1992
F 24321	1924/1925	KW 13399	1937	KGB 809	1993
F 24570	1924/1925	Yu 8630	1937	AGS 2499	1994
F 24587	1924/1925	Yu 19340	1937	CNW 849	1994
F 26988	1924/1925	Yu 19779	1937	CNW 859	1994
F 26991	1924/1925	Yu 20707	1937	AC 942	1995
F 27118	1924/1925	Yu 20929	1937	KR 3749	1995
F 27357	1924/1925	Yu 22354	1937	AC 3633	1997
F 27503	1924/1925	LS&T 5198	1938	AC 3636	1997
F 27569	1924/1925	LS&T 5560	1938	CCHH 8258	1997
F 27656	1924/1925	LS&T 5847	1938	TARRVS 172	2002
KW 5842	1924/1925	KW 245	1938/1939	KR 10461	2012
F 28254	1930/1931			BE 15-33	2015

R. campylogynum was discovered during June 1883 by Abbé Jean-Marie Delavay whilst the priest was botanising on Mount Tsang Chan, in the Tali Range of western Yunnan, and was described two years later by Adrien Franchet writing in Volume 32 of the *Bulletin de la Société Botanique de France*. George Forrest officially introduced the species into UK cultivation during 1912, but may have sent seed earlier under four field numbers from his 1904-1906 trip to Yunnan and eastern Tibet - F 475, F 504, F 4151 and F 4152 - but if so, their emergence from the premises of A. K. Bulley's Bees Ltd nursery went without a rousing fanfare or more importantly, any attached labels.

Growing across an altitudinal range of some 2,500m, with a correspondingly wide endemic distribution - stretching from southern Tibet to northeastern Upper Myanmar - as would be expected, the morphology varies widely. The species can be a prostrate, matted shrub, no more than a few centimetres high when carpeting mountain summits at the upper limit of its altitudinal spread - just below 4,900m or 16,000ft - or a near 2m-high erect to rounded bush when growing amongst other rhododendrons at lower elevations - above the 2,400m or 7,900ft contour - which meant prior to the Edinburgh Revision classification changes, and before the hillsides of China re-opened to Western botanists, many of these forms had been given specific or varietal status:

R. campylogynum var. *celsum,* now synonymous of course, but retained by both rhodophiles and horticulturalists as Celsum Group, was discovered on the eastern flank of the Tali Range by George Forrest sometime during June or July 1906. Plants can be found at elevations between 2,700 and 3,600m, so tend to be taller growing, to 1.8m, with leaves and flowers around the median for the species. Corolla colour is deep plum-purple. H. H. Davidian wrote the botanic description, his text appearing in the 1954 *Rhododendron and Camellia Year Book,* and the plants are hardy, free-flowering and easy to grow, but rare in cultivation.

R. campylogynum var. *charopoeum* was first collected in July 1903 at Tsekou, in the east of Tibet by Abbé Jean-Andre Soulié. Given specific status as *R. charopoeum* in a 1922 botanic description written by Sir Isaac Bayley Balfour that was composed posthumously from Reginald Farrer's field notes, this ranking was then reduced to varietal status by Davidian (the respective tomes being, Volume 13 of *Notes from the Royal Botanic Garden, Edinburgh,* and the 1954 *Rhododendron and Camellia Year Book*). Residing at elevations between 3,300 and 4,200m, the shrub forms compact, spreading mounds around 0.5m high, but differs from its siblings in having larger flowers, the corollas being 19 to 24mm long. George Forrest was again the first plant hunter to introduce the variety into cultivation, doing so in 1930, with specimens maintained today as Charopoeum Group. They have proven easy to grow, are hardy, and gifted with plum-purple or pale-rose flowers that provide a fine display.

R. campylogynum var. *myrtilloides* was a Frank Kingdon-Ward discovery.

Found in July 1914 on the Naung Chaung ridge of north-east Upper Myanmar's N'mai Divide, a Ward-Balfour botanic description gave it specific status in 1922 (again in Volume 13 of *Notes*) with Davidian's varietal downgrade following in 1954. Now contained within Myrtilloides Group, in the wild, these plants are distributed across the whole of the *R. campylogynum* altitudinal range and may be prostrate carpeters a few centimetres high or form spreading clumps to around 0.3m high, though all forms will bear the smallest leaves and flowers found within the subsection. In cultivation, a well-grown plant covered with tiny, deep purple bells, held aloft above the foliage on long flower stalks, will prove the perfect subject for a rock garden placement.

R. cremastum, found in the Mekong-Salwin Divide of western Yunnan by George Forrest during July 1917 and the beneficiary, in 1920, of a joint Forrest-Balfour botanic description - that also appears in Volume 13 of *Notes* - is one of only a few lepidote rhododendrons to open near red flowers. Its specific status remained sacrosanct until the first paper of *A Preliminary Synopsis of the Genus Rhododendron* was published in 1978, this authored by James Cullen and David Chamberlain and contained within Volume 36 of *Notes.* It offered a foretaste of what Doctor Cullen's full revision of the subgenus would bring and to say the synonymy was not universally welcomed would be an understatement. Eventually group status would be established, though for a number of years the plant bore the moniker *R. campylogynum* var. *rubrum,* and was even subsumed under the clonal name 'Bodnant Red'. The membership of Cremastum Group have matt, light green foliage and come from elevations of around 3,300m, so can grow to 1.8m in height. They are slightly less hardy than other members of the subsection so gardens along the east coast and inland will need to provide a sheltered position for plants to perform at their best. The grey-red flowers are the prime distinguishing feature, but the non-glaucous leaf underside is also easily spotted.

In flower *R. campylogynum* is easily identified from its lepidote relatives by the small, nodding and fleshy, campanulate corollas, held above the foliage on long pedicels. Those leaves are also small, never more than 3.7cm long, though usually less than 2.5cm long, with recurved and crenulate margins, and scales on the leaf underside that are of one kind, vesicular, and up to six times their own diameter apart. But note: that abaxial surface may also, sometimes, be completely devoid of scales (deciduous). The species is most closely allied to the rhododendrons assigned to Subsection *Glauca,* all of which are substantially bigger plants, their leaves and flowers especially so. There are also bonds with the taxa of Subsection *Lepidota* and Subsection *Uniflora,* but the rotate corollas of the former, and the straight slender style of the latter, clearly key individual plants into their respective botanic groupings.

Field observations have shown that across its range, *R. campylogynum* hybridises freely with members of Subsection *Glauca,* and some of these white, pink or purple flowering natural hybrids have been introduced into cultivation and were previously treated as members of the true species. Amongst this group are two RHS award-winning clones, namely 'Leucanthum', with creamy-white flowers, and the purplish-red 'Beryl Taylor'.

R. campylogynum is one of the most popular dwarf rhododendrons in cultivation, the small thimble-like flowers in shades of purple, pink and plum a highlight of any rock garden. However, it is a slow growing plant, the shrubs preferring soils that do not completely dry out and disliking periods of excessively high summer temperatures. This makes them more suitable for northern, rather than southern, UK gardens. Hardiness varies, with some forms gathered from lower elevations susceptible to injury in a hard winter, especially if bereft of the covering of snow that would have protected them out in the wild.

R. campylogynum Cremastum Group



R. campylogynum Charopoeum Group



R. campylogynum Cremastum Group



R. campylogynum Myrtilloides Group

R. campylogynum

Section *Lepipherum* Subsection *Caroliniana:*


R. minus



Taxa:

R. minus
R. minus var. *chapmanii*
R. minus var. *minus*

Taxonomic Revision:

The placement of the monotypic Subsection *Caroliniana* remains as designated in the 1996 Edinburgh Revision classification.

Subsection Morphology:

Shrubs, compact through straggly to upright, 1 to 6m high, rarely to 9m, occasionally stoloniferous;
branchlets green or purplish, variably lepidote, erect and rigid or not;
bark ginger-brown, shredding.

Leaf bud scales deciduous.

Leaves evergreen, lanceolate through broadly elliptic to oblong oval,
2 to 11.8cm long by 1.1 to 6.5cm wide,
apex acute, acuminate, obtuse or retuse;
upper surface dark through light green, sometimes rugose,
often with the vestiges of dried-out scales,
the midrib finely hairy or glabrous;
lower surface densely lepidote, the medium-sized scales brownish,
unequal and narrowly-rimmed,
contiguous through to their own diameter apart.

Leaf anatomy comprises a single-layered upper epidermis;
the cuticle is as thick as the cells are deep; water tissue is absent;
the lower epidermis cells are not prolonged into papillae.
Sclereid cells are absent.

Petiole 3-14mm long, densely lepidote.

Inflorescence terminal, more rarely terminal and axillary in the upper few leaves,
4-12-flowered, the truss dense.

Rhachis 3-10mm long, lepidote.

Pedicel 5-16mm long, moderately through densely lepidote.

Calyx minute, 0.5-2mm long, 5-lobed,
their outer surface and margins variably lepidote, the margins sparsely ciliate.

Corolla 2 to 3.8cm long, narrowly through openly funnel-shaped,
white through pink to purplish-pink, usually with greenish or brownish-red spotting,
the outer surface densely lepidote and sometimes sparsely hairy,
the inner surface pubescent, the tube longer than the lobes.

Stamens 10, unequal, declinate, as long or shorter than the corolla;
filaments moderately through densely pubescent towards the base.

Ovary 5-celled, conoid or oblong, 2-4mm long, densely lepidote.

Style straight at first, becoming declinate, impressed into a depression at the ovary apex, glabrous, or sparsely hairy at the base, and sometimes lepidote at the base.

Capsule oblong through cylindric, 6-15mm long, densely lepidote.

Seeds elongate, unwinged and without appendages.



R. minus

R. minus* var. *minus
Hardiness:
H5-7.
Flowering Period:
May-June.
Distribution in the wild:
Alabama, Georgia, Kentucky, North & South Carolina, & Tennessee, USA.
Growing in woodland and alongside streams, on moist mountain slopes, rocky cliffs, ridges and balds, at elevations of 50-1,900m.

Identification:
Branchlets rarely rigid or erect.
Leaves lanceolate through elliptic,
5.8 to 11.8cm long by 2.3 to 6.5cm wide,
the apex acute or acuminate;
upper surface midrib hairy.
Petiole 8-14mm long.
Inflorescence terminal, or terminal and axillary, 6-12-flowered.
Rhachis 3-10mm long.
Stamens as long or shorter than the corolla.

R. minus* var. *chapmanii
Hardiness:
H3-4.
Flowering Period:
April-May.
Distribution in the wild:
NW Florida, USA.
Growing on seasonally wet sandy dunes, in open pine woodlands, along dry creek banks and at the margins of evergreen scrub near bogs, at elevations from sea level to 50m.

Identification:
Branchlets mostly erect and rigid; somewhat stoloniferous.
Leaves oval through oblong-oval,
2 to 5cm long by 1.1 to 2.5cm wide,
apex obtuse or retuse;
upper surface rugose, the midrib glabrous.
Petiole 3-6mm long.
Inflorescence terminal, 4-8-flowered.
Rhachis 3-4mm long.
Stamens shorter than the corolla.

Seed Collections:
No authenticated collections of either variety have been documented, but between 1976 and 2020, members of the American Rhododendron Society contributed over 50 lots of var. *minus* to their annual seed exchange programme, and between 1979 and 2006, made 5 gatherings of var. *chapmanii.*

R. minus

When the Subgenus *Rhododendron* proposals of the Edinburgh Revision were first published in 1980 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Number 1), James Cullen's changes to the old Carolinianum Series were severe. Membership of the new Subsection *Caroliniana* was reduced from the three specific species set out in Part 1 of the *Preliminary Synopsis* paper (*Notes,* Volume 36, 1978), to just one taxon - albeit with two varieties - and its most popular epithet lost to synonymy. Understandably feathers were ruffled, none more so than those belonging to many American rhododendron buffs with an in-depth knowledge of the species who also lived close-to or amongst the native populations and knew just how different each could be from the other.

Prior to the revision, three taxa were recognised by the botanists: *R. carolinianum, R. chapmanii* and *R. minus*.

Endemic to the higher mountain slopes of both North and South Carolina, the *R. carolinianum* distribution also extends into the adjoining State of Tennessee. Lower down those same slopes, and on the coastal plains, with a range extending into Georgia and Alabama, *R. minus* will be found. The *R. chapmanii* populations are far more restricted, confined to low-lying sand dunes in five Counties of north-western Florida, plus Clay County on the eastern side of the State, these plants are now quite rare on the ground.

André Michaux had penned the formal description of *R. minus* in 1792, writing in the *Journal d'Histoire Naturelle*. The French botanist and collector had discovered the species on the banks of the Savannah River while exploring near Augusta, Georgia, in 1788. In 1870, Alphonso Wood wrote the botanic treatise for *R. chapmanii,* describing it as a variety of *R. punctatum* in *The American Botanist and Florist*. Asa Gray would later confer specific status on the species in the 1876-published Volume 12 of *Proceedings of the American Academy of Arts and Sciences,* while *R. punctatum* itself would soon be made synonymous with *R. minus*.

The epithetical history of *R. carolinianum* is somewhat more chequered:

Around 1815, it too was first described as a variety of *R. punctatum* by John Bellenden Ker, who had studied cultivated material collected by John Fraser. The nascent species description was lodged with the *Botanical Register,* yet despite the fact that Ker provided the text to accompany all the botanic illustrations drawn by the magazine's proprietor Sydenham Edwards, the new taxon was never published. In 1902, John Kunkel Small stumbled on the species, but he too 'erred' - perhaps presciently - failing to differentiate the plants from specimens of *R. minus* née *punctatum* that grew lower down the same slopes. So it was left to Alfred Rehder, observing plants growing at the Arnold Arboretum in 1912, to conclude that specimens collected from higher up the hillsides were not *R. minus,* but *R. carolinianum,* a name and description he published in Volume 14 of *Rhodora,* later that same year.

The morphological characteristics at variance between *R. carolinianum* and *R. minus* are: habit - compact as opposed to straggly; foliage shape - ovate rather than lanceolate; the corolla - open- instead of narrowly-funnel-shaped; and the tube - shorter or equal in length to the lobes, rather than always longer. *R. chapmanii* too is compact growing, but with rigid and ascending branches. Its leaves are also smaller, being oval in shape rather than lanceolate, with a wrinkled upper surface, and they have rounded instead of pointed tips.

Regrettably, the differences distinguishing *R. carolinianum* from *R. minus* are only apparent when specimens from the extremes of the distribution range are compared, a fact highlighted in a 1962 paper titled *Lepidote Rhododendrons of the Southeastern United States,* this published by the New York Botanical Garden and written by two eminent botanists, Wilbur Duncan and Thomas Pullen (*Brittonia*, Volume 14, Number 3). Field studies also led Duncan and Pullen to the conclusion that *R. chapmanii* was no more than a form of *R. minus,* though its geographical isolation required varietal status. So in 1980, when Doctor Cullen applied the classification rules of the International Code of Botanical Nomenclature to the 1962 Duncan-Pullen review, the strictures allowed him absolutely no wriggle room, and as a consequence, *R. carolinianum* was consigned to synonymic history. For even though those plants came from the northern sweep of the *R. minus* range, intergradation between the two occurred on the hillsides to such an extent that specimens were indistinguishable from one another, as John Kunkel Small had rather embarrassingly demonstrated back in 1902.

American aficionados should note that even arch splitter H. H. Davidian would confirm the position taken by Duncan and Pullen, and then Cullen, as being correct, conceding that any botanical differences between the two were only apparent 'when the extremes of these plants are compared' - effectively, a shrub growing at 1,900m, directly juxtaposed with one thriving at 50m. Of course, he then proceeded to not only maintain the specific status of all three individuals in his Lepidote tome (*The Rhododendron Species,* Volume 1, 1982, from which the quote above is taken), but also countenanced Alfred Rehder's 1940 designation *R. carolinianum* var. *album* - this made on flower colour alone - which had been published in that year's edition of the Arnold Arboretum's *Manual of Cultivated Trees and Shrubs*.

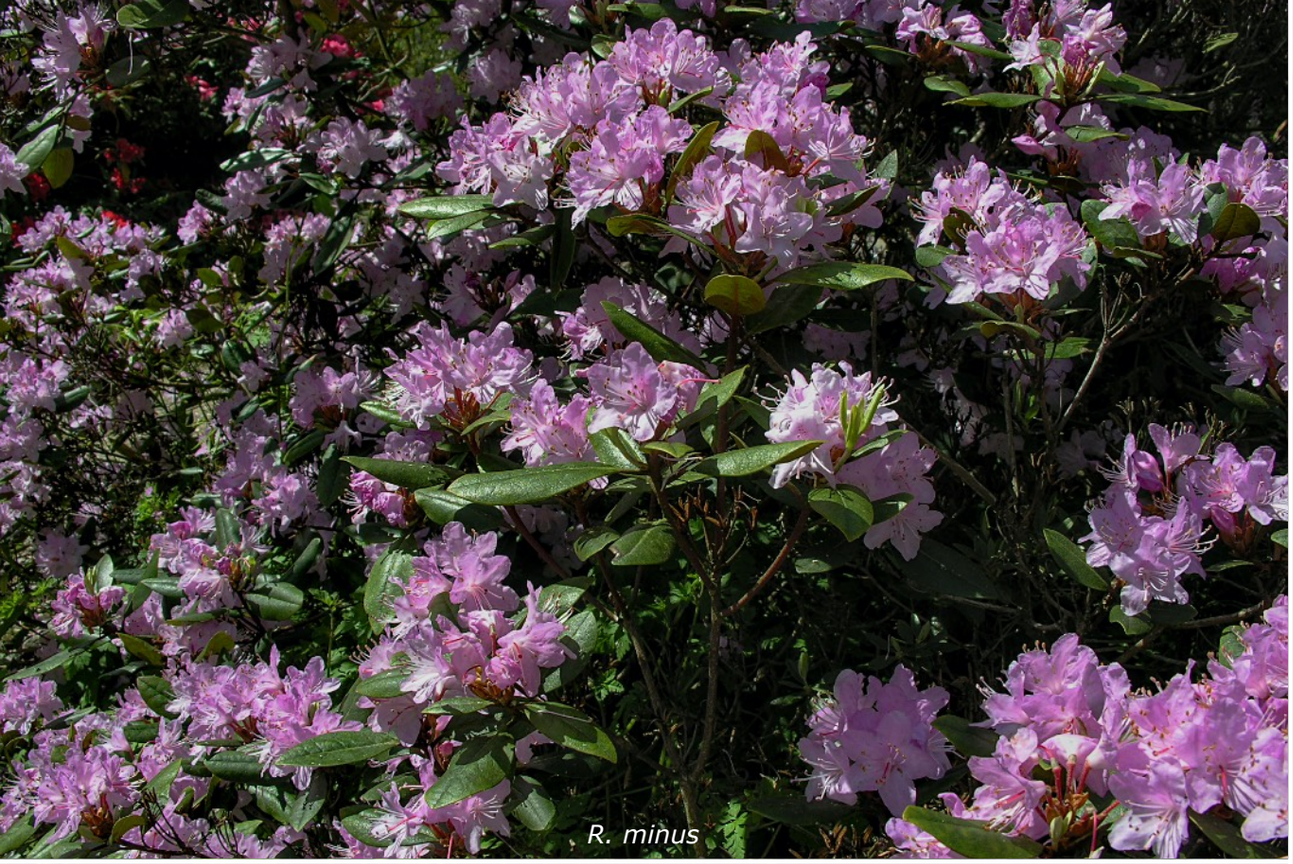
Corolla colour apart, horticulturally, there are significant differences between all three plants, as the geographic distribution foretells:

Carolinianum Group plants are the hardiest - the Rehder designation preserved under the RHS's botanically-unrecognised filing system - and the best form of the species for the UK's northern gardens, especially those in Scotland. Introduced as early as 1810, though not correctly identified at the time, plants thrive in the cooler, damper summers, are free-flowering from an early age and the lack of high temperatures through July and August has no detrimental effect on hardiness.

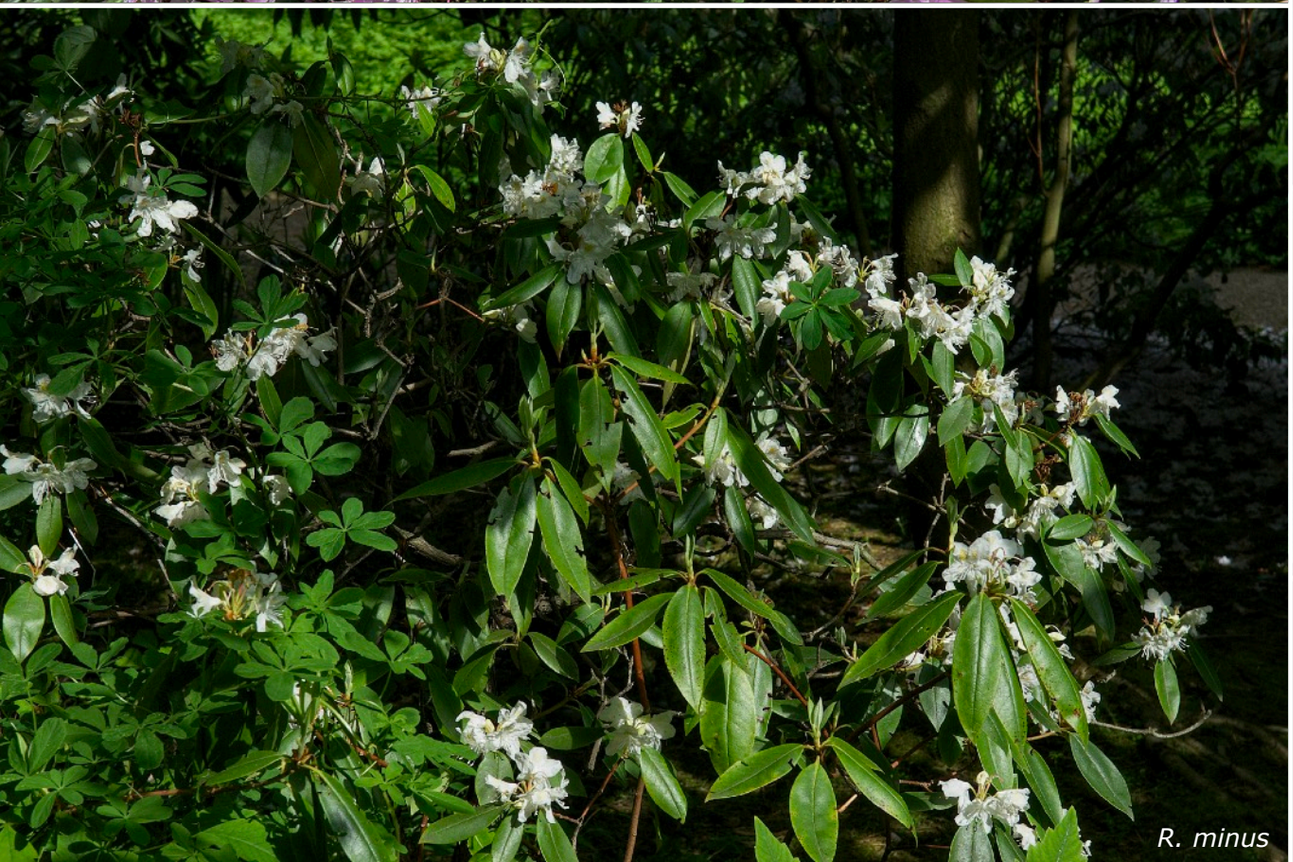
The same is most definitely not true for clones of *R. minus* var. *minus,* despite the species being in cultivation in since 1786. Where provenance can be traced back to higher latitudes and contours, the lack of a prolonged summer hot spell will have only a marginal effect on the ripening wood, though these plants generally are not as hardy as those of Carolinianum Group and succeed less well north of the border. For seed collected along the coastal plains or from the southern reaches of the distribution to flourish, planting sites should be restricted to gardens located in the lower half of the UK, and while free-flowering and relatively fast growing, such clones may often display chlorotic foliage, and if the soil is in any way 'heavy', have quite poor and restricted root systems.

To triumph with *R. minus* var. *chapmanii,* growing conditions will need to approximate the Gulf Coast of Florida, where prodigious quantities of summer heat are a fact of life. If tried along the west coast, plants will survive in sheltered sites, but not prosper, and only in southern and southwestern gardens will the species truly thrive, most especially at sites where deciduous azalea species such as *R. alabamense* and *R. austrinum* have already been shown to do well. Given the taxon's proclivity for sandy soils, plan accordingly, but keep the root-run damp during the growing season. The species has been in UK cultivation since 1936 despite these difficulties, and while rare, a free-flowering gem is the result of garnering and applying the correct level of TLC.

Two final points: the leaf upper surface hue often varies in sympathy with the flower colour, a lighter shade of green prevalent in plants with white corollas; and any clones with a var. *chapmanii* label that are without the wrinkled leaves are actually var. *minus*.



R. minus



R. minus



R. minus Carolinianum Group

R. minus Carolinianum Group



R. minus Carolinianum Group



R. chapmanii



R. minus Carolinianum Group

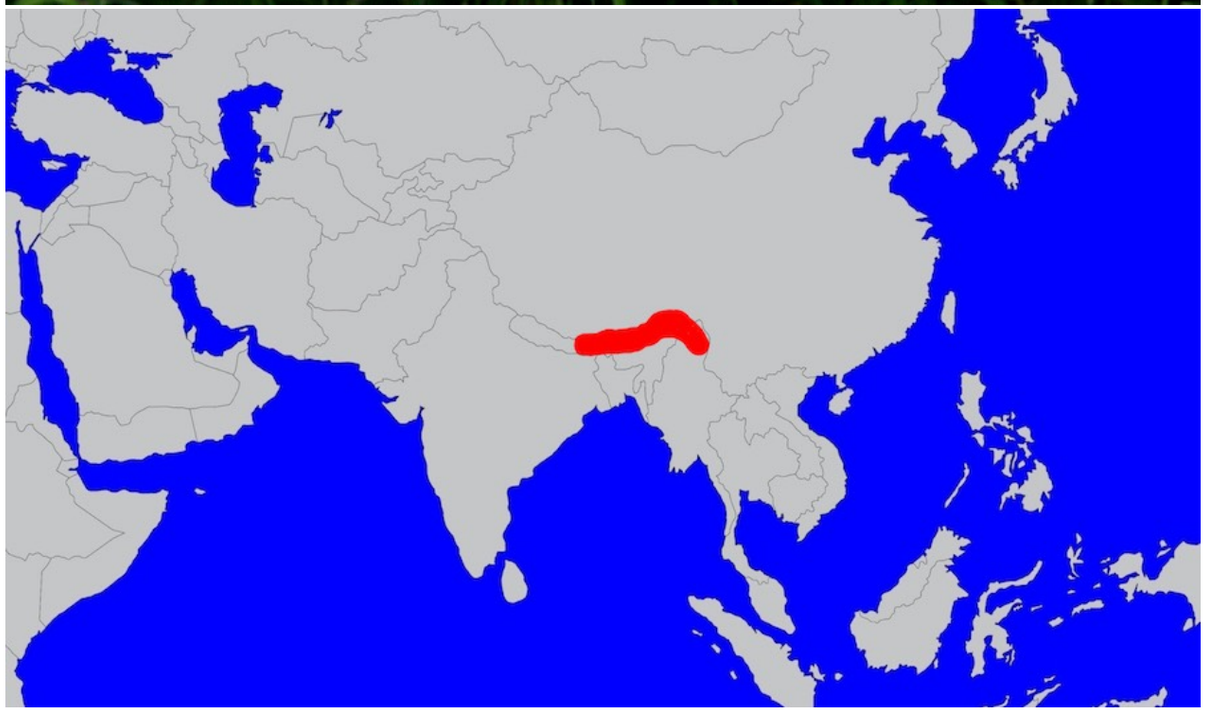


R. chapmanii

R. chapmanii

Section *Lepipherum* Subsection *Cinnabarina:*


R. cinnabarinum



Taxa:

R. cinnabarinum
- *R. cinnabarinum* ssp. *cinnabarinum*
- *R. cinnabarinum* ssp. *concatenans*
- *R. cinnabarinum* ssp. *tamaense*
- *R. cinnabarinum* ssp. *xanthocodon*

R. keysii

Taxonomic Revision:

The placement of Subsection *Cinnabarina* remains as designated in the 1996 Edinburgh Revision classification, however, field study reporting has required the reinstatement of *R. concatenans* at subspecies ranking under *R. cinnabarinum*.

Subsection Morphology:

Shrubs, rarely small trees, 1 to 7m high;
compact and rounded, to upright or umbrella-shaped,
often straggly and spreading with age, terrestrial, rarely epiphytic;
young shoots lepidote, sometimes pruinose;
bark shaggy and peeling, sometimes smooth to roughish,
becoming fawn, grey-brown or brown at maturity.

Leaves evergreen or partly deciduous,
lanceolate through oblong to oval,
2.5 to 15.5cm long by 1.5 to 5.5cm wide,
apex acute or rounded;
upper surface often glaucous and variably lepidote;
lower surface also frequently glaucous but always densely lepidote,
the scales small, usually unequal, close but not touching,
generally half their own diameter apart,
but sometimes separated by up to five times their own width,
broadly or narrowly rimmed.

Leaf anatomy comprises a 2-layered upper epidermis,
with the cells in both layers approximately the same size;
the thin cuticle is around half as thick as the cells are deep; water tissue is absent;
the lower epidermis cells are prolonged into papillae.
Sclereid cells are absent.

Petiole 5-20mm long, variably lepidote.

Inflorescence terminal, or sometimes terminal and axillary in the top 1 to 3 leaves,
2-5-9-flowered, usually pendulous.

Rhachis 1-12mm long, usually lepidote, rarely pubescent or without scales.

Pedicel 4-25mm long, variably lepidote, rarely without scales.

Calyx often inconspicuous, 1-4mm long, usually 5-lobed, but sometimes just a rim,
discoid or undulate, lepidote,
occasionally ciliate on the lobe margins.

Corolla 1.5 to 6.3cm long, fleshy, often waxy or pruinose,
usually narrowly tubular through tubular-campanulate,
but also funnel-campanulate or even campanulate, with five short lobes,
yellow through orange, apricot or salmon-pink to red, plum-crimson or purple,
and often bicoloured,
the outer surface rarely lepidote,
nectar production copious, watery,
held in 5 drops at the base of the corolla, or in one large drop.

Stamens 10-12, unequal, declinate, shorter or only slightly longer than the corolla.

Ovary 5-locular, 2-5mm long, lepidote.

Style straight, rarely declinate, longer than the stamens,
usually impressed into a depression at the ovary apex,
glabrous or pubescent at the base.

Capsule cylindric, 5-15mm long, lepidote.

Seeds elongate, unwinged, without appendages, or with minute appendages at both ends.



R. keysii



R. keysii

R. cinnabarinum

R. cinnabarinum* ssp. *cinnabarinum

Hardiness:
H4-5.
Flowering Period:
April-July.
Distribution in the wild:
Nepal; S & SE Tibet; Bhutan; Sikkim, Arunachal Pradesh & West Bengal, India;
NW Yunnan, China; NE Myanmar.
Growing on open hillsides, in thickets amongst other shrubs,
and within rhododendron, deciduous, mixed or evergreen forests or open woodland,
at elevations of 1,900-4,000m.

Identification:
Shrub, compact and rounded, to upright, straggly and spreading, 2 to 7m high;
branchlets purplish or green, sparsely through moderately lepidote, often pruinose;
bark shaggy and peeling, becoming grey-brown at maturity.
Leaves evergreen, coriaceous, lanceolate through oblong,
3 to 11.5cm long by 1.5 to 5.5cm wide,
apex rounded;
upper surface bluish-green through greyish-green, usually lepidote,
often glaucous (when juvenile) and shiny (when mature);
lower surface pale green, often glaucous, densely lepidote,
the scales fleshy, brown, reddish-brown or purple coloured, narrowly rimmed,
equal or unequal, small through medium-sized,
near-contiguous to half their own diameter apart, rarely more distant.
Petiole 5-20mm long, variably lepidote.
Inflorescence terminal, 2-9-flowered, usually pendulous;
the buds ovoid through obovoid, yellow-brown,
lepidote, the scales bloomed and with white hairs along the margins.
Rhachis 3-10mm long, often lepidote, rarely pubescent.
Pedicel 5-16mm long, moderately through densely lepidote.
Calyx minute, 1-2mm, lobed or just a rim,
their outer surface and margins often densely lepidote.
Corolla 2.5 to 6.3cm long, tubular through tubular-campanulate,
yellow through orange to red or plum-crimson, often bicoloured,
the outer surface usually with a waxy pruinose bloom,
very rarely lepidote.
Stamens 10, declinate, slightly shorter than the corolla;
filaments pubescent towards the base, rarely glabrous.
Ovary densely lepidote, sometimes puberulous at the apex.
Style slender and straight, glabrous, sometimes sparsely pubescent towards the base,
impressed into a depression at the ovary apex,
rarely lepidote at the base.
Capsule cylindric through cylindric-ovoid, 8-13mm long, straight,
densely lepidote.

Seed Collections:

Cooper 1	1914	LS&H 16027	1949	CHM 3108	1988
Cooper 745	1914	LS&H 18889	1949	EGM 91	1988
Cooper 747	1914	LS&H 20622	1949	EGM 100	1988
Cooper 1937	1914	LS&H 21283	1949	C&S 1597	1990
Cooper 2581	1914	LS&H 21293	1949	C&S 1658	1990
Cooper 2648	1914	SEN 1820	1954	C&S 1693	1990
Cooper 2922	1914	Stainton 230	1956	Fox 50	1990
Cooper 3256	1914	Bowes-Lyon 2031	1964	CCHH 8162	1997
Cooper 3819	1915	C&H 579	1965	KCSH 0375	2003
Cooper 3873	1915	BLM 220	1971	AC 5413	2004
Cooper 4804	1915	BLM 234	1971	AC 5416	2004
Cooper 4979	1915	BLM 280	1971	AC 5435	2004
Cooper 4982	1915	Beer 652	1975	KR 8586	2006
KW 10971	1933	SCH 2407	1980	KR 8603	2006
L&S 7	1933	McBeath 1256	1981	KR 8606	2006
L&S 8	1933	McBeath 1262	1981	KR 9919	2010
L&S 647	1934	McBeath 1282	1981	KR 10046	2010
L&S 1575	1936	EN 549	1984	TDA 049	2011
L&S 1894	1936	EN 572	1984	TDA 069	2011
L&S 2643	1936	DF 86059	1986	TDA 329	2013
L&S 2727	1936	DF 86075	1986	TDA 348	2013
KW 13758	1937	P&L 17	1986	TDA 349	2013
L&S 3050	1937	KR 1047	1987	TDA 350	2013
LS&T 3801	1938	KR 1309	1987	TDA 683	2014
LS&T 4361	1938	Bowes-Lyon 13	1987/1989	TDA 741	2014
L&S 10039	1944	Bowes-Lyon 19	1987/1989	TDA 984	2016
LS&E 12469	1946/1947			TDA 1057	2016



R. cinnabarinum



R. cinnabarinum

R. cinnabarinum

R. cinnabarinum was discovered in the northeast Indian state of Sikkim sometime during April or May, 1849, by Joseph Dalton Hooker. The species is described and illustrated in the first part of *The Rhododendrons of Sikkim-Himalaya,* the three-volume botanical tour de force he wrote concurrent with the expedition, detailing it's finds, which was published later that same year. Successfully germinated by Kew and at many commercial nurseries, plants from Hooker's seed were quickly introduced into a host of UK gardens.

A drooping flower truss emanating from a rhachis is the key characteristic used to identify the Subsection *Cinnabarina* rhododendrons from all the other lepidote species, both temperate and tropical. Within the subsection itself, the four *R. cinnabarinum* subspecies can be identified from *R. keysii* by a complete lack of any axillary flower buds, plus the corollas of the latter are slightly ventricose short tubes, never more than 2.5cm long. Separating-out the four subspecies, one from the other, is slightly more complicated, though the near wholly deciduous leaves of ssp. *tamaense* will prove a no-brainer during the winter months. Otherwise, corolla and leaf shape will need to be assessed, along with the presence of scales on the upper leaf surface and the distance the lower leaf surface scales are set apart from each another:

If the abaxial scales are generally between two and five times their own diameter apart and the plant has purplish flowers, it will again be ssp. *tamaense*.

If those same scales are almost touching to half their own diameter apart, the leaves narrow, lanceolate through oblong, and the corolla tubular through tubular-campanulate, the plant will be Hooker's ssp. *cinnabarinum*.

Abaxial scales almost touching to half their own diameter apart, but with wider leaves that are oblong through oval and corollas tubular-campanulate through campanulate, then either ssp. *concatenans* or ssp. *xanthocodon* will be to hand. Separating these two plants relies on the presence or not of scales on the upper leaf surface - ssp. *xanthocodon* has them; ssp. *concatenans* does not - and the size of the corolla - up to 3.2cm long for ssp. *xanthocodon;* between 3 and 4cm long for ssp. *concatenans.* There is way too much variability for corolla colour to be a decisive characteristic apart from the purple flowering clones, which will all be ssp. *xanthocodon* if the adaxial scale test has been met. Shades of apricot or apricot-yellow, could go either way.

In the wild, *R. cinnabarinum* ssp. *cinnabarinum* will be found to be distributed across a wide swathe of the Himalaya, from Nepal in the west, through southern Tibet, Bhutan and the northeastern Indian states of Sikkim, Arunachal Pradesh and West Bengal, to the northwest of China's Yunnan Province and Upper Myanmar in the east. Its altitudinal endemicity moreover, encompasses over 2,000m of mountainside, from the 1900m contour upwards to 4,000m. Both factors add considerable diversity to its morphological feature set and have led to a number of distinctive forms being given specific or varietal status post their initial discovery:

R. blandfordiiflorum, also an 1849 Hooker discovery, with seed gathered in Sikkim and introduced into cultivation that same year, will not be found recorded in *The Rhododendrons of Sikkim-Himalaya,* for it slipped undifferentiated past Sir Joesph's expert eye. But on first-flowering at Kew and in a few other British gardens during the mid-1850s, it was obvious that something different from either *R. cinnabarinum* or *R. roylei* (see opposite) had been collected. The omission was rectified by Sir Joseph's father, William Jackson Hooker, writing in Volume 82 of the *Botanical Magazine,* published in 1856, where the more slender corolla was reported, this longer than the regular species - between 5 and 6.3cm in length, as opposed to 2.5 to 3.8cm - plus the bicoloured pigmentation - red on the outside, but yellow or greenish-yellow inside - with some forms even described as tri-coloured. The endemic distribution is restricted to Sikkim, between the 3,050 and 3,660m contours, with plants fairly common on the ground, growing in valleys, along ridges and on mountain summits.

R. cinnabarinum var. *aestivale* was described within Volume 92 of *The Gardeners' Chronicle,* in an article written by John Hutchinson in 1932. His subject was a plant grown from wild collected seed established at Borde Hill Garden in West Sussex, which flowered much later than the type species, usually in July, and had leaves that were narrowly oblong-lanceolate.

R. cinnabarinum var. *breviforme* resides in northeastern Myanmar. It is a resident of mixed rhododendron and conifer forest, growing at altitudes on either side of the 3,100m contour. The corolla is short, 3-3.5cm long, red on the outside and deep yellow within, with the lobe margins also bearing a yellow pigmentation. Ludlow, Sherriff and Hicks were the first plant hunters to encounter the variety in 1949, introducing plants into UK cultivation on their return, but thirty years would pass before a botanic description of their find went to print, H. H. Davidian rising to the challenge in 1982, his outline appearing in Volume 36, Number 1, of the *Quarterly Bulletin, American Rhododendron Society*. Back in the late 1970s, plants of this type may have been purchased and labelled as *R. cinnabarinum* "var. Nepal" after Arthur George's 1977 Award of Merit win for a clone of var. *breviforme* named 'Nepal' (though technically it was exhibited by Hydon Nurseries, which he owned).

R. cinnabarinum var. *pallidum,* as well as *R. cinnabarinum* var. *purpurellum,* are now pigeonholed under ssp. *xanthocodon,* this reflecting their funnel-campanulate rather than tubular-campanulate corollas.

Another of Hooker's 1849 finds, *R. roylei,* did get an illustrated description in part one of *The Rhododendrons of Sikkim-Himalaya,* unlike *R. blandfordiiflorum*. The distribution of this form takes in Nepal, Bhutan and southeast Tibet, with plants found growing on hillsides amongst other shrubs, in open woodland, and in both conifer and rhododendron forest, from the 2,100m contour up to 4,000m. The corollas they bear are a deep plum-crimson in hue, and usually have a glaucous bloom. Again, an award clone was subsequently turned into a variety, 'Magnificum' the named clone shown by the Kent-based Reuthe Nursery, with the confusion further exacerbated by a near full blown botanic description in the 1918, Volume 64 edition of *The Gardeners' Chronicle*.

Fast-forward to the 1978 *Preliminary Synopsis* paper (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), plus the full, in-depth revision published in *Notes,* Volume 39, Number 1, and of course, James Cullen's wholesale reassessment of the subsection reduced all of the above forms to synonymy. The RHS Horticultural Group system came to the rescue however, preserving many of these revered monikers: Blandfordiiflorum and Roylei most avidly; Breviforme less so; and Aestivale by less diehards than you have fingers on one hand (apparently).

Genetically, the species is a hexaploid where 2*n* = 78, as are three of the other subsection members, the odd man out being ssp. *tamaense,* which has yet to have its chromosomes counted, so would require a status upgrade if 2*n* were to equal 52 or 26.

Following Hooker's initial introduction of seed, viable capsules of *R. cinnabarinum* were gathered-up by many other Western plant hunters and the shrub became a popular addition to woodland gardens up and down the whole of Great Britain. The species proved easy to grow, was fully hardy when mature - juveniles are susceptible to bark split from late spring frosts if not adequately sheltered - and those pendent flowers, in gleaming shades of red, yellow, pink and salmon, were especially stunning, even more so when bicoloured.

And as J. G. Millais writes in the first volume of his *Rhododendrons and the Various Hybrids,* published by Longmans, Green and Co., in 1917:

‘This is one of those Rhododendrons which looks best when viewed with the sun behind a bush in flower. The effect is then dazzling, for there is a certain quality and brilliance added to the shining flowers, which is not noticeable when seen only against a dark background.’

And then the pestilence that is powdery mildew struck.

It attacks the leaves.

The first signs are small, lighter patches or rings on the upper surface.

These then spread to the lower surface and become brown.

Alternatively, the upper surface may remain free of disfiguration, but the lower turn powdery white as the fungal mycelium spread.

Sometimes, if luck is with you, the disease stops there.

More often the whole leaf turns brown, yellow or red and is shed prematurely, and if the attack is severe, a specimen can loose all its leaves.

If that occurs, the good news is that new vegetative shoots will appear the following season. But the bad, is that repeated defoliations will lead to a plant’s demise, as will the most mordant attacks.

Prior to the late 1970s, rhododendrons were virtually exempt from the host range of this fungus, but then gardens in the south of England began reporting problems. By the early 1980s, the disease had spread to the west coast of Scotland and the islands of Arran, Colonsay and Gigha. East coast gardens were infected soon after and by the end of the decade even isolated Highland gardens were breached. Rapidity of spread was due to the nature of the fungal spores, these wind borne, or carried from one garden to another on a visitor’s clothes. Horticultural commerce also played a part.

Hybrids are affected worse than the species; some species more than others; and of these, the Subsection *Cinnabarina* plants have proved themselves to be highly susceptible. All is not lost however, as good garden husbandry and the regular, targeted, use of fungicides can now alleviate the worst symptoms.

Soil mineral imbalances lower a plant’s natural resistance to attack, especially a lack of magnesium and phosphorous, so application of a slow release fertiliser can dramatically improve the situation (as gardens such as Inverewe discovered after implementing such a treatment programme).

Burning the inflected leaves once they have fallen, plus measures to reduce water stress - such as mulching - also help, as will the removal of the most mildew prone hybrids and species, or susceptible companion plants if parting with the rhododendrons is beyond the pale. In areas where *R. ponticum* runs riot, the best approach is to leave things to Mother Nature, for the re-naturalising population previously removed by Ice Age glaciers some 16,000 years ago, provides the safest of havens from which the fungus can reinfect cultivated stock, though the recently discovered presence of *Phytophthora ramorum* and *Phytophthora kernoviae* on those same invading plants, may just tip the balance towards their removal.

Luckily, not all the forms of ssp. *cinnabarinum* are equally affected. Blandfordiiflorum Group plants, along with orange-flowered forms of the species, appear most receptive to the fungus, with Roylei Group specimens the least affected, and the pink, salmon and yellow blooming entities somewhere in-between.

One last note - to embryonic plant hunters everywhere (the Nagoya Protocol notwithstanding), backpacking hikers or any other Outward Bound adventurer - a pertinent testament that comes courtesy of the aforementioned W. J. Hooker: avoid burning the wood of *R. cinnabarinum* in your tent when camping out in the Himalaya, as its smoke inflames the eyes and causes facial swelling!



R. cinnabarinum Roylei Group



R. cinnabarinum



R. cinnabarinum Blandfordiiflorum Group



R. cinnabarinum Blandfordiiflorum Group ‘Hooker’s Form’

R. cinnabarinum Roylei Group

R. keysii

R. keysii

Hardiness:
H3-4.
Flowering Period:
May-July.
Distribution in the wild:
S & SE Tibet; Bhutan; Sikkim & W Arunachal Pradesh, India.
Growing in thickets, evergreen and mixed forests,
at elevations of 2,400-4,300m.

Identification:
Shrub or small tree, laxly upright, becoming leggy with age,
vigorous, 1 to 3.5m high, rarely to 6m;
branchlets slender, purplish or green, moderately through densely lepidote;
bark relatively smooth through roughish, fawn or brown.
Leaves evergreen, coriaceous, thin,
lanceolate-oblong through lanceolate-elliptic, rarely to near obovate,
3 to 15.5cm long by 1 to 4cm wide,
apex acute;
upper surface dark green, not glaucous, shiny,
sparsely through moderately lepidote,
the scales persistent, not touching, between 3 times and their own diameter apart;
lower surface pale green, not glaucous,
densely lepidote, the scales unequal,
brown through dark brown, medium to large-sized, flat and broadly-rimmed,
half to their own diameter apart, rarely more distant.
Petiole 5-16mm long, moderately through densely lepidote.
Inflorescence terminal and axillary in the upper 1 to 3 leaves,
2-6-flowered, pendulous;
the trusses often fusing together into dense clusters.
Rhachis 5-10mm long, sparsely through moderately lepidote, or without scales.
Pedicel 4-9mm long, moderately through densely lepidote, or without scales.
Calyx minute, *c.* 1mm, the lobes unequal, rim-like and wavy,
their outer surface often lepidote,
their margins often lepidote and sometimes ciliate.
Corolla 1.4 to 2.5cm long, narrowly tubular with slightly flaring lobes, usually bicoloured,
deep red through salmon-pink, tinged orange or green, rarely wholly red or yellow,
the lobes usually tipped yellow or red,
the outer surface without scales.
Stamens 10 or more rarely 12, unequal, declinate;
filaments densely pubescent towards the base or along the lower third, rarely glabrous.
Ovary densely lepidote, sparsely pubescent at the apex.
Style slender and straight, rarely declinate,
pubescent towards the base or along the lower third, rarely glabrous.
Capsule cylindric, 5-10mm long, straight, densely lepidote.

Seed Collections:

Cooper 1456	1914	KR 974	1985
Cooper 3383	1914	CHM 3009	1988
Cooper 3913	1915	EGM 62	1988
KW 6257	1924	EGM 64	1988
KW 6457a	1924/1925	AC 108	1990
L&S 184	1933	C&S 1655	1990
L&S 588	1934	C&S 1696	1990
L&S 1904	1936	Fox 62	1990
L&S 2334	1936	KR 1771	1990
KW 13625	1937	Sinclair 1743	1993
L&S 2992	1937	KC 0112	2001
L&S 3039	1937	KC 0115	2001
LS&T 6565	1938	KCSH 0315	2003
LS&E 12536	1946/1947	KCSH 0379	2003
LS&H 16372	1949	AC 5315	2004
LS&H 16392	1949	AC 5320	2004
LS&H 18732	1949	AC 5371	2004
LS&H 18927	1949	AC 5376	2004
LS&H 19481	1949	AC 5383	2004
LS&H 20581	1949	AC 5411	2004
LS&H 21284	1949	KR 8101	2005
LS&H 21299	1949	KR 8420	2006
Bartholomew 141	1974	KR 8612	2006
Bowes-Lyon 3189	1966	KR 9313	2008
KR 954	1985	KR 10649	2012

When in flower, it would be hard to mistake *R. keysii* for any other rhododendron species. In trusses of two to six, from both terminal and axillary buds, the compounding clusters of small, bright red tubes, their lobes flaring slightly at the mouth and usually coloured an equally vivid, yet complimentary yellow, are unique amongst the genus. That they occur on a willowy plant that can sometimes attain tree-like stature enhances their beauty even more.

R. keysii was discovered and first collected by Thomas Booth sometime between 1849 and 1851 on his expedition to Assam and Bhutan for the Royal Botanic Garden, Kew. The species was described by his uncle, Thomas Nuttall, in an article detailing all his nephew's rhododendron finds that appeared in Volume 5 of *Hooker's Journal Of Botany and Kew Garden Miscellany,* published in 1853. A plant collected in southern Tibet by Frank Ludlow and George Sherriff in 1936 and named *R. igneum* by John MacQueen Cowan in 1937 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 19) was found to be identical to *R. keysii* and has since been made synonymous with it. Also sunk was a form of the species then known as *R. keysii* var. *unicolor*. This was described from an award winning plant grown at Exbury, the Hampshire home and garden of Lionel de Rothschild, one of the rhododendron world's most visionary illuminati. Raised from a 1924 Kingdon-Ward collection - KW 6257, collected at Pemako in southeast Tibet - the flowers were wholly red, with only the very tips of the lobes occasionally showing a touch of yellow. Unicolor Group maintains the moniker.

Distinguishing *R. keysii* from the other Subsection *Cinnabarina* members when the plant is out of flower relies on the long, thin, narrowly-lanceolate-shaped leaves, the lax habit, and once the following season's flower buds have formed, their terminal and axillary presence. Genetically, it too is a hexaploid, replete with 78 chromosomes (six sets).

Cultivation in Britain's woodland gardens is usually without problem, the species fairly fast growing. Hardiness is comparable with *R. cinnabarinum* though forms gathered from the lower reaches of the distribution, close to the 2,400m contour, will require - in BBC ironic-double-entendre newsreader speak - a degree more protection.



R. keysii (LS&H 21284)



R. keysii (KW 6257) Unicolor Group

R. keysii


R. concatenans (KW 5874)


R. concatenans (KW 5874)

R. cinnabarinum* ssp. *concatenans

Hardiness:
H4-5.
Flowering Period:
May-June.
Distribution in the wild:
Pemako, SE Tibet.
Growing amongst scrub on steep rocky slopes, at elevations of 3,600-4,000m.

Identification:
Shrub, upright or rounded, 1.5 to 2.5m high;
branchlets green, moderately through densely lepidote;
bark shaggy and peeling, becoming grey-brown at maturity.
Leaves evergreen, coriaceous, elliptic through oblong-elliptic,
4 to 8.7cm long by 2 to 5cm wide,
apex rounded;
upper surface bluish- or olive-green, without scales,
often glaucous (markedly so when juvenile) and shiny or matt (when mature);
lower surface tinged purple or purplish-brown (paler and glaucous when juvenile),
densely lepidote, the scales fleshy, dark brown, brown or golden coloured,
narrowly rimmed, equal or unequal, medium to large,
near-contiguous to half their own diameter apart.
Petiole 6-12mm long, moderately through densely lepidote.
Inflorescence terminal, 3-8-flowered, usually semi-pendulous;
the buds ovoid through obovoid, yellow-brown,
lepidote, the scales bloomed and with white hairs along the margins.
Rhachis 3-10mm long, moderately through densely lepidote.
Pedicel 5-15mm long, moderately through densely lepidote.
Calyx 1-4mm long, often unequal, lobed or just a rim,
the outer surface and margins moderately through densely lepidote,
the margins sometimes ciliate.
Corolla 3 to 4cm long, tubular-campanulate through campanulate,
apricot through apricot-yellow,
usually with a waxy pruinose bloom, without scales.
Stamens 10, unequal, declinate, shorter than the corolla, anthers brown;
filaments pubescent towards the base, or more rarely along the lower third or half.
Ovary densely lepidote, sometimes puberulous at the apex.
Style slender and straight, glabrous, longer than the stamens,
impressed into a depression at the ovary apex,
sometimes puberulous at the base, rarely lepidote at the base.
Capsule cylindric 8-10mm long, straight, densely lepidote.

Seed Collections:

KW 5874	1924	LS&T 3761	1938	CC 7517	1996
KW 11568	1935	LS&E 13147	1946/1947	DGEY 181	2001
L&S 1757	1936	CV 9523	1995	DGEY 271	2001

R. concatenans was discovered on the Doshong La, near Pemako, in southeastern Tibet, during June 1924. The plant hunter who made the find was Frank Kingdon-Ward, the collection field number KW 5874. A month later Ward would encounter another Subsection *Cinnabarina* species, the very similar *R. xanthocodon,* at Nam La, still in Tibet, but a fair distance away from the earlier discovery, this gathering made under KW 6026.

Both collections would languish in obscurity following their introduction into the UK later that same year, *R. xanthocodon* for a decade - until it flowered for the first time in cultivation at Bodnant Garden, in North Wales, during the spring of 1934; and *R. concatenans* for eleven years - until its corollas brightened the woodland at Nymans, in West Sussex, during 1935.

Henry McLaren and Lieutenant-Colonel Leonard Messel - the respective owners of those two premier horticultural establishments - individually brought their plants to the attention of John Hutchinson, the resident rhododendron expert at Kew and author of the lepidote species entries in the-then recently published Series-Subseries encyclopedia of the genus, the Rhododendron Society's *The Species of Rhododendron*. Concluding that both were new to science, Hutchinson's botanic description for *R. xanthocodon* appeared in Volume 95 of *The Gardeners' Chronicle,* this published in 1934, while the appraisal of *R. concatenans* featured in Volume 97 of the same journal, printed in 1935.

Morphologically, the two species are very similar, effectively differing only in the presence of scales on the upper leaf surface, and in the length of their corollas. *R. concatenans* is without adaxial scales and has corollas that are 3 to 4cm long, while *R. xanthocodon* has a moderate through dense covering of adaxial scales, with its corollas no more than 3.2cm in length. Other differences between the two exist, but they are more marginal: the underside of the leaves of each species are differently coloured, with the foliage of *R. concatenans* tinged purple or purplish-brown, while that of *R. xanthocodon* is pale green; the adaxial leaf surface of the former is usually glaucous and matt, while that of the latter is normally without a bloom, but distinctly shiny. Purple corolla hues are unique to *R. xanthocodon* - specifically to plants now assigned to Purpurellum Group - but apricot through apricot-yellow tones are shared by both species.

Subsequent collections of *R. xanthocodon* introduced plants into British gardens that are now considered to be natural hybrids. These were mislabelled as *R. concatenans* and for many years their features blurred the prime differences between the two species to such an extent that *R. concatenans* was made synonymous under *R. cinnabarinum* ssp. *xanthocodon* in the 1978 paper *A Preliminary Synopsis of the Genus Rhododendron,* with this status confirmed in the full Subgenus *Rhododendron* revision of 1980 (*Notes from the Royal Botanic Garden, Edinburgh,* respectively Volume 36, and Volume 39, Number 1). The author of those changes, Doctor James Cullen, was not assisted in reaching his conclusions by the fact that Tibet's hillsides were at that time closed to Western scientists following the country's illegal annexation by the armed forces of the Chinese Communist Party - hence their fence-sitting diplomatic 'hesitancy' regarding the perpetrator of the current Ukrainian conflict - so the fact that the *R. concatenans* population was geographically disjunct, separated on the ground from the distribution of *R. xanthocodon,* was unknown to him. And that remained the case until May 1995, when permission was finally granted for a group of rhododendron experts to visit the Doshong La. Chip Muller and Keith White describe that expedition in Volume 50, Number 3, of the *American Rhododendron Society Journal.* Reporting on the final ascent of the pass, they write:

> 'Our eyes were on the cliffs, searching for the glaucous leaves or apricot-yellow flowers of *R. concatenans*. Searching for a half hour, we wondered if the plant was now extinct. There! Well up on the cliffs - and in flower! Three of us scrambled up, much as Kingdon-Ward had done, to photograph the prize with great difficulty. Imagine our surprise when, just around the next corner, the rest of the group found *R. concatenans* growing practically by the trail. There were hundreds, if not thousands of plants, growing in a narrow band at 11,800 feet for about a half-mile. There is no doubt that the plant, "species" or not, is growing well, in an isolated population on the south side of the Doshong La'.

The botanical leader of the party was Kenneth Cox, and the following year, a second trip was mounted, the team this time also including Kenneth's father, Peter Cox. These two renowned Scottish rhododendron experts would later write that:

> 'after fairly extensive study of the large populations of this species in Pemako, it is clear that this is a stable and uniform taxon with no overlap with typical *R. xanthocodon.* Indeed it is probably more closely related to ssp. *cinnabarinum* Roylei Group and should be given at least varietal status'
> (*The Encyclopedia of Rhododendron Species,* Glendoick Publishing, 1997).

Varietal status, as each and every botanist will tell you by rote, is assigned when taxa with marginal morphological differences grow intermixed. When they are geographically distinct, subspecies ranking is ascribed.

Consequently, *R. cinnabarinum* ssp. *concatenans* is recognised herein.

Peter and Kenneth advise that only those plants grown under the original KW 5874 introduction, along with gatherings made at Pemako post-1995, can be regarded as the true subspecies. However, one additional Kingdon-Ward collection and three made by Ludlow and Sherriff - all recorded as sourced from the Pemako area - are widely regarded by other experts to also be ssp. *concatenans* and so are provisionally included in the seed collections listing. LS&T 6560 - which encompasses the AM-awarded Collingwood Ingram selection 'Copper' - was previously considered to be ssp. *concatenans,* but a physical check will confirm that it is not, for there are scales on the upper leaf surface. If it is not regarded to be a true form of ssp. *xanthocodon,* then it may be one of the un-named natural hybrids mentioned above. Four collections made by Keith Rushforth in the West Siang district of Arunachal Pradesh during 2012 - namely, KR 10507, KR 10515, KR 10531 and Kr 10534 - have all been provisionally tagged as *R. cinnabarinum* ssp. *concatenans* cf. Time will tell if they are the real McCoy or not.

In UK cultivation, ssp. *concatenans* is reliably hardy in the south of the country, as well as along the west coast, but those gardens sited inland and along the North Sea coast, will need to provide a well-sheltered niche to guarantee success.

Genetically, the plant is a hexaploid where $2n = 78$.

R. xanthocodon (LS&H 17521)

R. cinnabarinum* ssp. *xanthocodon

Hardiness:
H4-5.
Flowering Period:
May-June.
Distribution in the wild:
S & SE Tibet; Bhutan; Sikkim & Arunachal Pradesh, India.
Growing amongst scrub on steep rocky slopes, and in mixed and evergreen forests,
at elevations of 2,900-4,100m.

Identification:
Shrub or small tree, upright, straggly and spreading, 1.5 to 7m high;
branchlets green, moderately through densely lepidote, often pruinose;
bark shaggy and peeling, becoming grey-brown at maturity.
Leaves evergreen, coriaceous, oblong through oval,
3 to 7.5cm long by 1.5 to 4.5cm wide,
apex rounded;
upper surface bluish- or olive-green, moderately through densely lepidote,
often slightly glaucous (when juvenile) and shiny (when mature);
lower surface pale green, often glaucous, densely lepidote,
the scales fleshy, dark brown, brown or golden coloured, narrowly rimmed,
equal or unequal, small to large,
near-contiguous to half their own diameter apart.
Petiole 6-15mm long, moderately through densely lepidote.
Inflorescence terminal, 2-8-flowered, usually semi-pendulous;
the buds ovoid through obovoid, yellow-brown, lepidote,
the scales bloomed and with white hairs along the margins.
Rhachis 3-12mm long, moderately through densely lepidote.
Pedicel 5-25mm long, moderately through densely lepidote.
Calyx 1-4mm long, often unequal, lobed or just a rim,
the outer surface and margins moderately through densely lepidote,
the margins sometimes ciliate.
Corolla 2.5 to 3.2cm long, tubular-campanulate through campanulate,
yellow, apricot through orange to purple,
usually with a waxy pruinose bloom, without scales.
Stamens 10, unequal, declinate, shorter than the corolla, anthers brown;
filaments pubescent towards the base, or more rarely along the lower third or half.
Ovary densely lepidote, sometimes puberulous at the apex.
Style slender and straight, glabrous, longer than the stamens,
impressed into a depression at the ovary apex,
sometimes puberulous at the base, rarely lepidote at the base.
Capsule cylindric 8-13mm long, straight, densely lepidote.

Seed Collections:

Cooper 2146	1914	Bowes-Lyon 15043	1969
Cooper 2154	1914	Bowes-Lyon 6077	1970
Cooper 3998	1915	KR 884	1985
KW 6026	1924/1925	EGM 51	1988
KW 8239	1927/1928	EGM 85	1988
Sherriff 6/38 *	1934	EGM 88	1988
L&S 1354 *	1936	EGM 96	1988
LS&T 5883	1938	C&S 1591	1990
LS&T 6349a *	1938	Heasman 46	1992
LS&T 6560	1938	Sinclair 1734	1993
LS&H 16126	1949	AC 3225	1997
LS&H 16492	1949	AC 3455	1997
LS&H 16493	1949	AC 3563	1997
LS&H 16495	1949	AC 3564	1997
LS&H 17521	1949	AC 3569	1997
LS&H 18921	1949	AC 3579	1997
Bowes-Lyon 3069	1966	CER 9926 *	1999
Bowes-Lyon 3071	1966	KR 6171	1999
Bowes-Lyon 3173	1966	KR 8209	2005

The four field numbers marked with an asterisk (*) are known collections of
R. cinnabarinum ssp. *xanthocodon* Purpurellum Group.

Officially, all the published historical accounts of Genus *Rhododendron* will assign the credit for the discovery of *R. xanthocodon* to Frank Kingdon-Ward, who collected herbarium specimens and viable capsules from a population of plants at Nam La, in Tibet, under the field number KW 6026 during July 1924. That seed germinated, introducing the species into UK cultivation later that same year, and those plants finally flowered in the spring of 1934 at Bodnant, the North Wales home and garden of Lord Aberconway. As had happened previously with Hooker's 1849 *R. blandfordiiflorum* introduction, the knowledgeable eyes of an expert rhodophile, in this case, those of Henry McLaren, quickly spotted that something new had been collected, and the plant was soon brought to the attention of the current lepidote doyen, John Hutchinson at Kew. A botanic description, combining details from Kingdon-Ward's type herbarium specimen and the cultivated shrub, subsequently appeared in Volume 95 of *The Gardeners' Chronicle*.

The creamy-yellow campanulate corollas were the obvious giveaway, but placement was initially within the old Triflorum Series, as the oval-oblong leaves were similar to those of *R. oreotrephes*. John MacQueen Cowan and H. H. Davidian corrected this faux pas within the text of an article they wrote for *The Rhododendron And Camellia Yearbook* of 1954, 'Some Rhododendron Anomalies'. Both of those structural features however, remain key to identifying the species from its four Subsection *Cinnabarina* relatives.

Mirroring the approach taken with *R. cinnabarinum* ssp. *cinnabarinum,* the Edinburgh Revision broadside reduced to synonymy under *R. cinnabarinum* ssp. *xanthocodon* the status of a number of previously specific or varietal taxa, namely *R. cinnabarinum* var. *pallidum, R. cinnabarinum* var. *purpurellum,* and *R. concatenans.*

Loss of the *R. concatenans* epithet caused the most outrage, and the correction of that boo-boo - the result of updated field study reporting - is detailed on page 81. The two varieties however, were correctly subsumed:

R. cinnabarinum var. *pallidum* had been collected by Sir Joseph Dalton Hooker in Sikkim during 1849, but was only identified as being different from the type species after it flowered at the Royal Botanic Garden, Kew, in 1854. Sir William Jackson Hooker described that variance - rose through pinkish-purple, funnel-campanulate corollas - in Volume 80 of the *Botanical Magazine,* which was published later that same year.

R. cinnabarinum var. *purpurellum* was a Frank Ludlow and George Sherriff find, made in 1936 at Natrampa, Chayul Chu, in southern Tibet. Its corolla is shorter than the type, campanulate in shape and coloured deep plum-purple through pinkish-mauve. The leaves are also somewhat smaller. A botanic description, written by John Cowan, can be found in the 1953-published Volume 21 of *Notes from the Royal Botanic Garden, Edinburgh*. Its sole claim to fame, is that of all the Subsection *Cinnabarina* plants, var. *purpurellum* is the closest, morphologically, to *R. oreotrephes* of Subsection *Triflora,* with intermediate crosses between these two species found in the wild.

Doctor Cullen clearly took one look at the corolla and leaf shape and then sunk the pair without a second thought, though RHS Group status maintains both of the epithets for horticultural use. He also painstakingly reviewed the herbarium material held at Edinburgh Botanic and in other British institutions, and decided that three collections made in Bhutan by a past RBGE Curator, Roland Cooper - Cooper 2146 and Cooper 2154 from 1914, and Cooper 3998 from 1915 - were not ssp. *cinnabarinum* as had first been thought, but were ssp. *xanthocodon,* which means history will have to be rewritten even if doing so prompts FKW to roll over in his grave.

The presence of lepidote scales on the upper leaf surface of *R. cinnabarinum* ssp. *xanthocodon* is the chief characteristic used to key the species from *R. cinnabarinum* ssp. *concatenans,* which is devoid of such. Additionally, the latter will be found to have slightly larger corollas, between 3 and 4cm long, whereas those of the former are no more than 3.2cm in length. Claims that differentiation can be made using the flower colour or the distinctive veining on the corolla are false, for although purple pigmentation is unique to ssp. *xanthocodon,* both taxa display apricot or apricot-yellow hues. Note too that the presence of natural hybrids of ssp. *xanthocodon,* introduced into UK gardens and then misidentified as ssp. *concatenans,* still complicates the keying process. Moreover, the validity of many cultivated specimens of ssp. *xanthocodon* is in doubt, as they do not conform with the accepted botanic description, their foliage being narrow rather than wide and those leaves lacking any adaxial scales. In the wild, tubular rather than tubular-campanulate corollas, much narrower foliage and that lack of persistent adaxial leaf surface scales are the key features that cleave ssp. *cinnabarinum* from ssp. *xanthocodon,* but given the aforementioned, this keying too may not be as clear-cut in UK cultivation.

On the good news front, *R. cinnabarinum* ssp. *xanthocodon* is a lot less prone to powdery mildew infection than specimens of ssp. *cinnabarinum,* but if compared with ssp. *tamaense,* slightly more so. Plants are fully hardy and free-flowering once mature, but generally require good wind shelter and some shade to perform at their best, the latter a prescient requirement for gardens in the south of the country.

The species has revealed itself to be a hexaploid with 78 chromosomes.



R. xanthocodon (Sherriff 6/38) Purpurellum Group



R. xanthocodon (LS&T 6560)

R. cinnabarinum* ssp. *tamaense

Hardiness:
H4.
Flowering Period:
May-June.
Distribution in the wild:
NW Yunnan, China; NE Myanmar.
Growing in thickets at woodland margins, and within rhododendron and fir forests,
at elevations of 2,750-3,500m.

Identification:
Shrub, rarely a small tree, upright, often epiphytic when young, 1 to 2m high;
branchlets lepidote, often pruinose, purplish;
bark shaggy and peeling, becoming grey-brown at maturity.
Leaves semi-deciduous or deciduous, lanceolate through oblong,
2.5 to 5.8cm long by 1.5 to 2.6cm wide,
apex rounded;
upper surface deep to medium green, without scales;
lower surface pale green, often glaucous, densely lepidote,
the scales fleshy, brown, reddish-brown or purple coloured,
narrowly rimmed, equal or unequally sized,
between 2 and 5 times their own diameter apart, rarely less distant.
Petiole 5-10mm long, lepidote.
Inflorescence terminal, 2-5-flowered, usually semi-pendulous;
the buds ovoid through obovoid, yellow-brown, lepidote,
the scales bloomed and with white hairs along the margins.
Rhachis 1-3mm long, lepidote.
Pedicel 5-19mm long, lepidote, the scales large.
Calyx minute, 1-2mm, lobed or just a rim,
the outer surface and margins densely lepidote.
Corolla 2.5 to 5cm long, campanulate, fleshy,
purple through pale lavender,
the outer surface usually with a waxy pruinose bloom,
the lobes sparsely through moderately lepidote.
Stamens 10, unequal, declinate, slightly shorter than the corolla;
filaments pubescent towards the base, rarely glabrous.
Ovary densely lepidote, sometimes puberulous at the apex.
Style slender and straight, glabrous,
impressed into a depression at the ovary apex,
sometimes sparsely pubescent towards the base, rarely lepidote at the base.
Capsule cylindric through cylindric-ovoid, *c.* 10mm long, straight,
moderately through densely lepidote.

Seed Collections:

KW 20926	1953
KW 21003	1953
KW 21021	1953

To date, Frank Kingdon-Ward is the only Western plant hunter to have encountered *R. tamaense* in the wild, securing three seed lots on his penultimate expedition in 1953.

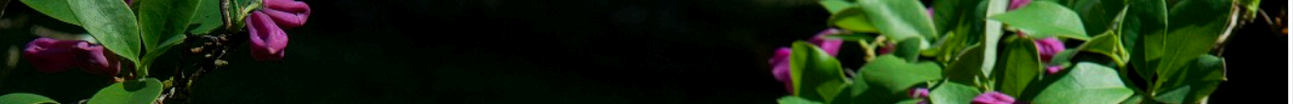
He was exploring The Triangle, an enclave between two Myanmarese rivers, the Mali Hka and N'Mai Hka, in Kachin State, a mountainous area of deep valleys and snow-capped peaks in that now-troubled country's uppermost northeastern corner. A veritable Shangri-La when Kingdon-Ward was active, today, mining and timber extraction have significantly despoiled the landscape. Had he still been alive, FKW would likely have been leading the fight against the wholesale logging operations that have taken place in the decades since his death, most of which were illegal. Forests have been decimated, the area's rich biodiversity annihilated, and likely permanent, long-term environmental damage inflicted. The canopy cover has suffered major loss across the whole State, most markedly in The Triangle, and the middle story trees have been virtually eradicated, leading to an inevitable and substantial reduction in the fauna and flora previously supported. Almost certainly, the two known populations of *R. tamaense* will be among the casualties.

Thankfully, the species still has a precarious toehold in north-western Yunnan, so it might not yet be extinct in the wild, especially if the Chinese authorities prize their natural world more than the generals of Naypyidaw did. It should be noted however that every chain-sawed tree was ultimately delivered across the border into Yunnan Province, and that the wholesale pillaging continues to this day, despite indignant statements to the contrary. The proceeds of this rape will of course be lining the pockets of those in charge, their paid minions voicing the denials.

R. tamaense is a very rare find in UK cultivation, despite the fact that a well-grown specimen bedecked in purple or lavender blooms is an enchanting sight. The species is fully hardy, develops into an upright shrub around 2m high, and is free-flowering once mature. However, it can sometimes appear leggy, a consequence usually of bad positioning in the garden rather than the deciduous foliage. Kingdon-Ward's field reporting states that in the wild, young plants often start life as epiphytes, so soil drainage should reflect this fact. Of the four *R. cinnabarinum* subspecies, it is the one least susceptible to powdery mildew.

H. H. Davidian described *R. tamaense* in the 1972 edition of *Rhododendrons,* the yearbook of what is now the RHS Rhododendron, Camellia and Magnolia Group. The deciduous through semi-deciduous foliage and lower leaf surface scales, generally between two and five times their own diameter apart, clearly differentiate the subspecies from its closest relatives.

Genetically however, *R. tamaense* is the only member of Subsection *Cinnabarina* whose chromosome count currently remains unknown. Should this too hit the hexaploid total of 78, the taxonomic subspecies ranking currently in place will be confirmed, but if the count comes in at just 26 or 52, the gifting of specific status would be the order of the day. Had the taxon successfully been crossed with any of its fellow subsection occupants, a diploid or tetraploid count would be unlikely if the viability rate of the resulting seed was high, but it has not. Nor, in fact, has it ever been paired with any other rhododendron in the genus - species or hybrid - according to the IRRC listings, a failing on the part of the directed pollination brigade given the obvious visual appeal.



R. tamaense (KW 21003)



R. tamaense (KW 21021)



R. tamaense (KW 21003)

Section *Lepipherum* Subsection *Cuneata:*



R. cuneatum (CLD 787)



Taxa:

R. cuneatum
R. ravum

Taxonomic Revision:

The 1996 Edinburgh Revision classification of Subgenus *Rhododendron* assigned *R. cuneatum* - a hexaploid, where 2*n* = 78 - and its then synonym, *R. ravum* - a tetraploid, where 2*n* = 52 - to Subsection *Lapponica,* within which they were morphologically aberrant.

To better clarify the bridging relationship that exists between these two species and those in Subsection *Heliolepida,* Subsection *Lapponica* and Subsection *Triflora,* Subsection *Cuneata* is created herein, into which the two are placed.

Subsection Morphology:

Large shrubs, upright and spreading or compact and bushy, 1 to 4m high; young shoots short or long, thick, densely lepidote with brown, flaky scales, glabrous; bark greyish-brown, finely striate.

Vegetative bud scales quickly deciduous.

Leaves evergreen, often aromatic, broadly through narrowly elliptic to oblong-lanceolate, 1 to 7cm long by 0.5 to 2.8cm wide, apex acute (rarely), obtuse or rounded, and strongly mucronate, base obtuse, cuneate or rounded; upper surface pale green, matt, densely lepidote, the scales overlapping, contiguous or between half to their own diameter apart; lower surface densely lepidote, monomorphic, the scales large, uniformly creamy-yellow, fawn, brown or rusty-brown, and of a similar size, overlapping through nearly contiguous.

Leaf anatomy comprises a single-layered upper epidermis; the cuticle is around half as thick as the cells are deep; water tissue is absent; the lower epidermis cells are prolonged into papillae. Sclereid cells are absent.

Petiole 2-15mm long, densely lepidote.

Inflorescence terminal, umbellate, 1-6-flowered; the bud scales deciduous, semi-persistent or persistent.

Rhachis 1-5mm long, lepidote or not, puberulous or not.

Pedicel 2-16mm long, moderately through densely lepidote.

Calyx large, pink, reddish or greenish, 5-lobed, these basically oblong with rounded or pointed tips and 4-12mm long, their outer surface lepidote or not (rarely), the scales pale, forming a central band, their margins occasionally lepidote but usually long-ciliate, the lobes persistent in fruit, sometimes fully enclosing the seed capsule.

Corolla 1.6-3.4cm long, 5-lobed, funnel-shaped, slightly zygomorphic,
rose-lavender through deep rose-purple, but occasionally near white,
usually with darker spotting,
the outer surface lepidote on the lobes or not, and often pubescent.

Stamens 10, declinate and long-exserted, 12-30mm long,
slightly shorter, equal in length or slightly longer than the corolla;
filaments pubescent along the lower half or towards the base.

Ovary conoid, 2-3mm long, 5-locular, densely lepidote,
sometimes with a tuft of hairs at the apex.

Style long and slender, declinate, not continuing the axis line of the pedicel,
equal to (rarely) or longer than the stamens, longer than the corolla,
impressed into a depression at the ovary apex,
usually pubescent at the base.

Capsule ovoid through cylindric-ovoid, 6-14mm long, densely lepidote,
sometimes hairy at the apex.

Seeds elongate, without wings or appendages.



R. cuneatum (CLD 807)



R. cuneatum (CLD 787)

R. cuneatum

Hardiness:
H5-6.
Flowering Period:
March-May.
Distribution in the wild:
N & W Yunnan, & SW Sichuan, China.
Growing in pine and oak forests, in thickets, and on rocky slopes,
at elevations of 2,700-4,200m.

Identification:
Shrub, upright and spreading or compact and bushy, 1 to 4m high.
Leaves often aromatic,
broadly through narrowly elliptic to oblong-lanceolate,
2 to 7cm long by 0.8 to 2.8cm wide;
upper surface pale green, matt, densely lepidote,
the scales overlapping, contiguous or between half to their own diameter apart;
lower surface densely lepidote, monomorphic, the scales large,
uniformly of a creamy-yellow, fawn, brown or rusty-brown hue, and of similar size,
nearly contiguous through overlapping.
Inflorescence 1-6-flowered.
Calyx large, pink, reddish or greenish, 5-lobed, these 5-12mm long.
Corolla 1.2 to 3.4cm long, funnel-shaped,
rose-lavender through deep purple, rarely near white,
often with darker spotting.
Stamens 10, unequal, long-exserted;
filaments pubescent along the lower half or near the base.
Style declinate,
not continuing the axis line of the pedicel,
usually longer than the stamens.

Seed Collections:

F 10071	1912/1914	R 11287	1923/1924	SBLE 247	1987
F 15218	1917/1919	R 11368	1923/1924	SBLE 586	1987
F 15427	1917/1919	R 11392	1923/1924	CLD 787	1990
F 15464	1917/1919	R 11393	1923/1924	CLD 807	1990
F 21030	1921/1922	McLaren P 70	1932/1939	CLD 868	1990
F 21375	1921/1922	Yu 15027	1937	AC 1493	1996
F 21948	1921/1922	CHM 2636	1986	KR 4085	1996
F 22203	1921/1922	SBLE 25	1987	JN 12241	2012
R 11271	1923/1924	SBLE 104	1987	JN 12249	2012
		SBLE 199	1987		

George Forrest first encountered a population of *R. cuneatum* during October, 1910, while he was exploring the eastern flank of the Lichiang mountain range in the west of China's Yunnan Province, and it was later described from the specimens he collected by William Wright Smith when writing in Volume 8, of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1914.

R. cuneatum has been acknowledged by the doyens to be the linking species between the rhododendrons of Subsection *Lapponica* and those resident in Subsection *Heliolepida,* and Subsection *Triflora*. Under the Edinburgh Revision classification, it had been closeted into the same botanic pigeonhole as the members of Subsection *Lapponica,* but the taxon is much taller growing than any of those species, and has far larger leaves, calyx lobes and corollas. Even more significant - morphologically - the style does not continue the axis line of the pedicel, but is declinate. So 'aberrant' was the word the botanists most frequently used to describe the species, noting that it had very little in common with its mostly dwarf compatriots.

A better approach than inclusion within Subsection *Lapponica* therefore, is placement in a new, standalone subsection. This follows the lead H. H. Davidian took when assigning the species to a separate niche within the Lapponicum Series - the Cuneatum Subseries - the UK's leading doyen on the genus stating that '*R. cuneatum* is so distinctive that it does not fit well into any known Series' (*The Rhododendron Species,* Volume 1, 1982). An outwith placement therefore, will allow the relationships that exist between each of those groupings to stand out more clearly and not be biased towards one particular caucus.

Further confirmation for the adoption of this rearrangement is provided by the discovery in the wild of stabilised populations of plants with characteristics that are midway between *R. cuneatum* and *R. rubiginosum,* as well as separate communities that are botanically equidistant between *R. cuneatum* and *R. yunnanense*.

Genetic study has revealed that *R. cuneatum* is a hexaploid with 78 chromosomes; *R. ravum,* a tetraploid where $2n = 52$. As such, the two are biologically incompatible. So one can no longer remain a synonym of the other if the pair cannot successfully interbreed.

R. ravum is therefore restored to specific status.

This plant is basically a smaller, lower-growing version of *R. cuneatum,* although the original botanic description - reflecting George Forrest's field notes - indicates that it too can achieve a height of up to 4m. The two species can be keyed apart using calyx lobe and leaf length measurements: these up to 5mm and 1.9cm long for *R. ravum;* 5 to 12mm long and 2 to 7cm long for *R. cuneatum*.

Seed of *R. cuneatum* was first successfully introduced into the UK during Forrest's 1912-1914 expedition under the field number F 10071. The gathering that all previously published accounts credit - F 10423 - is actually the type specimen of *R. ravum.* A further seven lots secured by the Scotsman were supplemented by gatherings made by Joseph Rock and Te-Tsun Yu, after which a five-decade hiatus ensued before Peter Cox, Peter Hutchison and Donald Maxwell-MacDonald reintroduced the species in 1986, though some of those modern-day collections may be referable to *R. ravum*. Yet despite this influx, and with no exceptional difficulty noted in growing the plants or rooting cuttings from them, the species today is a rare feature of even extensive rhododendron collections.

An established, mature specimen will usually cover itself each year with a bevy of flowers, but the pigmentation hue exhibited by some of these cultivated plants can best be described as 'washy'. Equally, the corollas themselves are not frost-hardy, unlike those of the Subsection *Lapponica* species, so require better shelter if nighttime dips below 0ºC in the spring are a frequent occurrence. However, youngsters are quite fast growing, quick to bud-up, and otherwise, fully hardy.



R. cuneatum (CLD 787)



R. cuneatum (CLD 868)



R. cuneatum (R 11392)

R. ravum

Hardiness:
H4-5.
Flowering Period:
March-May.
Distribution in the wild:
NW Yunnan & SW Sichuan,China.
Growing in thickets and open scrub at elevations of 3,000-3,400m.

Identification:
Shrub, compact and bushy, 1.4 to 3.7m high.
Leaves obovate through oblanceolate,
1 to 1.9cm long by 0.5 to 0.9cm wide;
upper surface densely lepidote;
lower surface densely lepidote,
the scales monomorphic in size and colour, slightly overlapping.
Inflorescence 3-5-flowered.
Calyx medium, 5-lobed, these 2-5mm long.
Corolla 1.2 to 1.9cm long, narrowly or widely funnel-shaped,
deep rose or purple.
Stamens 10, unequal, long-exserted;
filaments sparsely pubescent along the lower half or near the base.
Style declinate, usually longer than the stamens,
not continuing the axis line of the pedicel.

Seed Collections:

F 10423	1913
F 10435	1913
F 11736	1914
F 15448	1917/1919
KW 4486	1921

In addition to the five authenticated collections listed above,
some of the *R. cuneatum* gatherings introduced since 1986 could actually be *R. ravum.*

As outlined above in the *R. cuneatum* entry, George Forrest was also responsible for finding *R. ravum,* the discovery made on the mountains northeast of the Yangtze Bend in Yunnan, during July 1913. The species was introduced into UK cultivation later that same year under the field numbers F 10423 and F 10435, with an additional gathering returned by the Scotsman in 1914, and a fourth collection made during his 1917-1919 expedition. A single find by Frank Kingdon-Ward in 1921 completes the known introductions, although as stated opposite, some of the *R. cuneatum* reintroductions post 1986 may in fact be referable to *R. ravum*. The species was described by Sir Isaac Bayley Balfour and William Wright Smith within Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1916, and their chosen epithet, apparently, translates as 'grey'.

R. ravum was incorrectly made synonymous under *R. cuneatum* in the revision of Subsection *Lapponica* published in Volume 34 of *Notes* during 1975. Written by Melva and William Philipson, and incorporated without correction into the full Subgenus *Rhododendron* reappraisal of 1980, their work took no account of published chromosome counts, as did much of the synonymic sinking implemented by the new classification's lead author, Doctor James Cullen, although in fairness, H. H. Davidian was guilty of the same oversight.

In this case, a tetraploid was sunk under a hexaploid.

Morphologically, the two may have appeared identical, but scientific research published over the succeeding four decades has shown that a tetraploid cannot successfully breed with a hexaploid, the chromosome count mismatch effectively a barrier preventing reproduction. So if individuals from one part of the *R. cuneatum* population cannot fruitfully procreate with those from another, such synonymy is demonstrably invalid and must be revoked, with specific status returned to *R. ravum*.

As is implemented herein.

Keying the two rhododendrons apart is actually straightforward - despite their supposedly mirror image characteristics - as the calyx lobes on *R. ravum* are between 2 and 5mm long, while those on *R. cuneatum* are between 5 and 12mm in length. The leaf blades provide additional confirmation: those of *R. ravum* being no more than 1.9cm long; those of *R. cuneatum* often exceeding 7cm in length. The original species diagnosis, based on Forrest's field reporting, indicates a height attainment for *R. ravum* of around 3.7m - or 12ft - in the wild, but this was revised downwards to just 1.2m - 4ft - in subsequent appraisals (the entry in *The Species of Rhododendron,* published by the Rhododendron Society during 1930, for instance). Certainly cultivated specimens of *R. ravum* are lower-growing than those of *R. cuneatum,* but as to wild plants…

R. ravum (F 10435)

Section *Lepipherum* Subsection *Edgeworthia:*



R. edgeworthii



Taxa:

R. edgeworthii
R. pendulum
R. seinghkuense

Taxonomic Revision:

The placement of Subsection *Edgeworthia* remains as designated in the 1996 Edinburgh Revision classification.

Subsection Morphology:

Shrubs, 0.3 to 2.5m high, rarely to 5.6m tall;
prostrate, compact or rounded to straggly, bushy or leggy with age,
epiphytic or scrambling over rocks;
young shoots often with small, golden-coloured scales, densely tomentose.

Leaves evergreen, coriaceous,
oblong through ovate to oblong- or ovate-lanceolate, rarely elliptic,
2 to 16cm long by 1 to 6cm wide,
apex acuminate or obtuse,
base rounded or broadly obtuse;
upper surface often bullate, with or without scales,
sometimes sparsely pubescent;
lower surface usually densely lepidote,
but covered with a thick, densely woolly indumentum of curled hairs,
fawn, brown or rust-coloured,
completely obscuring the golden-brown scales,
which are usually very small and between half to two times their own diameter apart.

Leaf anatomy comprises a 2- or 3-layered upper epidermis,
with the cells in all the layers of a similar size;
the cuticle is thin to around half as thick as the cells are deep; water tissue is absent;
the lower epidermis cells are prolonged into papillae.
Sclereid cells are present.

Petiole 4-25mm long, with or without scales,
densely fawn, brown or rust-coloured tomentose.

Inflorescence terminal, 1-3-6-flowered;
sometimes scented.

Rhachis 1-3mm long, with or without scales, tomentose.

Pedicel 6-21mm long, with or without scales,
densely fawn, brown or rust-coloured tomentose.

Calyx often well-developed and conspicuous,
the five lobes 5-19mm long, pale green, red or tinged-red,
oblong, ovate or rounded,
unequal and usually fully enclosing the mature capsule,
their outer surface lepidote or not (rarely) and glabrous or variably hairy,
their margins densely hairy, usually lepidote, but sometimes without scales.

Corolla 1.5 to 7.6cm long, funnel-campanulate through campanulate,
white, white flushed pale pink through rose, or yellow,
5-lobed,
the outer surface often densely lepidote, glabrous or hairy.

Stamens 10, radially arranged or declinate.

Ovary 2-8mm long, oval through oblong to ovate, 5-6-locular,
variably lepidote, densely fawn or brown tomentose.

Style long or short, straight, declinate or sharply deflexed downwards at the base.

Capsule 7-22mm long, oval through oblong to ovate,
moderately through densely lepidote,
and moderately through densely brown tomentose.

Seeds elongate, winged, each end with appendages.



R. pendulum (ESIK 163)



R. edgeworthii

R. edgeworthii

R. edgeworthii

Hardiness:
H2-3.
Flowering Period:
April-May.
Distribution in the wild:
S & SE Tibet; Bhutan; Sikkim, Arunachal Pradesh & West Bengal, India;
SW Sichuan, & NW & C Yunnan, China; NE Upper Myanmar.
Growing terrestrially on rocks and cliffs,
sometimes in open situations on rocky slopes amongst dwarf scrub,
or as an epiphyte in dense woodland,
at elevations of 1,800-4,000m.

Identification:
Shrub, usually epiphytic, compact to straggly, often becoming leggy with age,
0.3 to 3.6m high, rarely to 5.6m;
branch tomentum dark orange or rust through pale beige-brown.
Leaves oblong-ovate through oblong-lanceolate, rarely elliptic,
4 to 16cm long by 2 to 6cm wide,
apex acuminate,
base rounded or broadly obtuse;
upper surface markedly bullate, glabrous and usually without scales,
the midrib deeply grooved, often tomentose along the lower third,
more rarely the entire length, very occasionally glabrous;
lower surface densely lepidote,
the very small scales golden to pale brown, generally equally-sized,
half to their own diameter apart,
but completely obscured by a dense woolly indumentum,
white at first becoming fawn through rust-coloured at maturity.
Petiole 5-25mm long.
Inflorescence 1-6-flowered; strongly fragrant.
Calyx conspicuous, 11-19mm long, deeply lobed,
these red or tinged red.
Corolla 3 to 7.6cm long, funnel-campanulate,
white, often flushed pale-pink or rose,
sometimes with a yellow blotch at the base,
the outer surface glabrous or hairy, moderately through densely lepidote,
the inner surface glabrous.
Stamens 10, unequal, declinate;
filaments densely villous along the lower third or half of their length.
Ovary 3-8mm long, 5-6-celled.
Style long and straight,
longer than the stamens and roughly equal in length to the corolla,
densely lepidote and tomentose along the lower quarter or third.
Capsule cylindric-ovate or globose,
10-22mm long by 8-12mm wide.

Seed Collections:

F 8172	1912/1914	R 23592	1932	KW 20840	1953	JN 1055	1999
Cooper 2756	1914	R 25453	1932	C&H 421	1965	DGEY 215	2001
Cooper 3879	1915	R 25454	1932	Bowes-Lyon 3193	1966	DGEY 401	2001
Farrer 842	1919	McLaren C 33	1932/1939	SBEC 207	1981	KC 0106	2001
KW 3038	1919	McLaren S 158	1932/1939	SBEC 607	1981	GLGS 16516	2002
F 21564	1921/1922	KW 10379	1933	KR 1014	1985	HECC 10025	2002
F 21714	1921/1922	KW 10929	1933	KR 1059	1987	KR 7637	2002
F 22831	1921/1922	L&S 1251	1936	KR 1292	1987	KR 7722	2002
KW 5439	1922	L&S 2745	1936	SBLE 435	1987	NAPE 0111	2003
R 6369	1923/1924	L&S 2836	1936	CLD 1430	1990	AC 5264	2004
R 6745	1923/1924	KW 13632	1937	Cox 6021	1992	KR 7500	2004
R 6999	1923/1924	L&S 2952	1937	KR 2330	1992	KR 8024	2005
R 7377	1923/1924	L&S 3132	1937	AC 637	1993	KR 8518	2006
R 7865	1923/1924	Yu 17431	1937	AC 648	1993	ZH-G 071	2006
R 11277	1923/1924	Yu 18226	1937	AC 666	1993	C&N 5943	2007
R 11278	1923/1924	Yu 19631	1937	AC 706	1993	KR 9309	2008
F 26423	1924/1925	Yu 20962	1937	AC 712	1993	BE 09-02	2009
F 26618	1924/1925	Yu 22962	1937	KR 2701	1993	BE 09-03	2009
F 27617	1924/1925	LS&T 3709	1938	KR 2711	1993	KR 9845	2010
F 27769	1924/1925	LS&T 3720	1938	Bowes-Lyon 10133	1994	JN 11081	2011
KW 6793	1926	LS&T 3728	1938	CNW 380	1994	BE 12-01	2012
KW 6807	1926	LS&T 6581	1938	CNW 834	1994	BE 12-04	2012
KW 7137	1926	KW 293	1938/1939	CNW 896	1994	BE 12-10	2012
KW 8052	1927/1928	KW 346	1938/1939	Cox 6507	1994	BE 12-40	2012
KW 8206	1927/1928	R 135	1948/1949	AC 1337	1996	JN 12133	2012
F 28305	1930/1931	LS&H 16378	1949	CCHH 8016	1997	KR 10413	2012
F 30393	1930/1931	LS&H 18777	1949	CCHH 8126a	1997	TDA 474	2013
KW 9504	1931	KW 19433	1950	CCHH 8209	1997		
R 22019	1932	KW 20839	1953	Henriksen 143	1997		

R. edgeworthii was one of the species Sir Joseph Dalton Hooker discovered during his 1849 exploration of Sikkim's mountains and forests. He named the plant for a fellow botanist, Michael Pakenham Edgeworth, then a member of the Bengal Civil Service, but soon to become Commissioner of Multan following the successful conclusion of the Second Anglo-Sikh War, who's knowledge of the area Hooker was botanically prospecting greatly assisted the expedition. The species is illustrated and fully described in the third part of *The Rhododendrons of Sikkim-Himalaya,* which was published in 1851.

Amongst the lepidote rhododendrons, only those resident in Subsection *Edgeworthia* and Subsection *Leda* have a lower leaf surface indumentum that completely hides the scales. These two traits - indumentum plus scales - effectively key all the members of both subsections from each and every other rhododendron species. Stature, leaf aromaticity and shape, along with the array of packed white flower balls, each composed of a multitude of small individual corollas no more than 8mm long, instantly separates those with a sub-Arctic domicile - the *Leda* species - from those endemic to the Himalaya - the *Edgeworthia* trio. The straight style, the delectably scented flowers and the large wrinkled leaves equally swiftly distinguish *R. edgeworthii* from *R. pendulum* and *R. seinghkuense*.

Two previously specific ranked species have correctly been made synonymous with *R. edgeworthii: R. sciaphilum,* collected by Frank Kingdon-Ward in the Naung Chaung Valley of northern Myanmar; and *R. bullatum,* a Jean-Marie Delavay find gathered in north-west Yunnan. The former, described by Kingdon-Ward and Sir Isaac Bayley Balfour - *Notes from the Royal Botanic Garden, Edinburgh,* Volume 10, 1917 - had leaf blades that were only moderately rugose and flowers that lacked scent. The latter, bearing an Adrien Franchet description - *Bulletin de la Société Botanique de France,* Volume 34, 1887 - and far more widely grown within the rhododendron aficionado fraternity, had a style that was both hairy and scaly along the lower third, rather than just hairy, and calyx lobes that were scaly instead of hairy. Otherwise, the two entities were indeed identical with *R. edgeworthii,* and H. H. Davidian - an acknowledged arch-splitter - consigned both into deserved obscurity in an article he wrote for the *Rhododendron and Camellia Year Book* of 1964, though to this day, any number of mature specimens in British gardens will still be found solely bearing a *R. bullatum* label, despite the RHS maintaining Bullatum Group as a horticultural home for all those collections emanating from Yunnan.

Hooker's premier seed gathering was the first of many introductions of the species into UK cultivation, as a glance at the extensive collections list will show. Growing across an altitudinal range of some 2,200m, with an equally wide geographic distribution, features and hardiness vary accordingly, hence the sunk synonyms. The low starting point, at just 1800m, means most forms of *R. edgeworthii* will only succeed outdoors in gardens along the west coast and in the south, despite some of the wild populations putting down roots at 4,000m. Note too that exceptionally cold winters will take their toll, as evidenced recently at Logan Botanic and some other sub-tropical havens. Away from these milder areas, over-wintering in a cool greenhouse will prove necessary most years, although plants with a provenance that can be linked to the highest reaches of the range, if given a well-sheltered spot, have survived outdoors for many years in gardens as far north as Edinburgh Botanic and Glendoick. But only those stems that were buried beneath an insulating blanket of snow emerged unscathed in the spring of 2011.

Drainage too has to be exceptional, as the field notes of the plant hunters emphasise: Kingdon-Ward - finding an abundant population of plants on an exposed granite ridge; Reginald Farrer - noting that plants grew epiphytically at the top of virtually every tree in one Myanmarese alpine zone forest (though the less tongue-twisting 'Burmese' would have spilled from his pen at the time). Therefore gardens that can provide rotting tree stumps or boulders thickly covered in moss have ideal, ready-made sites, with raised beds the perfect alternative where these are lacking. Leaf spot, poor growth and dieback are early indicators that essential cultural requirements have not been met, the last of those three listed being the most urgent call for remedial action. But master the pitfalls and challenges of growing *R. edgeworthii,* and the large white, or white-flushed-pink flowers, produced en masse by a mature plant, are the captivating and dazzling recompense. They exude the most luscious scent. And the deeply lobed, red calyxes provide a splendid visual contrast against the white of the corolla tubes.

Equally eye-catching, the bullate foliage and indumented stems come back to the fore once the blooms have fallen. So too the unfurling new leaves and extending branchlets, clad in a dense woolly tomentum, white at first but darkening to fawn or rusty-brown as the months progress.

Completely hidden away beneath that tangle of indumentum is a dense covering of very small golden-brown scales. Studies carried out by the U.S. Department of Agriculture in the 1980s showed that these did far more than just reduce water loss from the leaves. All the scales were found to contain essential oils - complex volatile fluids made up from a mix of up to 20 compounds in high concentrations, many more at lower strengths - with those on the *R. edgeworthii* leaf blade each holding a larger drop than any other lepidote species - 151 milligrams of oil per scale. Highly aromatic foliage can be one of the beneficial results, this most most notable in the Section *Pogonanthum* and Subsection *Heliolepida* rhododendrons, but a far greater advantage was garnered by *R. edgeworthii,* namely, 'germacrene'. Hosts of insects - adult weevils included - are repulsed by this compound, so having it present in quantity on the leaf surface greatly reduces the potential incidence of entomological attack, ensuring the bullate foliage has a long and often completely un-nibbled life.


R. edgeworthii



R. edgeworthii (CCHH 8016)



R. edgeworthii (CLD 1430)



R. edgeworthii (KW 6793)

R. pendulum

Hardiness:
H3-4.
Flowering Period:
April-May.
Distribution in the wild:
Nepal; S Tibet; Bhutan; Sikkim & Arunachal Pradesh, India.
Growing terrestrially on steep slopes and cliffs, or as an epiphyte in dense woodland,
at elevations of 2,200-3,700m.

Identification:
Shrub, epiphytic, compact and rounded to bushy and straggly,
0.3 to 1.3m high;
branch tomentum whitish, beige, fawn or brown.
Leaf bud scales persistent or deciduous.
Leaves oblong through oblong-elliptic, rarely elliptic,
2 to 5cm long by 1 to 3cm wide,
apex obtuse,
base rounded or obtuse;
upper surface smooth, often shiny, usually convex,
glabrous and usually without scales,
the midrib deeply grooved, tomentose at the base, along the lower half,
or throughout its entire length,
the margins somewhat revolute;
lower surface epidermis glaucous-papillate,
densely lepidote, the scales very small to medium-sized, golden through brown,
half to their own diameter apart,
completely hidden by a dense, woolly, whitish, beige or cinnamon-coloured tomentum.
Petiole 4-12mm long.
Inflorescence 1-3-flowered.
Calyx lobes 5-9mm long, red or tinged red,
their outer surface scales when present reddish,
their margins without scales.
Corolla 1.5 to 2.5cm long, open-funnel-campanulate,
near radially symmetric,
white, often flushed pink, rarely cream or pale yellow,
sometimes spotted brown or reddish-brown;
the outer surface glabrous or sparsely hairy, moderately through densely lepidote.
Stamens 10, regular;
filaments densely villous towards the base.
Ovary 2-3mm long, 5-celled.
Style short and sharply deflexed at the base,
shorter than the stamens,
sparsely lepidote and tomentose at the base.
Capsule ovate through cylindric-ovate,
7-13mm long by 6-8mm wide.

Seed Collections:

Cooper 3876	1915	Bowes-Lyon 3098	1966	Heasman 56	1992
L&S 1309	1936	Bowes-Lyon 6007	1970	Sinclair 1740	1993
L&S 2898	1936	KR 1232	1987	KR 8328	2005
LS&T 6660	1938	CHM 3094	1988	TDA 373	2013
LS&E 12525	1946/1947	EGM 89	1988	TDA 377	2013
LS&H 16117	1949	KEKE 1110	1989	TDA 930	2016
LS&H 18771	1949	AC 100	1990	TDA 939	2016
LS&H 18888	1949	Fox 71	1990	TDA 942	2016
LS&H 20627	1949	Kinmouth 97	1990	TDA 958	2016
Bowes-Lyon 3024	1966	McBeath 2491	1990	TDA 970	2016
		ESIK 163	1992		



R. pendulum (ESIK 163)

R. pendulum too was a Joseph Hooker discovery, made in Sikkim during 1849, with an illustration and botanic description included within the second part of the tour de force expedition report, *The Rhododendrons of Sikkim-Himalaya,* published in 1851.

Two easily observed characteristics are used to identify the species from its closest relatives: the short style, sharply bent downwards at the base, cleaves it from *R. edgeworthii;* the smooth and cambered upper leaf surface, from *R. seinghkuense*. Both traits are reflective of the Subsection *Boothia* species, especially *R. leucaspis,* which also has small white flowers with a short deflexed style, regularly arranged stamens, and at first glance, a somewhat similarly shaped corolla. Equally, as Hooker detailed, there is also a commonality with *R. camelliiflorum*. Key to identifying one taxon from the other is the dense covering of indumentum on the *R. pendulum* leaf undersides, as well as along the stems. To a degree, these features are mirrored on *R. leucaspis* by the hairs on the upper leaf surface and margins, and those along the branchlets, but such do not appear on the abaxial leaf surface, where the scales are clearly visible. On the other hand, the foliage and stems of *R. camelliiflorum* are without both indumentum and hairs.

Before the nine species of Genus *Ledum* were ensconced within Section *Lepipherum, R. pendulum* was unique amongst the lepidote rhododendrons for the way its leaves were stored inside their vegetative buds. Unlike the vast majority of its scaly-leafed cohorts, whose embryonic leaves are held flat and overlap each other in that protective cocoon, *R. pendulum* follows the packing arrangement adopted by the rest of the rhododendron family - Subgenus *Therorhodion* excepted - in housing the inchoate foliage rolled-up. This can best be seen without damaging a plant when the bud first starts to open, while the alternative - taking a sharp knife to a mature bud - will provide a cross-sectional objet d'art for the less squeamish. As the juvenile *R. pendulum* leaf departs the bud, its margins uncoil, flattening out, before developing the slightly revolute edge found on the fully mature foliage.

The date when the species was first introduced into UK cultivation is a little wobbly. 1850 is a possibility if Hooker returned with seed that successfully germinated, but there are no definitive accounts to indicate that this was the case. Historically, credit was heaped upon Frank Ludlow and George Sherriff, who encountered *R. pendulum* during their 1936 expedition to Bhutan and southern Tibet, but a reassessment of living and dried material made by James Cullen for the 1980 Subgenus *Rhododendron* revision, determined Roland Cooper's 1915 gathering, under the field number Cooper 3876, was in fact *R. pendulum,* though whether this was the premier introduction or a re-introduction is still to be decided. Additional gatherings have trickled-in intermittently ever since, yet the species remains a rare find in British gardens, even for those boasting substantial rhododendron collections.

The reason for this is likely down to the fact that *R. pendulum* has proved rather hard to establish, especially in cold gardens, despite the species being fractionally tougher than *R. edgeworthii* - it is able to withstand short winter lows down to -18°C - a puzzling conundrum given the 300m deficit in the upper altitudinal range between the two. But even when drainage is exemplary and a sheltered site provided, plants will be found to be quite slow growing. Yet as with some of the other difficult individuals - *R. lowndesii, R. ludlowii* and *R. megeratum* quickly come to mind - a perfectly grown specimen covered in bloom is far more than just a floral gem.

It is also a subtle statement of that gardener's green-fingered prowess.



R. pendulum (ESIK 163)

R. pendulum (Sinclair 1740)

R. seinghkuense

Hardiness:
H2-3.
Flowering Period:
April.
Distribution in the wild:
SE Tibet; NW Yunnan, China; NE Upper Myanmar.
Growing terrestrially on cliffs, steep rocky slopes and shady rocks,
or as an epiphyte in dense woodland,
at elevations of 1,800-3,500m.

Identification:
Shrub, epiphytic, prostrate or erect, often becoming straggly with age, 0.3 to 1m high;
branch tomentum brown or rust-coloured.
Leaf bud scales persistent or semi-persistent.
Leaves oblong-elliptic through narrowly ovate to ovate- or oblong-lanceolate, rarely elliptic,
2.5 to 8cm long by 1.5 to 4cm wide,
apex acuminate,
base rounded or obtuse;
upper surface flat, moderately bullate, usually lepidote, sometimes sparsely pubescent,
the midrib deeply grooved, glabrous, or tomentose at the base or along the lower half;
lower surface epidermis glaucous-papillate,
densely lepidote, the very small scales golden-brown through pale brown,
generally equally-sized, one to two times their own diameter apart,
hidden by a dense, pale through dark brown woolly tomentum.
Petiole 4-13mm long.
Inflorescence 1-2-flowered.
Calyx 5-9mm long, pale green.
Corolla 1.5 to 2.5cm long, rotate-campanulate,
bright yellow or sulphur-yellow,
the outer surface glabrous and densely lepidote,
the tube glabrescent.
Stamens 10, regular, slightly shorter than the corolla;
filaments densely villous along the lower third or two-thirds.
Ovary *c.* 4mm long, 5-6-celled, lepidote.
Style short and sharply deflexed at the base,
glabrous and without scales, sometimes tomentose at the base.
Capsule ellipsoid,
8-14mm long by 8-13mm wide.

Seed Collections:

KW 5440	1922	KW 9543	1931	Yu 21070	1937
KW 6993	1926	Yu 19567	1937	CCHH 8106	1997
KW 9254	1931	Yu 20595	1937	DGEY 133	2001

R. seinghkuense is by far the rarest of the three Subsection *Edgeworthia* species in UK cultivation. It was first encountered in the Seinghku Valley, north-east Upper Myanmar, by Frank Kingdon-Ward in 1922, and described by John Hutchinson when he was compiling the lepidote Series entries for the Rhododendron Society's 1930 publication *The Species of Rhododendron*.

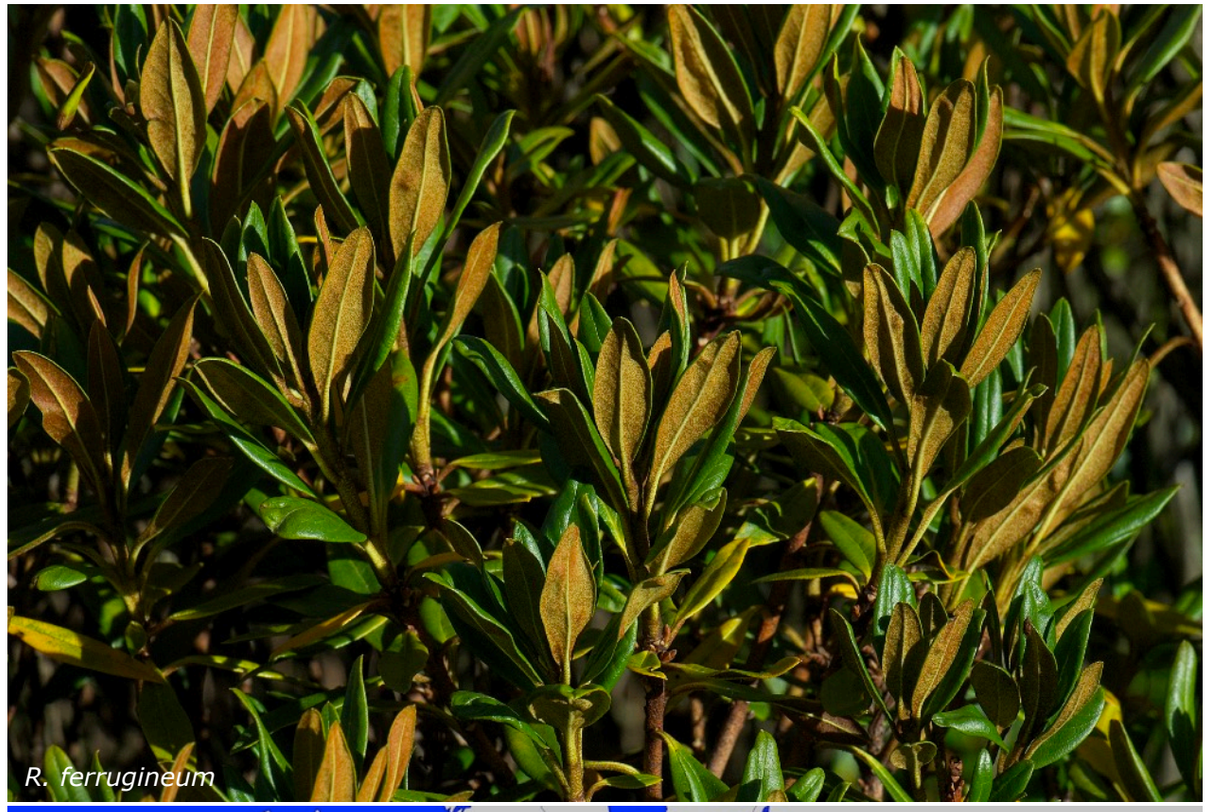
As with *R. pendulum,* the short deflexed style will quickly distinguish the species from *R. edgeworthii,* but unlike *R. pendulum,* the leaves of *R. seinghkuense* are flat and markedly wrinkled. Both features make identification a cinch within the subsection and the lower leaf tomentum, completely hiding the golden-brown scales, will key specimens from all the other rhododendrons in the genus apart from those in Subsection *Leda,* but as these plants are so different when in flower (and out), telling one from the other is a doddle.

Scrape away the abaxial indumentum to reveal the scales and a further identification check is possible if a loupe or low-powered microscope is to hand: the distance each is set apart from its twin will be seen to be between one and two times their own diameter. On the leaf undersides of *R. edgeworthii* and *R. pendulum,* the scales are more tightly packed, just half to their own diameter apart.

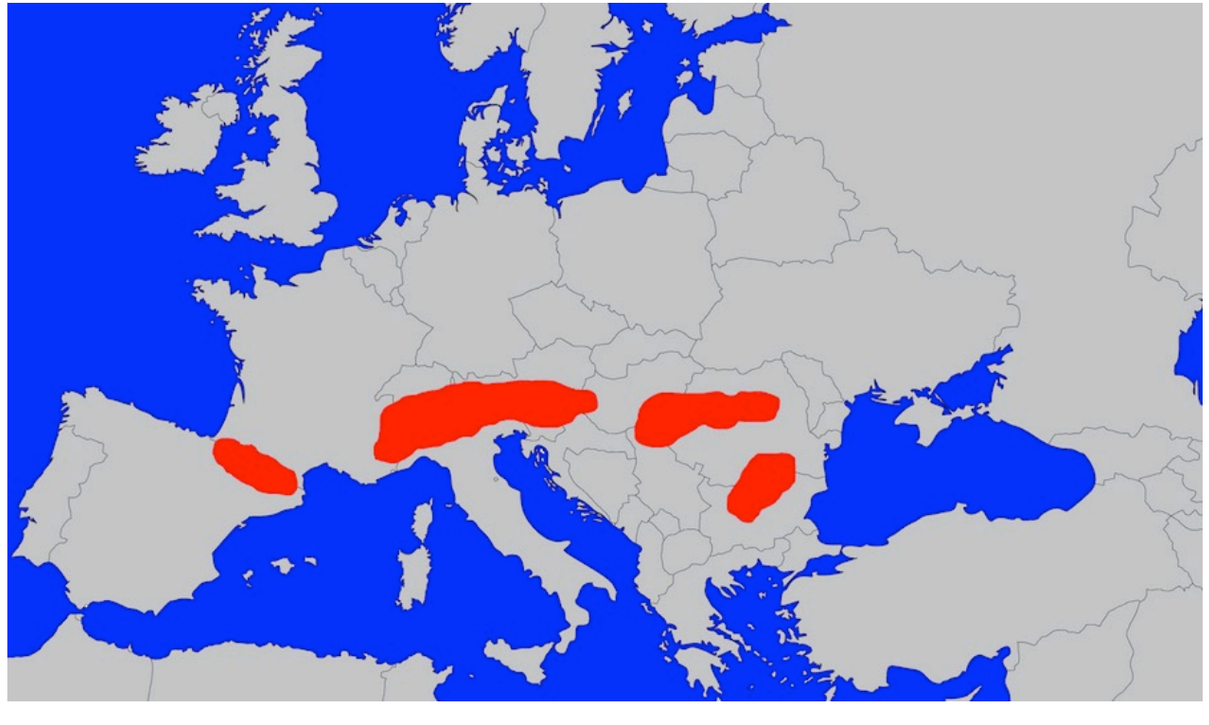
Lack of hardiness in cultivation is the reason so few UK gardens boast a specimen of *R. seinghkuense* established outdoors. All four seed gatherings made by Kingdon-Ward resulted in plants with a hardiness rating of H2, which means cultivation under glass unless you have a near frost-free west coast woodland site. The dainty yellow flowers, though unscented, are ample recompense for providing a free-draining home, and the small bullate leaves are highly attractive in their own right. However, two veteran, west coast Head Gardeners, when broached on the subject, reported that even when grown on tree stumps, the species is short-lived, unlike similarly housed specimens of *R. megeratum* or *R. valentinianum*.

Two more recent collections of the species made in Yunnan - CCHH 8106 and DGEY 133 - may prove more robust and permit wider UK cultivation outdoors.

Section *Lepipherum* Subsection *Ferruginea:*



R. ferrugineum



Taxa:

R. ferrugineum
R. hirsutum
R. kotschyi

Taxonomic Revision:

Precedence and dogma dictate a botanist's pick of subsection epithet,
even when in hindsight, knowledge that resulted in the original designation
can be seen to have been limited or in error.

Assignment of the genus name by the authors of the 1996 Edinburgh Revision classification
to a subsection containing three plants that are isolated
from the thousand or so other members of the rhododendron family,
both geographically and in affinity,
wrongly confers them with an illegitimate normalcy.

They were, of course, among the first rhododendrons known to Western botanists,
but *R. ferrugineum, R. hirsutum* and *R. kotschyi*
are not typical representatives of the genus:
they are taxa from a remote and distant side branch of it.

In consequence, the Subsection *Rhododendron* epithet
has here been replaced with Subsection *Ferruginea,*
this mirroring the choice made by Hermann Sleumer within
Ein System der Gattung Rhododendron (*Botanische Jahrbücher,* Volume 74, 1949).

Equally, the repeated use of the 'Rhododendron' epithet at subgenus and section level
- in addition to each and every individual epithet being preceded by the term -
has also been abandoned in favour of Sleumer's terminology.

Subsection Morphology:

Small shrubs, erect, rounded or compact, spreading or creeping,
0.3 to 1.5m high;
branchlets variably lepidote, glabrous or hairy, often bristly;
bark grey-brown, striate.

Leaf-bud scales deciduous.

Leaves evergreen, coriaceous,
oblanceolate, oblong, narrowly obovate, elliptic or obovate-orbicular,
0.8 to 5cm long by 0.4 to 1.6cm wide,
apex acute, rounded or obtuse, and mucronate,
base obtuse, rounded or tapered,
sometimes slightly decurrent on the petiole;
upper surface dark green, shiny, without bristles,
occasionally sparsely lepidote but usually without scales,
the margins crenulate, sometimes entire, glabrous or ciliate, with or without bristles;
lower surface without bristles,
variably lepidote, the scales large or medium-sized, unequal,
golden, dark brown or reddish-brown,
overlapping, contiguous or distant.

Leaf anatomy comprises a single-layered upper epidermis;
the cuticle is as thick as the cells are deep; water tissue is absent;
the lower epidermis cells are somewhat prolonged into papillae.
Sclereid cells are absent.

Petiole 1-8mm long,
narrowly winged towards the base or ridged on each side,
moderately through densely lepidote,
glabrous or puberulous, with or without bristles.

Inflorescence terminal, umbellate or racemose, 3-16-flowered.

Rhachis 5-30mm long, usually conspicuously elongate,
variably lepidote or without scales,
glabrous or puberulous, without bristles.

Pedicel 6-25mm long,
variably lepidote,
glabrous or puberulous, rarely long-ciliate.

Calyx minute or small, the 5 lobes distinct,
lanceolate, triangular, ovate or oblong in shape and each 0.5-5mm long,
their outer surface variably lepidote or without scales,
their margins lepidote or not, glabrous or ciliate, sometimes setose.

Corolla 1 to 2cm long, narrowly tubular-campanulate or tubular-campanulate,
crimson-purple, scarlet-purple, rosy-purple, rose-pink, deep or pale pink, rarely white,
5-lobed, spreading, the margins glabrous or hairy,
the outer surface variably lepidote,
glabrous or pubescent on the tube and the lobes,
the inner surface moderately through densely pilose.

Stamens 10, unequal, 4-12mm long,
shorter, equal to or slightly longer than the corolla tube;
filaments moderately through densely pubescent along the lower half or at the base.

Ovary conoid or ovoid, 2-3mm long, 5-6-locular,
glabrous, densely lepidote.

Style slender, short and straight,
impressed into a depression at the ovary apex,
elepidote, glabrous or pubescent at the base,
shorter or equal in length to the stamens,
shorter, equal to (rarely) or longer than the ovary.

Capsule conoid or ovoid, 3-7mm long, variably lepidote, glabrous.

Seeds elongate, without wings or appendages.



R. hirsutum



R. hirsutum



R. hirsutum

R. hirsutum

Hardiness:
H6-7.
Flowering Period:
June-July.
Distribution in the wild:
France; Switzerland; Italy; Austria; Germany; NW Slovenia; W Croatia.
Growing on the European Alps, alongside or on limestone,
in open woodland, on screes, exposed slopes, moorland and amongst scrub
at elevations of 360-1,900m.

Identification:
Shrub, 0.3 to 1m high;
branchlets sparsely lepidote, pubescent and sparsely setose.
Leaves oblanceolate through obovate to obovate-orbicular,
0.8 to 3.3cm long by 0.4 to 1.4cm wide;
upper surface flat, sparsely lepidote or not,
the margins crenulate, and ciliate or setose, the hairs or bristles long;
lower surface pale green, sparsely lepidote,
the scales thick, golden, brown or dark brown,
2 to 4 times their own diameter apart.
Petiole 2-4mm long, lepidote,
glabrous, sparsely through moderately setose.
Inflorescence racemose, 4-12-flowered.
Rhachis 5-10-30mm long,
sparsely through moderately lepidote, densely minutely puberulous.
Pedicel 10-25mm long,
sparsely lepidote, densely minutely puberulent or glabrous, occasionally long-ciliate.
Calyx lobes 2-5mm long,
their outer surface lepidote,
their margins without scales, but ciliate or setose, the hairs or bristles long.
Corolla 1 to 2cm long, tubular-campanulate,
rose-pink, deep or pale pink, sometimes scarlet or crimson, rarely white,
the lobe margins hairy,
the outer surface sparsely lepidote,
glabrous or sparsely pubescent on the tube.
Stamens roughly as long as the corolla tube.
Style sparsely pubescent at the base,
equal in length to the stamens, or shorter than the longest stamens,
1.5 to 2.5 times as long as the ovary.

Seed Collections:
None officially documented,
though between 1989 and 2005, members of the American Rhododendron Society
contributed eight gatherings to their annual Seed Exchange programme.

R. hirsutum holds a hallowed place in the history of rhododendrons in Great Britain for it was the first species introduced into UK cultivation. A date of 1656 is usually given for its importation from the Continent, but in fact this was when John Tradescant the younger (1608-1662) - son of John Tradescant the elder (*c.* 1570-1638) - catalogued all the plants growing in the garden of the family's extensive Lambeth estate. Both Tradescants were botanists and plant collectors, so either could have gathered living specimens or seed on a journey to or through the Alps. Equally, they might have obtained such from their European contacts. So the exact chronological detail of when and from where *R. hirsutum* was introduced will probably never be known, but establishment in an English garden prior to the end of the Civil War in 1651 and possibly before its start in 1642 is likely, with an even earlier arrival distinctly on the cards.

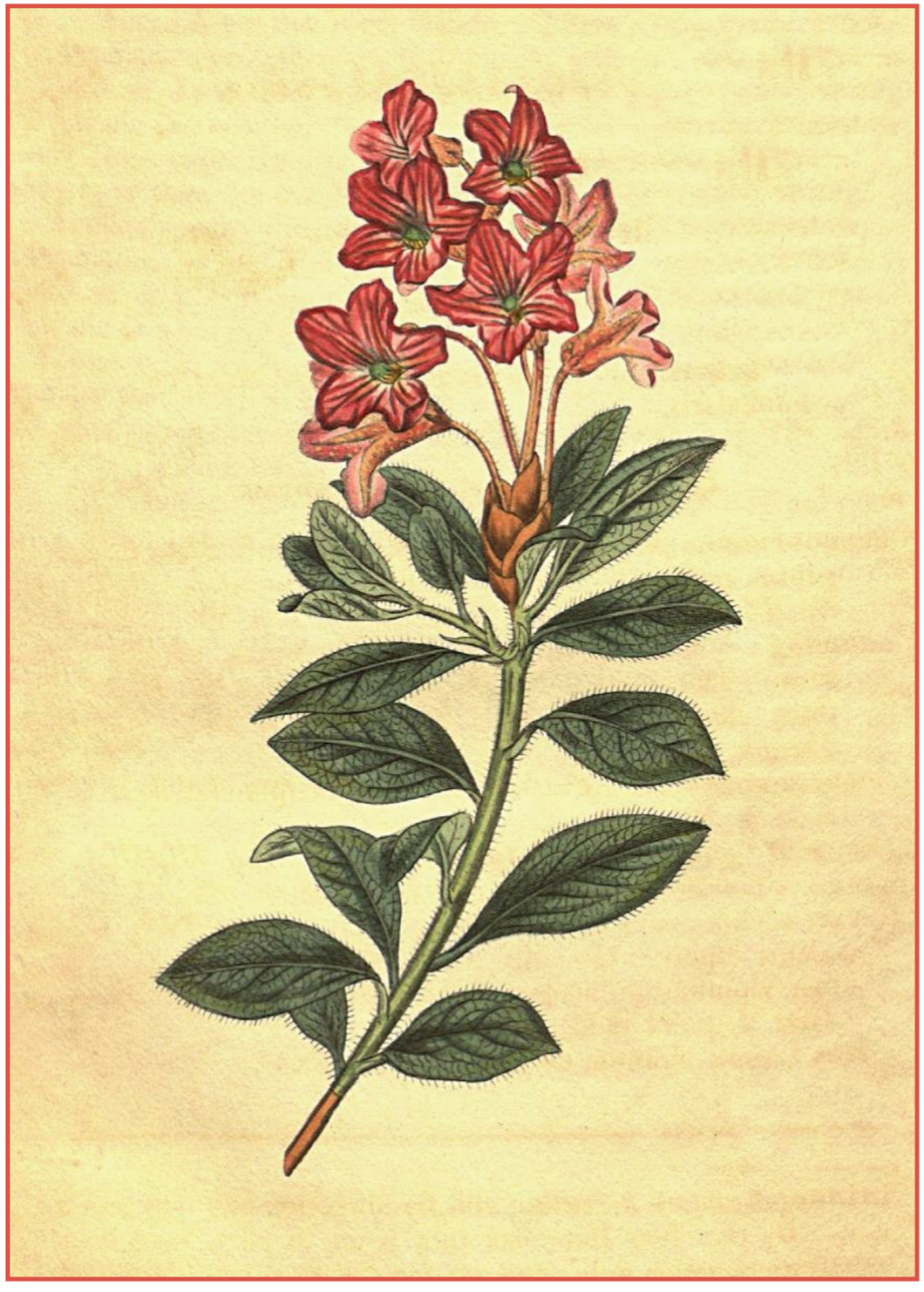
Within Subsection *Ferruginea,* the species can be identified from its two cohorts by the hairs or bristles on the leaf margins, this characteristic extending to the petioles and young stems; by the much larger calyx lobes; from the fringe of hairs around the corolla lobe margins; and by the spacing of the scales on the underside of the leaves, these never touching or overlapping, but distant from one another by between two and four times their own diameter.

In the wild, *R. hirsutum* will only be found growing on or close to a limestone formation, for it is a calcicole species tolerant of alkaline soils and so ecologically vicariant with *R. ferrugineum*. In the Alps, wherever populations of the two meet, *R. hirsutum* will be found on drier ground or scree, the soil open and stony, while *R. ferrugineum* will be established in a damper and shadier locale, its roots in a peaty accumulation atop the limestone substrate or in soil made marginally acid through leaching. Field observation has also found that while the populations of *R. ferrugineum* form extensive pure stands that dominate subalpine areas, ultimately excluding all other competitor species, *R. hirsutum* is somewhat averse to association with its own kind and more genial towards other species encroaching on its space.

In cultivation, the Hairy Alpenrose's preference for a calcareous soil is not exclusive, with neutral or slightly acid composts proving amenable, though very low pH values are not recommended. Plants are fully hardy, but slow growing, taking many years to form an upright dome around one metre high and wide. They are late flowerers, opening their blooms in June or July, the corollas sometimes lost amongst the new growth despite being produced in good quantity. The double-flowered form known as *R. hirsutum* 'Flore Pleno' is of garden origin.

Two small relic populations of *R. hirsutum* are still to be found in Croatia, one straddling the border with Slovenia, the other, more extensive, along the Adriatic coast between Rijeka and Split. In both locales the plants are in decline due to local people harvesting the leaves for medicinal purposes, the balms that are produced used to treat inflammation, gastro-intestinal disorders and even the common cold.

Carl Linnaeus described the species in 1753, the third of five rhododendrons that feature in his *Species Plantarum*.



R. hirsutum, illustrated in *Curtis's Botanical Magazine,* Volume 43, t. 1853.


R. ferrugineum


R. ferrugineum

R. ferrugineum
Hardiness:
H6-7.
Flowering Period:
June-July.
Distribution in the wild:
France; Switzerland; Italy; Austria; Germany; W Slovenia.
Growing on the mountains of the Alps and the Pyrenees,
in open woodland, pine scrub and on exposed moorland slopes,
at elevations of 900-2,500m.

Identification:
Shrub, 0.3 to 1.5m high;
branchlets ascending, densely lepidote, usually glabrous, without bristles.
Leaves oblanceolate through lanceolate to elliptic or narrowly elliptic,
1.6 to 5cm long by 0.6 to 1.6cm wide;
upper surface somewhat revolute,
the margins crenulate or entire, without bristles;
lower surface dark brown or reddish-brown, densely lepidote,
the scales overlapping, rarely contiguous.
Petiole 2-8mm long, moderately through densely lepidote,
usually without bristles, rarely sparsely bristly.
Inflorescence racemose, 5-16-flowered.
Rhachis 5-20mm long,
moderately through densely lepidote or without scales,
glabrous or densely minutely puberulous.
Pedicel 6-17mm long,
moderately through densely lepidote,
glabrous or rarely minutely puberulous.
Calyx lobes 0.5-1.5mm long,
their outer surface moderately through densely lepidote,
their margins lepidote or not, and long-ciliate.
Corolla 1.2 to 1.7cm long, tubular-campanulate,
crimson-purple, rose-scarlet, deep rose or deep pink, rarely pale pink or white,
the lobe margins glabrous,
the outer surface moderately through densely lepidote, glabrous,
sometimes pubescent on the tube.
Stamens roughly as long as the corolla tube.
Style glabrous, rarely puberulous at the base,
shorter in length or equal to the stamens, or shorter than the longest stamens,
up to twice as long as the ovary, rarely equal to the ovary.

Seed Collections:

W&H 964	1989

In addition to the sole authenticated gathering listed above,
between 1982 and 2015, members of the American Rhododendron Society
contributed 21 lots to their annual Seed Exchange programme.

Due to their natural distribution across the mountain slopes of the Pyrenees and the Alps, *R. ferrugineum* and *R. hirsutum* were among the first rhododendron species to be botanically described by Western scientists, Carl Linnaeus, as indicated above, supplying the actual elucidation in his *Species Plantarum* of 1753. That single sheet of Latin prose, with but five entries in total - on page 392 of 560 - defined the genus at a time when less than 0.5% of its specific-ranked members had been encountered. If the strictures set out by those European botanists two-hundred-and-seventy years ago were not vehemently and inflexibly maintained today, setting Genus *Rhododendron* in a concrete straitjacket, there would not be a problem, but botany as a discipline is hidebound, with what could best be described as an institutional aversion to change, and in consequence, those two individual species retain an entirely inappropriate significance within the whole:

Because - to paraphrase H. H. Davidian from *The Rhododendron Species,* Volume 1, 1982 - they 'bear no affinity with any other rhododendron species'.

Moreover - to precisely quote Doctor James Cullen, author of the 1980 Subgenus *Rhododendron* revision (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, No. 1) - their 'isolation from the rest of the subgenus is remarkable, and raises interesting problems of dispersal and evolution'.

Nevertheless, because they were the first species to be described, the choice was made by Doctor Cullen to telegraph this fact across the entire updated taxonomy:

So Subgenus *Rhododendron* superseded Subgenus *Lepidorrhodium.*

Section *Rhododendron* subsumed Section *Lepipherum.*

And Subsection *Rhododendron* supplanted Subsection *Ferruginea* along with the older Ferrugineum Series.

As intended, they were capital letter arrow pointers, but they led to a set of nudniks.

And their adoption caused nothing but confusion - see paragraph 5 within the article *Concerning the Origin and Distribution of Rhododendrons,* in Volume 47, Number 3, of the online *Journal American Rhododendron Society,* for instance - due to a totally unnecessary duplication of epithets across the rankings.

Herein and throughout the seven other volumes of this work, the terminology used by Hermann Sleumer in his 1949-published paper *Ein System der Gattung Rhododendron* (*Botanische Jahrbücher,* Volume 74) is readopted - Subgenus *Lepidorrhodium;* Section *Lepipherum;* Subsection *Ferruginea* - with the three species held in the latter, returned to their proper context within Genus *Rhododendron* as a result.

Departing such esoteric botanic kerfuffle for more fundamental observations, both *R. ferrugineum* and *R. hirsutum* may colloquially be known as the Alpenrose, but there are still clear differences between the pair, as well as between them and *R. kotschyi,* the third member of the troika:

R. ferrugineum does not have hairs or bristles on its young shoots, nor along the margins of its leaves, characteristics that are manifestly displayed by *R. hirsutum,* which is also known as the Hairy Alpenrose.

The scales on the *R. ferrugineum* leaf underside will clearly be seen to overlap, while those on *R. hirsutum* are set two to four times their own diameter apart, and the *R. kotschyi* population reside contiguous to half their own diameter apart. Moreover, as the Latin epithet for *R. ferrugineum* implies, the abaxial surface of the leaf is usually rusty-brown in colour, this reddish hue absent from the foliage of its two close associates.

The style atop the *R. kotschyi* ovary is shorter than, or occasionally the same length, as its supporting platform, while the gynoecium of *R. ferrugineum* and *R. hirsutum* boast styles that are occasionally equal to, but more often longer than, their ovaries. Between 1.25 and 2.5 times as long.

And one final distinction - the calyx lobes of *R. hirsutum* are larger, each 2-5mm long apropos the 1.5mm maximum of *R. ferrugineum* and the 2mm of *R. kotschyi*.

Of course, nothing is ever that straightforward, for a natural hybrid exists to confuse matters both out in the wild and in those UK gardens where such specimens have been introduced. As would be expected from the name, the morphological characteristics of *R. x intermedium* - described and named by Ignaz Friedrich Tausch in 1836, but also rather quaintly known by the local populace as the 'Bastard Alpenrose' - lie midway between the two specific species and populations of the cross will be found wherever *R. ferrugineum* and *R. hirsutum* meet or are within pollinator flying distance. Add in the significant additional backcrossing that has taken place and the result is a multitude of plants that vary in form between either of the two poles. And they also partially bridge the ecological calcicole divide, the hybrids being able to grow on or alongside limestone, as well sink their roots into acid pH soils.

R. ferrugineum was first introduced into British horticulture during either 1739 or 1752, with the second date regarded by many as merely a re-introduction from a Swiss population. Growth is slow, the plants forming rounded domes to 1.5m high in time, these with upward or ascending branches. Flowering takes place late in the season, during June or July, and although mature specimens bloom freely, bud production is not quite as prolific as that exhibited by wild plants on the Alps, where the strength of the light is greater than in the UK. Hardiness is sufficient for specimens to be grown anywhere across the country, though the species reacts badly if subject to sustained high summer temperatures or prolonged drought, especially if the two occur concurrently.

Before the introduction of the Southeast Asian species, *R. ferrugineum* was quite widely planted. Today it is a far rarer find, absent even from many of the more celebrated rhododendron gardens. Scientifically however, it is one of the most studied rhododendron species on the planet (as a Google search will quickly show), the literature revealing that the shorter stamens can self the stigma without the intervention of any pollinators; that plants in the wild can spread vegetatively for as much as 6m in any one direction, with a single clone found to cover an area almost twenty square metres in extent; and that although it outcompetes nearly all the other species and achieves a 90 to 100% cover at subalpine elevations, it takes between 150 to 250 years to do so.

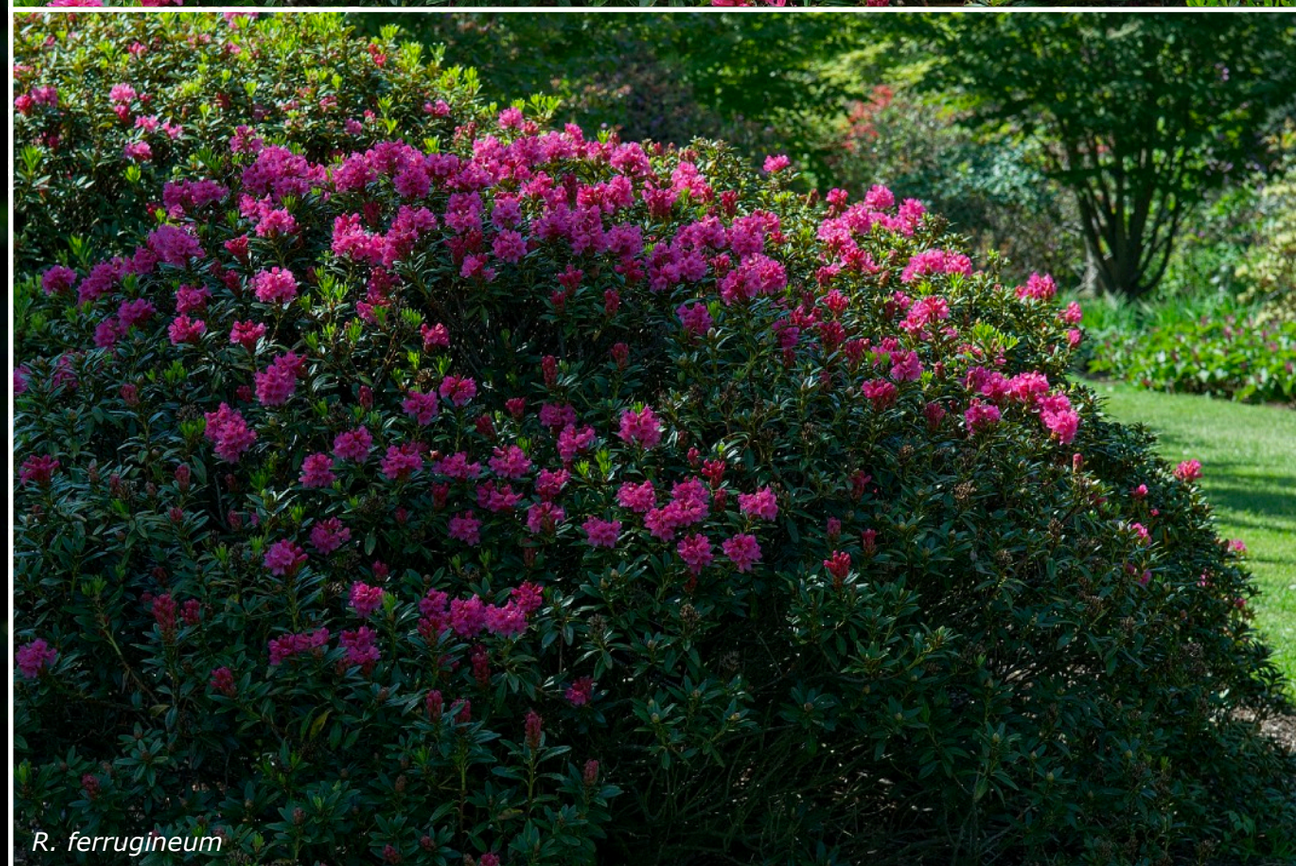
That *R. ferrugineum* still remains the type species of the genus despite its cul-de-sac placement within such, is a frankly ridiculous botanic anomaly, historical verisimilitude notwithstanding.



R. ferrugineum



R. ferrugineum



R. ferrugineum

R. ferrugineum

R. kotschyi

Hardiness:
H5-6.
Flowering Period:
May-July.
Distribution in the wild:
Slovenia; Macedonia; Bulgaria; Romania; W Ukraine.
Growing on the Transylvanian and Carpathian Mountains,
on shady moorland and rocky slopes, in both acid soils and on limestone formations,
at elevations of 1,200-2,400m.

Identification:
Shrub, 0.3 to 0.6m high;
branchlets moderately through densely lepidote,
glabrous or sparsely puberulous, without bristles.
Leaves oblanceolate through oblong to narrowly obovate and elliptic,
0.9 to 2.3cm long by 0.5 to 0.8cm wide;
upper surface leaf margins crenulate, without bristles;
lower surface dark brown, moderately lepidote,
the scales contiguous to half their own diameter apart.
Petiole 1-5mm long, moderately through densely lepidote,
glabrous, without bristles.
Inflorescence umbellate or shortly racemose, 3-7-flowered.
Rhachis 10-20mm long,
sparsely lepidote or without scales, glabrous.
Pedicel 8-20mm long,
moderately through densely lepidote,
moderately through densely minutely puberulous.
Calyx lobes 1-2mm long,
their outer surface lepidote or not,
their margins lepidote and long-ciliate.
Corolla 1.3 to 2cm long, narrowly tubular-campanulate,
crimson-purple, scarlet-purple, rosy-purple or pink, rarely white,
the lobe margins usually glabrous,
the outer surface sparsely through moderately lepidote,
densely pubescent on the tube, moderately pubescent on the lobes.
Stamens included, shorter than the corolla tube.
Style glabrous,
shorter in length than the stamens,
shorter than, or rarely as long as the ovary.

Seed Collections:
No authenticated gatherings have been documented.

With one notable exception, most texts denote Heinrich Wilhelm Schott and Theodor Kotschy as being the first botanists to describe the third member of Subsection *Ferruginea,* their outline held within Volume 9 of *Botanische Zeitung (Berlin),* which was published in 1851. The epithet they jointly chose for the find, was *R. myrtifolium.*

Lajos Simonkai, writing in *Enumeratio Florae Transsilvanicae (Budapest),* was the next author to put pen to paper and he coined the epithet *R. kotschyi* in 1886.

That twenty-six year gap is now considered to be irrelevant because of two earlier registrations of the *R. myrtifolium* epithet: firstly, in the 1824 edition of *The Botanical Cabinet* (Volume 10, Tab 908), in which Conrad Loddiges applied it to a bee-pollinated *R. hirsutum* x *R. minus* cross; and secondly, within the 1834-published third volume of George Don's *A General History of the Dichlamydeous Plants*, where it appears in the combination *R. ponticum* var. *myrtifolium*. The Edinburgh Revision decision to place Simonkai's honorific into synonymy under *R. myrtifolium* is therefore wrong. Equally, the 2022-published paper *Proposal to conserve the name Rhododendron myrtifolium Schott & Kotschy against R. × myrtifolium G. Lodd. ex Bosse (Ericaceae)* - written by Nachychko, Sosnovsky & Bräuchler, and found in *Taxon,* Volume 71, Issue 1 - fails to pick up Don's 1834 use of the epithet, which a simple search of the online International Plant Names Index would have revealed. This completely undermines their retention argument as use of either 'myrtifolium' epithet within Genus *Rhododendron* would be illegal under the nomenclature rules.

Thus the *R. kotschyi* epithet takes precedence, as reflected in H. H. Davidian's *The Rhododendron Species,* Volume 1, of 1982 vintage.

R. kotschyi is usually regarded as the eastern equivalent of *R. ferrugineum,* but this overlooks its tolerance of calcareous soils, which ecologically, would suggest a more closer relationship with *R. hirsutum* if populations of the species were not also found growing on acidic loam, a practice not replicated in the wild by *R. hirsutum*. Nor is a reverse liking for an alkaline substrate demonstrated by *R. ferrugineum*. However, a paper first published online in December 2014 - *Genetic introgression of hybrid Rhododendron x intermedium Tausch is habit mediated* (Bruni et al., *Plant Biosystems,* Volume 150, Issue 3, 2016) - reports that on the southeastern Alps in Italy, the hybrid swarm of F1, F2 and backcrossed plants that are included within the *R. x intermedium* taxon are not only found growing on calcareous-dolomitic rocks, but on marginally acidic soils as well, which could suggest that *R. kotschyi* is a stabilised natural hybrid, though now remote from its parent species.

The shrub is smaller-growing than either of its more western-domiciled counterparts, with a tight, spreading habit, far wider than high. It opens its blooms earlier too, often from May onwards, though this practice is weather-dependant. The species is also the most difficult of the three to grow well in UK cultivation, with bark-split an ongoing problem likely due to our maritime climate. Consequently, very few establishments boast a specimen.

Distinguishing *R. kotschyi* from *R. ferrugineum* relies on five main characteristics in addition to the much lower stature: the abaxial leaf surface scales, contiguous to half their own diameter apart, which rarely overlap; the much narrower corolla tube; a denser covering of pubescent hairs on the outer surface of the corolla tube and lobes; the style, which is shorter than the ovary and the stamens; and the stamens themselves, which are shorter than the corolla tube and so included. A lack of bristles on the branchlets, petioles and leaf margins quickly cleaves *R. kotschyi* from *R. hirsutum*.

Introduced into UK cultivation during 1846, *R. kotschyi* would appear the perfect subject for a rock garden placement in an expert rhodophile's garden, slow-growing and spreading, but flowering from a young age. A warm spring will see the blooms open in May through June, or if exposed to typical British weather, June into July.





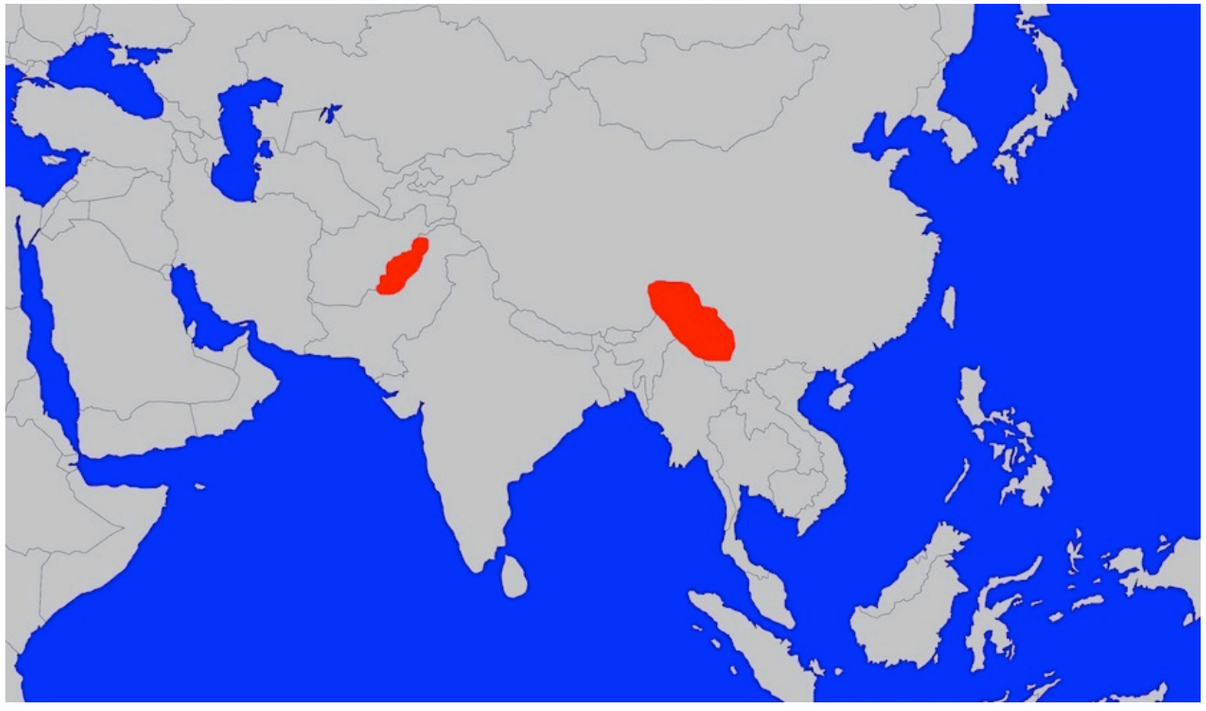
- above -
R. kotschyi featured on a 1981 Soviet-era stamp.

- right -
R. kotschyi featured on a 1974 Romanian stamp.

Section *Lepipherum* Subsection *Genestieriana:*



R. genestierianum (KW 20682)



Taxa:

R. afghanicum
R. genestierianum

Taxonomic Revision:

The genetic sequencing evidenced in the 2005 scientific study
The Molecular Systematics of Rhododendron (Ericaceae): A Phylogeny Based Upon RPB2 Gene Sequences,
written by Loretta Goetsch, Andrew Eckert and Benjamin Hall,
placed *R. afghanicum* and *R. genestierianum* within the same subclade
in the paper's maximum parsimony strict consensus tree.

Their association reflected bootstrap support (for 1,000 replicates) of 96,
and a Bayesian posterior probability of 100.

The same alliance was evidenced in the study's maximum likelihood phylogram.

Therefore, despite their currently disjunct geographic distributions,
that genetic relationship is maintained herein,
with Sleumer's 1949-published Subsection *Genestieriana* having precedence
over Cullen's 1978 Subsection *Afghanica* conception.

Subsection Morphology:

Small shrubs, or more rarely a small tree,
straggly or prostrate to erect and slender, 0.5 to 5m high;
branchlets lepidote, sometimes sparsely so, glabrous,

Leaf bud scales deciduous.

Leaves evergreen, coriaceous,
lanceolate through oblong-lanceolate to oblong,
or narrowly elliptic through narrowly elliptic-oblanceolate,
3 to 15.3cm long by 1 to 4.5cm wide,
apex abruptly and acutely acuminate, or obtuse,
base tapering or rounded-cuneate;
upper surface bluish-green, dark or olive-green,
usually matt, but sometimes moderately shiny,
sparsely lepidote or without scales, sometimes downy along the midrib;
lower surface pale green, or white-papillose and markedly glaucous,
the *R. afghanicum* leaf lepidote, the scales unequal,
near contiguous to twice their own diameter apart, pale brown, translucent or yellowish,
the *R. genestierianum* leaf laxly lepidote, the scales very small,
between four and six (rarely to ten) times their own diameter apart,
golden-yellow through brown.

Leaf anatomy comprises
a single (*R. genestierianum*) or two-layered (*R. afghanicum*) upper epidermis,
with the cells in both layers of the latter equal in size;
respectively, the cuticle is thin, less than half as thick as the cells are deep,
or as thick as the cells are deep;
respectively, water tissue is present or absent;

the lower epidermis cells are prolonged into papillae (*R. afghanicum* only slightly so).
Sclereid cells are absent (*R. genestierianum*).

Petiole 5-25mm long, glaucous or not, lepidote, glabrous or puberulent.

Inflorescence terminal, rarely terminal and axillary in the uppermost one or two leaves,
4-10-16-flowered, in a racemose truss, this distinct or lax.

Rhachis 3-50mm long, lepidote or without scales, glabrous or densely puberulous,
sometimes variably glaucous.

Pedicel 6-30mm long, densely through sparsely lepidote or without scales, glabrous.

Calyx 1-6mm long, rim-like or irregular,
the lobes then narrowly triangular through oblong,
their outer surface lepidote or without scales, glabrous,
their margins eciliate, lepidote or not.

Corolla 0.8 to 1.8cm long, 5-lobed, tubular-campanulate through campanulate,
white through whitish-green, or creamy-yellow (*R. afghanicum*),
or reddish-purple through deep plum-purple, fleshy and pruinose (*R. genestierianum*),
the outer surface glabrous and usually without scales.

Stamens 8-10, regular or unequal, radially arranged, sometimes long-exserted;
filaments glabrous or densely villous near the base.

Ovary 5-locular, densely lepidote, glabrous.

Style short, stout, sharply deflexed, impressed into the ovary,
glabrous and without scales, sometimes glaucous.

Capsule ovoid, ovoid-cylindric or oblong, 5-9mm long,
moderately through densely lepidote, glabrous.

Seeds elongate, without wings or appendages.



R. genestierianum

R. afghanicum

Hardiness:
H3.
Flowering Period:
June-July.
Distribution in the wild:
E Afghanistan; Pakistan.
Growing on rocks, ledges and in the crevices of cliffs in fairly dense forest,
at elevations of 2,000-3,000m.

Identification:
Semi-dwarf shrub, straggly or prostrate, branches ascending, to 0.5m high;
branchlets lepidote.
Leaves thick, lanceolate through oblong-lanceolate to oblong,
3 to 8cm long by 1 to 2.5cm wide;
upper surface olive to bluish-green, rarely lepidote, downy along the midrib;
lower surface pale green, lepidote, the scales unequal,
near contiguous to twice their own diameter apart, pale brown, translucent or yellowish.
Petiole 6-12mm long, lepidote, puberulent.
Inflorescence 8-16-flowered, distinctly racemose.
Rhachis elongate, 13-50mm long, lepidote, densely puberulous.
Pedicel 6-15mm long, equal to or longer than the corolla, densely lepidote, glabrous.
Calyx irregular, the lobes 1-6mm long,
their outer surface and margins lepidote.
Corolla campanulate with a tubular base, 5-lobed, small, 0.8 to 1.3cm long,
white through whitish-green, or creamy-yellow,
the outer surface glabrous, occasionally lepidote,
the tube 6-8mm long.
Stamens 10, radially arranged, unequal, long-exserted, the anthers white;
filaments densely villous near the base.
Ovary densely lepidote.
Style impressed at the top of the ovary, sharply deflexed at the base or straight,
elepidote.
Capsule 6-8mm long, lepidote, glabrous.

Seed Collections:

H&W 9706	1969

R. afghanicum was discovered during 1879 in the Kurram Valley, Afghanistan, by Doctor James Aitchison, who found populations of the plant at both Shendtoi and Kaiwas (though Shendtoi now lies on the Pakistan side of the border). He introduced the species into cultivation in 1880, and described it jointly with William Hemsley in 1881, writing in Volume 18 of the *Journal of the Linnaean Society*.

Aitchison had accompanied the British expeditionary force led by Major-General Lord Frederick Sleigh Roberts in the Second Anglo-Afghan War of 1878 to 1880, and though his doctorate was in medicine, with his primary responsibilities the welfare of the unit's troops, he was also the official botanist. His discoveries were detailed in a report for the Linnean Society titled *On the flora of Kurram Valley, etc.. Afghanistan,* this appearing shortly after the end of the campaign.

On account of the very distinctive inflorescence, the Edinburgh Revision botanists had placed *R. afghanicum* into it's own monotypic subsection (*A Preliminary Synopsis of the Genus Rhododendron,* Part 1, *Notes from the Royal Botanic Garden, Edinburgh,* Volume 36, 1978), even though previously it was associated with *R. hanceanum* in the Hanceanum Subseries of the Triflorum Series. Like *R. collettianum* - another Kurram Valley, Aitchison find - the species is an outlier, distant from the main distribution of Genus *Rhododendron* and endemically restricted to the border areas between eastern Afghanistan and Pakistan.

The leaf shape, lower surface scale distribution, corolla size and shape, and the often sharply bent style, are the key characteristics used to identify the species, easily separating plants from the lower growing forms of *R. hanceanum* that morphologically it was thought to most closely resemble, but from which it is geographically distant.

From *R. collettianum,* which shares the same wooded mountain slopes, but at a higher altitude, *R. afghanicum* can be distinguished by its non-aromatic foliage and decidedly un-*Pogonanthum*-like flower trusses and corollas.

From its new genetic bedfellow, however, when in bloom, flower colour will be the obvious distinguishing feature - white or creamy-yellowish as opposed to reddish- or deep plum purple - with the *R. genestierianum* corollas also fleshy and pruinose, the keying at all other times turning to the leaf undersides. On *R. afghanicum* the abaxial surface has a pale green hue with the unequal, pale brown, translucent or yellowish scales set from near contiguous to twice their own diameter apart. In contrast, on *R. genestierianum,* the lower epidermis is white-papillose, markedly glaucous, and has very small scales that are golden-yellow through brown, and between four to six, or more rarely to ten times, their own diameter apart. Specific characteristics shared between the two are the radially arranged stamens and deflexed style, which is also impressed into the ovary apex

R. afghanicum is fatally poisonous to grazing livestock and because of this, the last known surviving plants from Aitchison's first introduction, growing at Tower Court, Ascot, were destroyed shortly after the end of the Second World War. Ian Hedge and Per Wendelbo re-introduced the species in 1969 - as live plants rather than seed; under H&W 9706 - but it remains extremely rare or once again has been lost to UK cultivation. Peter and Kenneth Cox reported in their *Encyclopedia of Rhododendron Species,* published in 1997, that while a plant reached flowering size at Glendoick, it was subsequently killed by a hard winter.

The online website of the Danish Chapter of the American Rhododendron Society has photographs of a mature plant grown from the Hedge & Wendelbo collection taken in a private garden in Denmark, these currently viewable at:

https://www.rhododendron.dk/afghanicum.html

R. genestierianum

Hardiness:
H2-3.
Flowering Period:
April-May.
Distribution in the wild:
E & SE Tibet; NW Yunnan, China; NE Upper Myanmar.
Growing at forest margins, in thickets and amongst scrub on rocky slopes,
at elevations of 2,000-4,500m.

Identification:
Shrub or small tree, erect and slender, sometimes epiphytic, 1.2 to 5m high;
branchlets sparsely lepidote, glabrous, reddish-purple and glaucous at first,
becoming purplish- or reddish-brown at maturity, remaining glaucous or not;
bark peeling, red, light through dark reddish-brown, or purplish,
smooth at maturity.
Leaves lanceolate through oblong-lanceolate,
3 to 15.3cm long by 1.2 to 4.5cm wide,
apex abruptly and acutely acuminate, base usually tapering;
upper surface dark or olive-green, sparsely lepidote or without scales;
lower surface white-papillose, markedly glaucous, lepidote,
the scales very small, golden-yellow through brown,
between four and six (or rarely to ten) times their own diameter apart.
Petiole 5-25mm long.
Inflorescence terminal, rarely terminal and axillary in the uppermost one or two leaves,
4-10-15-flowered.
Pedicel 16-30mm long, slender, pruinose; not hardened or erect in fruit.
Calyx 1-2mm long, usually rim-like,
deep plum-purple coloured, pruinose, elepidote.
Corolla 1.2 to 1.8cm long, tubular-campanulate through campanulate,
reddish-purple through deep plum-purple, fleshy and pruinose.
Stamens 8-10, radially arranged.
Ovary densely lepidote.
Style short, stout, sharply deflexed, impressed into the ovary.
Capsule 5-9mm long,
moderately through densely lepidote.

Seed Collections:

F 17824	1919	F 26419	1924/1925	Yu 19583	1937
F 18329	1919	F 27378	1924/1925	KW 424	1938/1939
F 19917	1921/1922	F 27758	1924/1925	R 70	1948/1949
F 20845	1921/1922	KW 9415	1931	KW 20682	1953
F 21692	1921/1922	KW 9490	1931	CCHH 8080	1997
R 11202	1923/1924	R 22006	1932	CCHH 8119	1997
F 24831	1924/1925	R 22013	1932	DGEY 101	2001

R. genestierianum was a George Forrest discovery made in April 1919 while exploring the N'Maikha-Salwin Divide in north-east Upper Myanmar. The botanic description, a solo composition penned by the collector, can be found in Volume 12 of *Notes from the Royal Botanic Garden, Edinburgh,* published in 1920.

Forrest named his find for his friend, Annet Genestier, a Roman Catholic priest working for the Paris Foreign Missions Society, based in the village of Zhongding, near Bingzhongluo, in western Yunnan. Like the plant hunter, Père Genestier had had his own share of troubles with zealous Buddhists, re-building his church at least twice after it was destroyed in their attempts to rid Tibet of foreigners, so the two probably swapped war stories of their hair-raising escapes from marauding lamas. The priest's solitary gravestone can be found in the churchyard, though this is not the original monument, which was desecrated and destroyed during the Cultural Revolution, but a concrete tomb that holds his bones, these regathered by local villagers after being dug up and scattered by Mao's communist cadres. The church too is a remodelled version, slightly smaller than the original, but still distinctly 19th-Century French in style, completed in the early 1990s and open for mass on Sundays. Premier Xi, not known for his gullibility or tolerance of religious minorities, has yet to be spotted amongst the congregation.

R. genestierianum, while distantly related to *R. campylogynum,* was considered to have no close associate within the genus until the Goetsch-Eckert-Hall phylogeny was published in 2005. Diagnostically, the glaucous bloom on the pedicel, calyx and corolla is a key identifier. Taken together with the combination of peeling bark, long lanceolate-shaped leaves that are markedly glaucous-white below and have very pointed tips, plus the lax pendant trusses of plum-purple urns on especially long pedicels, the species is unlikely to be confused with any other rhododendron, including its new found friend, *R. afghanicum*.

Two Frank Kingdon-Ward seed lots from Upper Myanmar, collected during 1931 and named *R. mirabile,* were described by the plant hunter in Volume 92, Series 3, of *The Gardeners' Chronicle,* this published in 1932. These were later considered to be identical with *R. genestierianum* and made synonymous.

UK cultivation of the species is problematic because the young growth begins to extend very early in the season, so unless kept frost free, it will be damaged and lost. The H2-3 rated species is therefore one for west coast gardens where the Gulf Stream modifies the climate sufficiently enough to avoid frosting when the new branchlets are lengthening. Brodick Castle Gardens on the island of Arran has the most renown group of plants, clearly very much at home in the woodland, as are those at Muncaster Castle in Cumbria, both long-established groups of plants that have taken recent gales post the loss of much shelterbelt protection in their stride.

Lacking such a maritime nirvana, *R. genestierianum* can of course be grown in a cool greenhouse or conservatory, where the reddish-purple branchlets, white leaf undersides and peeling bark will provide all-year-round interest when the blooms have faded. But not everyone finds this rhododendron attractive, even, or especially, when in flower. Once such, a gentleman by the name of Reginald Farrer, apparently describing the plant as ugly. It is certainly different.

Although re-introduced in 1997 and 2001, those seed gatherings were from plants growing around the 2,500m contour, so as yet, it has not been possible to assess if - as expected - capsules collected from specimens sited higher up the altitudinal range would provide progeny able to thrive in less congenial UK gardens.



R. genestierianum



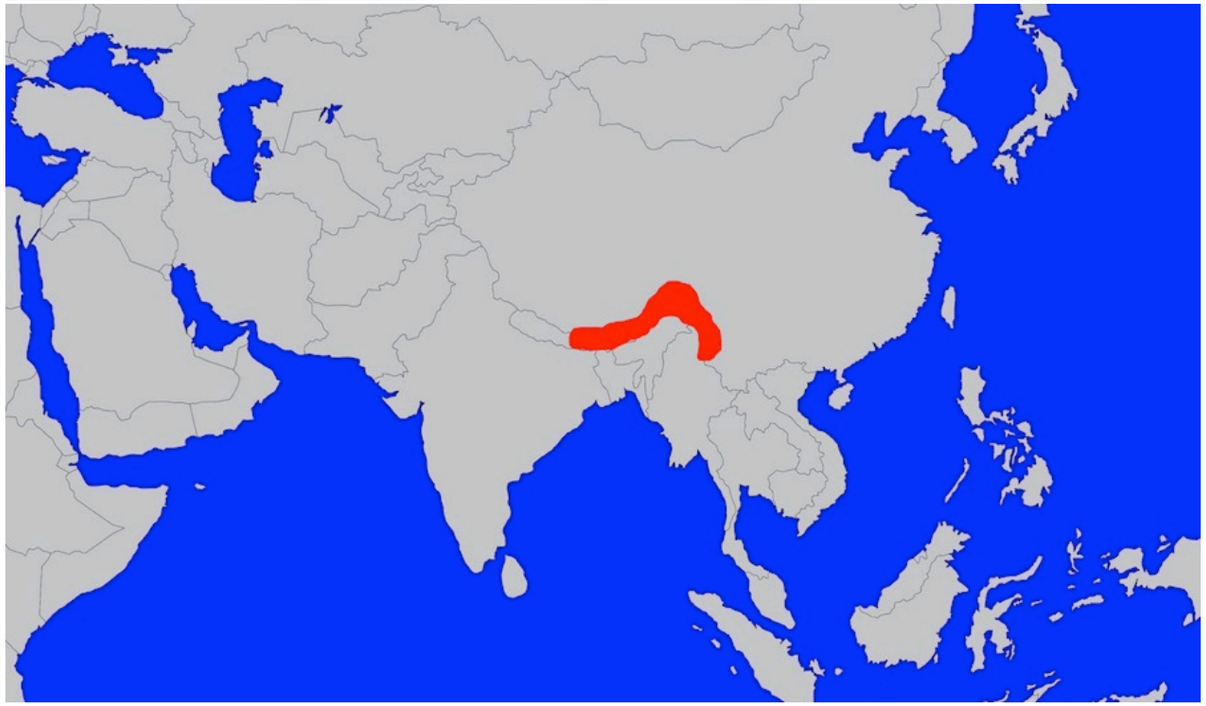
R. genestierianum

R. genestierianum (KW 20682)

Section *Lepipherum* Subsection *Glauca:*



R. hypolepidotum



Taxa:

- *R. brachyanthum*
  - *R. brachyanthum* ssp. *brachyanthum*
  - *R. brachyanthum* ssp. *hypolepidotum*
- *R. charitopes*
- *R. glaucophyllum*
  - *R. glaucophyllum* var. *barunianum*
  - *R. glaucophyllum* var. *glaucophyllum*
  - *R. glaucophyllum* var. *tubiforme*
- *R. luteiflorum*
- *R. pruniflorum*
- *R. shweliense*
- *R. tsangpoense*

Taxonomic Revision:

The placement of Subsection *Glauca* remains as designated
in the 1996 Edinburgh Revision classification, however:

Under the nomenclature rules, the combination *R. glaucophyllum* var. *album* was illegal,
so *R. glaucophyllum* var. *barunianum* is herein proposed in its stead.
The replacement epithet denotes the Barun Khola valley in eastern Nepal
where the variety was first discovered.

It has long been known that *R. charitopes* was a diploid with twenty-six chromosomes,
while *R. tsangpoense* was a tetraploid with fifty-two.
This means their subspecies relationship as defined in the Edinburgh classification
was not sustainable as a reproductive barrier existed between the two.
If one subspecies cannot successfully breed with its closest relative,
then their botanist-defined morphological marriage can no longer continue.
Divorce proceedings initiated herein have therefore returned both taxa to specific status.

Subsection Morphology:

Shrubs, 0.25 to 2m high, compact through upright, but leggy in shade;
young shoots lepidote;
branch and stem bark often coppery, peeling, mostly in long flakes,
revealing a smooth, rarely rough, brownish through mahogany-red underbark.

Leaf bud scales deciduous, rarely persistent.

Leaves evergreen, small, coriaceous, aromatic, often strongly so,
lanceolate through obovate,
1.3 to 9cm long by 0.6 to 4.5cm wide;
upper surface sparsely lepidote;
lower surface markedly glaucous, whitish-, greyish- or bluish-papillose,
with dimorphic scales, distant to almost contiguous or overlapping,
the smaller kind more numerous, milky, pale yellow or golden, and flat,
the larger type long-stalked, funnel-shaped, distant or close, and dark brown.

Leaf anatomy comprises a 2-layered upper epidermis,
with the cells of both layers equal in size except for *R. glaucophyllum,*

which has larger cells in the lower layer;
the cuticle is thin; water tissue is absent;
the lower epidermis cells are markedly prolonged into papillae.
Sclereid cells are usually absent.

Petiole 2-13mm long, moderately through densely lepidote.

Inflorescence terminal, more rarely terminal and axillary in the upper one or two leaves,
umbellate or racemose, 3-10-flowered, rarely 2-flowered;
bud scales usually deciduous.

Rhachis 1-7mm long, usually lepidote, but sometimes without scales,
rarely puberulous.

Pedicel 8-40mm long, slender, moderately through densely lepidote.

Calyx well-developed, 3-11mm, deeply 5-lobed, often glaucous,
the lobe outer surface and margins lepidote, rarely without scales,
the margins usually ciliate.

Corolla 0.8 to 3.2cm long, campanulate or tubular-campanulate,
the 5 lobes spreading,
pink, purple, red, white or yellow,
sometimes with spots,
the outer surface usually lepidote, but sometimes without scales.

Stamens 10, unequal, equal to or shorter than the corolla;
filaments moderately through densely pubescent at the base,
more usually along the lower half, but often from near the apex downwards.

Ovary 5-celled, conoid or ovoid, 2-5mm long, usually densely lepidote.

Style usually short, stout, impressed and sharply deflexed from the base,
rarely long and declinate;
sometimes lepidote at the base and rarely puberulous.

Capsule ovoid through cylindric-ovoid, 4-10mm long, densely lepidote,
fully or partly enclosed by the persistent calyx-lobes.

Seeds elongate, unwinged, each end with minute appendages.



R. luteiflorum

R. glaucophyllum* var. *glaucophyllum

Hardiness:
H3-4.
Flowering Period:
Late April-May.
Distribution in the wild:
E Nepal; S Tibet; Bhutan; Sikkim & Arunachal Pradesh, India.
Growing in woodland clearings and on ridges and rocky slopes,
at elevations of 2,700-3,700m.

Identification:
Shrub, upright and rounded to bushy and spreading, 0.3 to 1.5m high.
Leaves lanceolate through narrowly elliptic to elliptic,
3 to 9cm long by 1 to 2.6cm wide,
apex acute, mucronate, base obtuse to tapering;
upper surface dark brownish-green, shiny, moderately through densely lepidote;
lower surface densely lepidote,
the smaller scales between half and three times their own diameter apart,
pale yellow or golden,
the larger scales widely or closely separated, brown.
Petiole 4-13mm long.
Inflorescence terminal,
more rarely terminal and axillary in the upper one or two leaves,
2-10-flowered;
the buds spherical, reddish-brown,
the scales densely lepidote, with white-ciliate margins.
Rhachis sometimes without scales.
Pedicel 8-27mm long, somewhat slender, rarely longer than the corolla.
Calyx leafy, the lobes 5-11mm long, ovate-lanceolate, the apex markedly acuminate,
their outer surface occasionally with scales only at the base,
their margins with a tuft of hairs inside at the apex.
Corolla 1.4 to 3.2cm long, campanulate,
pink, pinkish-purple or rose.
Stamens 9-21mm long.
Style shorter than the corolla, stout and sharply deflexed at the base.

Seed Collections:

KW 11565	1935	CHM 3114	1988
L&S 1355	1936	C&S 1656	1990
L&S 2764	1936	GR 5023	2003
L&S 3095	1937	TDA 507	2013
L&S 3184	1937	TDA 628	2014
LS&E 12535	1946/1947	TDA 639	2014
LS&H 18887	1949	TDA 703	2014
Stainton 195	1956	TDA 706	2014
Bowes-Lyon 6005	1970	TDA 707	2014
Bowes-Lyon 6020	1970	TDA 715	2014
BLM 315	1971	TDA 955	2016
CHM 2069	1985	TDA 964	2016
KR 1312a	1987	TDA 97?	2016
Bowes-Lyon 7	1987/1989	TDA 982	2016



R. glaucophyllum

R. glaucophyllum* var. *barunianum

Hardiness:
H3-4.
Flowering Period:
Late April-May.
Distribution in the wild:
E Nepal.
Growing on rocky banks in open, well-drained sites at elevations of 3,000-3,200m.

Identification:
as var. *glaucophyllum* except:
Corolla 1.4 to 2cm long, white.

Seed Collections:

BLM 315	1971
Dingle 22	1984



R. barunianum

R. glaucophyllum* var. *tubiforme

Hardiness:
H3-4.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; E Bhutan; W Arunachal Pradesh, India.
Growing in mixed bamboo, conifer and rhododendron woodland, in thickets, on rocks, and on steep slopes, at elevations of 2,750-3,650m.

Identification:
as var. *glaucophyllum* except:
Height to 2m.
Pedicel 8-16mm long, shorter than the corolla.
Calyx without hairs or bristles at the apex.
Corolla tubular-campanulate,
pink, rose-pink, or pink with white lobes,
sometimes with darker spots.
Stamens 16-30mm long.
Style long and straight, declinate, equal to or longer than the corolla.

Seed Collections:

L&S 2856	1936	C&S 1633	1990	KR 9575	2008
LS&H 20613	1949	Kinmouth 86	1990	KR 10455	2012
LS&H 20623	1949	KCSH 0337	2003	KR 10502	2012
LS&H 21282	1949	KR 8156	2005	KR 10521	2012
KR 1459	1987			KR 10526	2012



R. tubiforme

R. glaucum was collected in May of 1849 by Sir Joseph Dalton Hooker, who named, illustrated and described the species in the second part of his tour de force work *The Rhododendrons of Sikkim-Himalaya,* which was published in 1851. Unfortunately, both George Don and Robert Sweet had beaten Hooker to the off on the epithet some twenty years earlier and so in accordance with botanic convention, the name had to be changed, becoming in 1945 - through an Alfred Rehder reworking published in Volume 26 of the *Journal of the Arnold Arboretum* - *R. glaucophyllum*.

Leaf shape, especially the acuminate tips, along with the equally pointed large calyx-lobes that are hairy at the apex, are usually sufficiently distinctive characteristics to separate the species from the other Subsection *Glauca* rhododendrons with a similar corolla colour palette. Additionally, the brownish-green upper leaf surface, spherical reddish-brown flower buds, and conspicuously glaucous and densely scaly leaf lower surface, provide further confirmation of identity.

The species has two varieties:

The first to be discovered, *R. glaucophyllum* var. *tubiforme,* was a Frank Kingdon-Ward find made in May 1935 at Manda La, then part of British India's Assam Province but now within the West Kameng District of Arunachal Pradesh. The plant was first described by John MacQueen Cowan and H. H. Davidian in 1948, raised to specific status by Davidian in 1982, reduced to a subspecies by David Long in 1988, and returned to its original designation in 1997 by Peter and Kenneth Cox, a view maintained by James Cullen in 2005 and followed herein. In the wild and in cultivation, the variety grows somewhat taller than the type species, topping out at around 2m high, but two other features, unique within the subsection, make it distinctive: the tubular-campanulate corollas; and the long, straight style. The latter is usually declinate but without the sharp downward deflexion close to the base exhibited by all the other *Glauca* cohorts.

Kingdon-Ward's type collection of var. *tubiforme,* under the designation KW 11463, was herbarium material for pressing and drying, viable seed not having set so early in the season. Little more than a year later in mid-November 1936 however, Frank Ludlow and George Sherriff did secure mature capsules, these from a population of plants just across the border in eastern Bhutan, and under L&S 2856 introduced the variety into UK cultivation. It has flourished in British gardens ever since, despite the swelling but still closed flower buds having a proclivity to succumb to even the merest hint of frost. Doctor Cullen considered the variety aberrant enough from the other Subsection *Glauca* species to be treated as a stabilised natural hybrid (*Hardy Rhododendron Species,* 2005), the cross possibly with *R. ciliatum,* but this view is not apparently widely shared.

R. glaucophyllum var. *album* was first collected by Len Beer, Roy Lancaster and David Morris during their plant hunting expedition to eastern Nepal in the early 1970s. The exact location of the find was a stream-cut gully in the Barun Khola valley completely filled with a jumbled-up population of *R. ciliatum* and *R. glaucophyllum*. The trek along the valley and indeed the whole expedition, is marvellously reported in Lancaster's book *A Plantsman in Nepal,* published in 1981 (with an even better, photographically enhanced and updated edition appearing in 1995). H. H. Davidian penned the botanic description, which appears in Volume 36, Number 1 of the *Journal of the American Rhododendron Society,* published in January 1982. Yet the chosen epithet that concludes the combination duplicates a Vireya species that was named by Carl Ludwig Blume in 1823, so it is not unique within the genus and must therefore be designated as illegal. *R. glaucophyllum* var. *barunianum,* evincing the Nepalese locale where the species was first encountered, is the formulation adopted herein, as indicated above.

Introduced into UK cultivation at the start of 1972, var. *barunianum* is the only member of Subsection *Glauca* to bear pure white flowers, these slightly smaller than those of the type species. Varietal status is a reflection of the large, uniform population of these plants now known to exist in eastern Nepal. However, it should be noted that the BL&M 315 collection is apparently a mixed gathering, as many of the seedlings display pinkish-purple corollas, so only the Dingle 22 collection of 1984 vintage can be considered to be the real 'pure' McCoy. The late Barry Starling details raising some of the BL&M 315 seedlings in a piece for the RCMG Bulletin 116 of November 2014 (on page 9), and he named one of the specimens germinated for the leader of the expedition after it had won an Award of Merit at the 1977 Chelsea Flower Show.

With its peeling bark, glaucous leaves and bountiful flourish of pretty pink flowers, *R. glaucophyllum* has been a popular garden plant since Hooker first introduced the species in 1850. Close to thirty documented collections have arrived since, most from the 1970's onwards and a number of forms are in cultivation, all proving easy to grow and being free-flowering from quite a young age. The smaller clones grow no higher than 0.7m and make perfect specimens for the rock garden, while those with a more boisterous nature are the eye-catching highlights of a woodland glade.



R. glaucophyllum

R. glaucophyllum (L&S 2764)

R. barunianum

R. tubiforme

R. brachyanthum* ssp. *brachyanthum

Hardiness:
H4-5.
Flowering Period:
May-July.
Distribution in the wild:
Cangshan, Yunnan, China.
Growing in rhododendron thickets, amongst scrub and on open rocky hillsides,
at elevations of 3,000-3,700m.

Identification:
Shrub, broadly upright to spreading, usually densely so,
0.3 to 1.5m high, more rarely to 2m.
Leaves elliptic through narrowly obovate,
2 to 6.5cm long by 1 to 2.6cm wide, rarely to 8cm long by 3.2cm wide,
apex acute to rounded, mucronate,
base obtuse to tapering;
upper surface bright or dark green, shiny, usually without scales;
lower surface sparsely lepidote at first but often completely elepidote at maturity,
the smaller scales when present between 4 and 10 times their own diameter apart,
clear or milky,
the larger scales brown and more widely separated.
Petiole 3-10mm long.
Inflorescence terminal,
or more rarely terminal and axillary in the upper one or two leaves,
3-7-10-flowered;
bud scales sometimes persistent.
Pedicel 14-40mm long, slender, longer than the corolla.
Calyx leafy, the lobes 3-8mm long, apex rounded,
their outer surface occasionally with scales only at the base,
their margins with or without scales or hairs.
Corolla 0.8 to 2cm long, campanulate,
pale through greenish yellow.

Seed Collections:

F 15487	1917/1919	CNW 873	1994
R 11172	1923/1924	CNW 908	1994
F 28266	1930/1931	CNW 1320	1994
SBEC 641	1981	AC 1333	1996
SSNY 363	1992	AC 1371	1996
AC 686	1993	CCHH 8260	1997
CNW 847	1994	C&N 5898	2007

Abbé Jean-Marie Delavay was the first Western plant hunter to encounter and then collect *R. brachyanthum,* discovering a population of plants on Tsang-chan, part of the Cangshan mountain range, close to Tali (now Dali) in Yunnan Province, China, on June 20th, 1884. Herbarium specimens were gathered and sent to Paris under Delavay No. 159 for Adrien Franchet to describe in Volume 33 of the *Bulletin de la Société Botanique de France,* published in 1886. H. H. Davidian cites June 1887 as the collection date in *The Rhododendron Species,* Volume 1, 1982, page 141/142, which is incorrect and does not reflect the records of the Muséum National d'Histoire Naturelle, the prime institution that holds Delavay's herbarium sheets and notes.

Field study has shown the species to have a very restricted endemic distribution that is confined to the peaks of the Cangshan. Its closest relative is *R. hypolepidotum,* which is native to southeast Tibet, northwestern Yunnan and northeastern Myanmar, with the pair now delineated as subspecies under the first taxon to be described. Botanically, these differ only in the lepidote nature of the lower leaf surface: the ssp. *brachyanthum* scales are at least twice their own diameter apart, though they will usually be found even more widely spaced, are somewhat deciduous, and can be lost entirely by the time the leaf matures; ssp. *hypolepidotum* on the other hand, retains all its scales into maturity, with these set touching or no more than one-and-a-half times their own diameter apart. Horticulturally however, to all intents and purposes, they are identical twins.

Flower colour quickly separates both subspecies from all the other members of Subsection *Glauca* apart from *R. luteiflorum*. Here, pedicel length and flowering time are the key dividers: shorter than the corolla and no more than 1.5cm long, with a bloom time of April through May, and *R. luteiflorum* will be to hand; always longer, often hitting the 4cm mark, with the flowers rarely opening before June and often extending into July, one of the two subspecies. The corolla shape of most forms of *R. brachyanthum* - resembling tiny yellow thimbles - is also distinctive.

George Forrest takes credit for introducing ssp. *brachyanthum* into UK cultivation: possibly under F 4153, gathered on his 1904-1906 trip, but then entrusted into the care of A. K. Bulley and Bees Seeds Ltd; definitely, from a collection made on his 1917-1919 expedition. The species proved fully hardy in its new home, displaying vigorous growth and a free-flowering nature, though too much shade will result in a leggy, open plant, instead of the dense spreading mound more usually seen. But note: some aficionados find the scent of the strongly aromatic foliage disagreeable.

Mature specimens of ssp. *brachyanthum,* whilst not a rarity in British gardens, are more usually domiciled within the major botanic collections.



R. brachyanthum (CNW 847)



R. brachyanthum (CNW 847)



R. brachyanthum (AC 1333)



R. brachyanthum (AC 1333)

R. brachyanthum* ssp. *hypolepidotum

Hardiness:
H4-5.
Flowering Period:
May-July.
Distribution in the wild:
SE Tibet; NW Yunnan, China; NE Myanmar.
Growing in forests and open situations amongst scrub, boulders and alpine meadow,
on cliffs and steep slopes, at elevations of 2,700-4,400m.

Identification:
Shrub, broadly upright to spreading, usually densely so,
0.3 to 1.5m high, more rarely to 2m.
Leaves elliptic through narrowly obovate,
2 to 6.5cm long by 1 to 2.6cm wide, rarely to 8cm long by 3.2cm wide,
apex acute to rounded, mucronate,
base obtuse to tapering;
upper surface bright or dark green, shiny, usually without scales;
lower surface densely lepidote,
the smaller scales touching or up to one-and-a-half times their own diameter apart,
clear or milky,
the larger scales brown and more widely separated.
Petiole 3-10mm long.
Inflorescence terminal,
or more rarely terminal and axillary in the upper one or two leaves,
3-7-10-flowered;
bud scales sometimes persistent.
Pedicel 14-40mm long, slender, longer than the corolla.
Calyx leafy, the lobes 3-8mm long, apex rounded,
their outer surface occasionally with scales only at the base,
their margins with or without scales or hairs.
Corolla 0.8 to 2cm long, campanulate,
pale through greenish yellow.

Seed Collections:

F 13302	1914	R 10919	1923/1924	Yu 20052	1937
F 13550	1914	R 10991	1923/1924	Yu 20796	1937
F 14052	1917/1919	F 25575	1924/1925	Yu 20916	1937
KW 3302	1919	F 25843	1924/1925	LS&T 6576	1938
F 19541	1921/1922	F 26473	1924/1925	R 12	1948/1949
F 19872	1921/1922	KW 7046	1926	R 93	1948/1949
F 20835	1921/1922	KW 9704	1931	Cox 6051	1992
F 22723	1921/1922	R 22184	1932	DGEY 036	2001
KW 5437	1922	R 23553	1932	DGEY 176	2001
KW 5481	1922	Yu 19315	1937	C&N 5927	2007
R 10917	1923/1924	Yu 19744	1937	JN 12136	2012

Although it was another French priest working for the Société des Missions Étrangères de Paris who discovered *R. hypolepidotum* - Jean-Andre Soulié, on July 19th, 1895 - the botanic description was penned, like that for its sister species, by Adrien Franchet, this time writing in Volume 12 of the *Journal de Botanique,* which was published in 1898, and he gave the find varietal status. Mystifyingly, here too, there is a discrepancy with the dates, the Soulié gathering correctly detailed by H. H. Davidian as taking place on Mount Sela, near Tsekou, in the southeast of Tibet, but during July of 1903, five years after it was described in 1898 (*The Rhododendron Species,* Volume 1, 1982, page 142). One can only suppose H. H. was having an off day…

The distribution of this *R. brachyanthum* subspecies is far less restricted than its rarer sister, with plant populations found from northeast Upper Myanmar in the east, crossing the Chinese border into northwest Yunnan, and concluding their westward march in the southeast of once independent Tibet. The altitudinal range is also wider, with ssp. *hypolepidotum* growing on sites across 1700m of mountainside, from as low as 2,700m up to 4,400m, while the ssp. *brachyanthum* populations on the Cangshan Mountains will only be found between the 3,000 and 3,700m contours.

Botanic differences between the two subspecies, as well as with the other Subsection *Glauca* plants, were set out in the *R. brachyanthum* entry and do not need restating here, the cultivation requirements also proving identical. George Forrest was again the first plant hunter to introduce the species into UK gardens, officially securing seed towards the end of his 1912-1914 expedition and possibly doing so on his 1904-1906 trip, though only A. K. Bulley and his talented team of employees at Bees Seeds Ltd know if the earlier F 692 field number covered just herbarium material.



R. hypolepidotum (KW 7046)

R. hypolepidotum (KW 7046)

R. shweliense

Hardiness:
H3-4.
Flowering Period:
April-June.
Distribution in the wild:
SW Yunnan, China.
Growing on open cliffs, rocky and grassy slopes, at elevations of 3,000-3,400m.

Identification:
Small shrub, compact and rounded, 0.3 to 0.8m high.
Leaves narrowly elliptic through obovate,
1.3 to 4.7cm long by 0.6 to 1.8cm wide,
apex obtuse or rounded, mucronate,
base obtuse to tapering;
upper surface dark or pale green, matt, lepidote or not;
lower surface variably lepidote,
the smaller scales between half and four times their own diameter apart, pale yellow,
the larger scales brown and widely or closely separated.
Petiole 3-10mm long.
Inflorescence 2-4-flowered.
Pedicel 15-23mm long, slender, longer than the corolla.
Calyx lobes 4-7mm long.
Corolla 1.1 to 1.5cm long, campanulate,
pale pink tinged yellow,
the upper three lobes spotted pink.
Style puberulent throughout.

Seed Collections:

F 24154	1924

R. shweliense has only been found twice in the wild, both times by George Forrest, the premier encounter taking place in June 1919, and the second in May 1924, with seed secured just once on the earlier-in-the-season rendezvous. The plants were discovered on the mountains of the Shweli-Salween Divide in western Yunnan, growing on rocky slopes and cliffs, and were described jointly by Forrest and Sir Isaac Bayley Balfour in Volume 13 of *Notes from the Royal Botanic Garden, Edinburgh,* published in 1922.

There is a concern that plants in cultivation under F 24154 do not match with the original botanic description or the type herbarium specimens, even though these are acknowledged to be poor. Opinions are split three ways: they could be natural hybrids between *R. brachyanthum* and *R. lepidotum;* they could be either forms or hybrids of *R. glaucophyllum;* or they could be the true species. The isolated nature of the distribution, somewhat distant from the other Subsection *Glauca* species, is also raising hackles. So, while speciation could certainly have occurred, until the plants are re-discovered on the ground, any questions related to their status or lineage must be left hanging, unless DNA sequencing comes to the rescue. The identification points given opposite are based on the cultivated plants and so may not reflect the characteristics of the true species.

The puberulent style is clearly a unique feature within the subsection, as are the pink flushed yellow flowers and non-shiny leaves. The plants appear most closely related to *R. brachyanthum* ssp. *hypolepidotum,* but have shorter pedicels, and flowers that are moderately through densely lepidote on the outside, with long-established and fully mature specimens rarely exceeding 0.75m in height.

R. shweliense is easy to grow and free-flowering from quite a young age. To do well along the east coast however, it requires a sheltered though sunny aspect. The species is very rare in UK cultivation and will only ever be found for sale at one of the specialist rhododendron nurseries, and then, less than infrequently.

The two plants photographed here - growing at Benmore Botanic Garden (left, top and bottom) and Wakehurst Place (right, top and bottom) - although bearing a Forrest 24154 label and with a provenance apparently traceable all the way back to that 1924 collection, do not - as stated - match the botanic description, nor the type herbarium specimens. Their defining characteristics moreover, lend additional credence to James Cullen's stated view that the vast majority of plants cultivated under this seed number are natural hybrids. The Wakehurst plant label, although with F 24154 etched into its surface, deems the attached subject *R. zaleucum,* which clearly, it is not, though it might well be another entry to pop on the potential parentage listing.


R. shweliense (F 24154)


R. shweliense (F 24154)


R. shweliense (F 24154)


R. shweliense (F 24154)

R. charitopes

R. charitopes
Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
NW Yunnan, China; NE Upper Myanmar.
Growing in thickets and scrub along side valleys, on cliffs and rocky slopes,
and beside streams, at elevations of 3,000-4,300m.

Identification:
Small shrub, compact and rounded, usually densely so, 0.25 to 1.5m high.
Leaf bud scales sometimes persistent.
Leaves elliptic through obovate,
2.6 to 7cm long by 1.3 to 4.5cm wide,
apex bluntly rounded through retuse, mucronate,
the base tapering;
upper surface dark green, somewhat shiny, sparsely lepidote or without scales;
lower surface variably lepidote,
the smaller scales half through three times their own diameter apart, pale yellow,
the larger scales brown and more widely separated,
the veins distinct.
Petiole 4-6mm long.
Inflorescence 2-6-flowered;
the bud scales sometimes persistent.
Rhachis sometimes puberulous.
Pedicel 18-30mm long, somewhat slender.
Calyx leafy, the ovate lobes 6-10mm long with a rounded apex,
their outer surface occasionally with scales only at the base.
Corolla 1.5 to 2.6cm long, campanulate, broadly campanulate or near saucer-shaped,
apple-blossom pink fading to white, usually with crimson flecks,
or rose through deep rose-crimson, without spots,
the outer surface sometimes sparsely hairy.

Seed Collections:

F 25570	1924	LS&T 5848	1938
F 25789	1924	LS&E 15096	1946/1947
F 25808	1924	AC 3243	1997
F 25581	1924	AC 3272	1997
LS&T 3751	1938	AC 3316	1997
LS&T 3752	1938	AC 3320	1997
LS&T 4916	1938	CCHH 8199	1997
LS&T 5198a	1938	CCHH 8206	1997
LS&T 5237	1938	BE 09-05	2009
LS&T 5565	1938	BE 09-10	2009
LS&T 5769	1938	BE 09-30	2009


R. charitopes (F 25570)


R. charitopes (F 25581)



R. charitopes

R. charitopes was discovered by Reginald Farrer in June 1920 on the approach to the Shing Hong Pass in what was then northeast Upper Burma. Seed was unavailable, so only dried herbarium material was gathered under the collection number 1627. Regrettably, the plant hunter would die in the field later that same year, either from diphtheria or alcohol poisoning (depending on which account you read), before he could return to the site and secure mature capsules, but his field notes and specimens were later used by Sir Isaac Bayley Balfour when writing in *Notes from the Royal Botanic Garden, Edinburgh,* Volume 13, to produce a species botanic description that was published in 1922.

The 1980 Subgenus *Rhododendron* revision, published in *Notes,* Volume 39, Number 1, maintained the advance warning given in the first *Preliminary Synopsis* paper of 1978 (*Notes,* Volume 36), and associated *R. charitopes* with *R. tsangpoense* at subspecies ranking even though their distributions did not overlap - the latter is found in southeast Tibet, while the former ranges across northeast Upper Myanmar as indicated, as well as northwest Yunnan - but James Cullen noted that 'they approach very closely and there is no very clear morphological separation between them', which there is not. However, as indicated in the 1950-published report *Chromosome Numbers In Species Of Rhododendron,* written by E. K. Janaki Amal, I. C. Enoch and M. Bridgwater, for *The Rhododendron Year Book,* Number 5, *R. charitopes* is a diploid with twenty-six chromosomes, while *R. tsangpoense* is a tetraploid with fifty-two. They are therefore genetically isolated from each other and cannot successfully breed, which rather rules out a subspecies alliance and requires their specific status to be restored, a measure adopted herein.

But as Doctor Cullen correctly states, there are no instantly apparent characteristics to separate the two ex-subspecies, although *R. charitopes* usually has larger calyx lobes, these between 6 and 10mm long, bears pinkish flowers, and its abaxial leaf surface scales tend to be half to three times their own diameter apart. On *R. tsangpoense* the calyx lobes are smaller, just 3-6mm long, the corollas pinkish through purple, and the scales between one and six times their own diameter apart. Additionally, following a deeper dive, the leaf and flower bud scales of *R. charitopes* sometimes persist, while the larger, brown-coloured scales on the abaxial leaf surface of *R. tsangpoense* will often be found quite close to one another. But note: these morphological features are not consistently reliable enough for a positive identification if used on their own, only in combination.

Corolla colour quickly separates *R. charitopes* from *R. luteiflorum* and both subspecies of *R. brachyanthum,* the non-contiguous scales from *R. pruniflorum,* and the rounded leaf apex from the pointed-tipped foliage of *R. glaucophyllum*. Stature can be used to key the taxon from *R. shweliense,* a 'species' that rarely exceeds more than 0.7m in height even when mature. The latter's matt upper leaf surface and sometimes puberulous style provide additional assurances.

Viable capsules from plants growing on the mountains dividing the Salween and Kiu-Chiang rivers in north-western Yunnan sourced the first seed to reach British gardens, the gathering made by George Forrest in July 1924, with the germinated progeny reaching flowering size and opening their first blooms in April 1929. Those developing buds are sensitive to cold, so a site able to offer protection from Spring hoar frosts - when ground heat is lost to a clear, open sky - is essential. For gardens bordering the North Sea and inland, a sunny spot is also a necessity to fully ripen the new shoots, as is protection from the chill winter winds coming off the Continent or blowing in from Iceland and points north. Clones with apple-blossom pink, saucer-shaped flowers, are the most desired, and a well-grown mature specimen will be awash with bloom season after season, but some forms have a proclivity to flower in the autumn, diminishing the impact of the Spring display.

For once, the Latin epithet - 'of graceful aspect' - is entirely appropriate.

R. charitopes

R. tsangpoense

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
S Tibet.
Growing along valleys on steep grassy slopes and amongst rocks and boulders,
at elevations of 2,400-4,100m.

Identification:
Small shrub, compact and rounded, usually densely so, 0.25 to 1.5m high.
Leaves elliptic through obovate,
2.6 to 7cm long by 1.3 to 4.5cm wide,
apex bluntly rounded through retuse, mucronate,
the base tapering;
upper surface dark green, shiny, very sparsely lepidote or without scales;
lower surface variably lepidote,
the smaller scales one through six,
or sometimes up to ten times their own diameter apart, pale yellow,
the larger scales brown and widely or closely separated,
the veins clearly marked.
Petiole 2-6mm long.
Inflorescence 2-6-flowered.
Pedicel 13-30mm long, slender, as long or longer than the corolla.
Calyx ovate, the lobes 3-6mm long with a rounded apex,
their outer surface occasionally with scales only at the base or without any scales.
Corolla 1.3 to 2.6cm long, broadly campanulate,
pink through purplish-rose,
usually with crimson flecks.

Seed Collections:

KW 5843	1924	CC 7565	1996
KW 5844	1924	AC 3599	1997
L&S 1881	1936	AC 3631	1997
LS&T 3664	1938	AC 3641	1997
LS&T 3778	1938	KR 5713	1998
LS&E 15107	1946/1947	TARRVS 171	2002
CV 9515	1995	AC 5366	2004
KR 3521	1995	AC 5590	2004
KR 3523	1995	KR 5655	2004

R. tsangpoense was a Frank Kingdon-Ward find that was discovered some four years after its erstwhile stablemate:

June 1924 found the plant hunter botanising on the hills leading to the Doshong La Pass in southeastern Tibet - the ground explored as part of the expedition's journey along the mythical Tsangpo Gorge, an area that even today remains relatively unknown - and it was here that two forms of the species were found and collected. On his return to England, Kingdon-Ward described *R. tsangpoense* in an article for Volume 86, Series III, of *The Gardeners' Chronicle,* which was published in 1929.

Prior to James Cullen's revision of Subgenus *Rhododendron, R. tsangpoense* was regarded as most closely associated with *R. pruniflorum,* for it mirrored the leaf shape and size, and the campanulate corolla of that species. The only substantial difference between the pair was in the density of the abaxial leaf surface scales and their placement: the *R. tsangpoense* covering being sparse to moderate, variably distant but never touching; that of *R. pruniflorum* dense, overlapping, contiguous or up to half or their own diameter apart. Equally, while current on-the-ground exploration has found no overlap in the populations of *R. tsangpoense* and *R. charitopes,* merging does occur in southeast Tibet between the former and *R. pruniflorum*. But unlike each and every other member of Subsection *Glauca, R. tsangpoense* is a tetraploid with fifty-two chromosomes; the rest, diploids with twenty-six. Future examination of the DNA strands will therefore indicate whether the four sets of thirteen found in *R. tsangpoense* are the diploid copies of two parents or one - the result, respectively, of Allopolyploidy or Autopolyploidy - and so offer conclusive evidence when sequenced against *R. charitopes* and *R. pruniflorum* on the association between all three of these morphologically close individuals.

As indicated above, the subspecies ranking of *R. tsangpoense* under *R. charitopes* is clearly untenable as a diploid cannot successfully breed with a tetraploid, the few 'viable' seeds - three or four in a capsule instead of hundreds - likely to be unstable or sterile triploids. That ranking is therefore revoked herein, with specific status restored.

R. tsangpoense was introduced into British gardens under KW 5844 during 1924 and its cultivation requirements and hardiness mirror those for *R. charitopes,* especially with regard to placement and protection from late spring frosts. The pinkish-purple flowers, while delightful in their own right, are usually outshone by those of both putative parents.

KW 5843 - a collection made immediately prior to that of the *R. tsangpoense* type specimen - was originally named *R. curvistylum* and described by John Hutchinson and Kingdon-Ward in *Plant Hunting on the Edge of the World,* 1930. It was then reassessed by H. H. Davidian and John MacQueen Cowan in *The Rhododendron Year Book 1948,* with Edinburgh's botanic duo reducing its status to a variety of *R. tsangpoense.* Synonymy was imposed in the Cullen revision (hence the field number's inclusion in the table opposite), however, today's experts regard plants grown from this gathering as natural hybrid crosses with *R. campylogynum,* which was collected under KW 5842. These pollinator-produced plants have only been found on the Doshong La, and the Kingdon-Ward seed lot is their only documented introduction into UK gardens, which, if the given parentage is genetically accurate - *tsangpoense* x *campylogynum* - may prove to be one of those earlier mentioned triploids, complete with thirty-nine chromosomes, should someone ever venture to count those little maggots under a microscope…

R. tsangpoense

R. tsangpoense (KW 5844)

R. tsangpoense (KR 5713)



R. pruniflorum (KW 7038)

R. pruniflorum

Hardiness:
H4-5.
Flowering Period:
July-August.
Distribution in the wild:
SE Tibet; Arunachal Pradesh, India; NE Upper Myanmar.
Growing in conifer forest, rhododendron thickets and on rocky hillsides,
at elevations of 2,400-4,000m.

Identification:
Shrub, bushy, rounded or spreading, 0.3 to 1.2m high.
Leaves oblong through obovate to narrowly obovate,
1.5 to 5cm long by 1 to 2.6cm wide,
apex obtuse or rounded, mucronate,
the base obtuse to tapering;
upper surface dark or olive-green, shiny, usually with very few scales;
lower surface densely lepidote,
the smaller scales slightly overlapping, contiguous,
or between half and (more rarely) their own diameter apart,
pale yellow, clouded or milky,
the larger scales brown and widely or closely separated.
Petiole 2-8mm long.
Inflorescence terminal,
or more rarely terminal and axillary in the upper one or two leaves,
3-7-flowered;
the buds spherical-ovoid, slightly pointed, reddish-brown,
the bud scales lepidote along the middle, their margins white-ciliate.
Pedicel 13-35mm long, slender, equal to (rarely) or longer than the corolla.
Calyx lobes 3-5mm long, apex rounded,
their outer surface occasionally with scales only at the base.
Corolla 1 to 1.6cm long, campanulate,
dull crimson, cerise, plum- through lavender-purple or rarely pink.

Seed Collections:

KW 6924	1926	KW 9735	1931	AC 3596	1997
KW 7038	1926	KW 10500	1933	AC 4583	2000
KW 7045	1926	L&S 1647	1936	AC 4585	2000
KW 7188	1926	KW 13361	1937	AC 4601	2000
KW 7550	1926	LS&E 13045	1946/1947	AC 4646	2000
KW 8257	1927/1928	LS&E 13113	1946/1947	AC 4661	2000
KW 8415	1927/1928	KW 19620	1950	KR 8465	2006

R. pruniflorum was found at Seinghku Wang in northeastern Upper Myanmar by Frank Kingdon-Ward during June 1926. It was described by John Hutchinson in *The Species of Rhododendron,* published in 1930 by the Rhododendron Society.

The taxon is unique within Subsection *Glauca* in having overlapping scales on the lower leaf surface. This characteristic is most closely matched by *R. brachyanthum* ssp. *hypolepidotum,* but here, when closest together, the smaller-sized scales will only just be touching and when distant, they are generally more widely spaced than those found on the *R. pruniflorum* leaf. The yellow as opposed to purple corolla colour will of course instantly correct any mistake made in assessing such lepidote neighbourliness.

More likely is a degree of confusion with *R. tsangpoense,* both in and out of flower, for at one point in the classification travails, *R. pruniflorum* was designated a variety of *R. tsangpoense.* The chromosome counts make this impossible, of course, at least in today's more scientifically advanced and genetically aware world, with *R. pruniflorum* boasting twenty-six and *R. tsangpoense* fifty-two.

That apart, corolla colour and shape can basically be too much alike for a positive identification to be made, as can leaf shape and size, so again, reliance is placed on the scales. On the *R. pruniflorum* leaf underside the density of the lepidote covering is high, with any scales not found in contact never more than their own diameter apart, usually much less. In contrast, the scales of *R. tsangpoense* never touch and are separated from each other by a distance equal to between 1 and 6 times their own diameter or even more, this feature precluding a dense covering.

Kingdon-Ward's 1926 collection was also the first introduction of *R. pruniflorum* into British gardens, the plant hunter and explorer securing a total of ten seed lots over the course of six expeditions. Frank Ludlow and George Sherriff contributed a batch from Tibet in 1936, and two more were returned on an expedition with Henry Elliott in the late 1940s, but then politics and armed conflict got in the way until 1997, when Alan Clark found the species growing in sparse woodland above Showa La. Three years later in 2000, he found the taxon again, this time at Tra La, above Lunang, also in Tibet, after which, Keith Rushforth discovered a brand new population of plants resident in the Delei Valley of northeast India's Arunachal Pradesh during 2006.

Cultivation of *R. pruniflorum* in UK gardens is straightforward, with specimens fully hardy, fairly vigorous and free-flowering.



R. pruniflorum (KW 7188)

R. pruniflorum (KW 10500)

R. pruniflorum



R. luteiflorum (KW 21556)

R. luteiflorum

Hardiness:
H3-4.
Flowering Period:
April-May.
Distribution in the wild:
NW Yunnan, China; NE Upper Myanmar.
Growing in dense thickets along exposed ridges at elevations of 2,900-3,300m.

Identification:
Shrub, rounded-spreading through stiffly-upright, 0.6 to 1.5m high;
bark smooth, brown and flaking.
Leaves lanceolate through elliptic,
3.5 to 9cm long by 1.3 to 2.6cm wide,
apex rounded or obtuse, mucronate,
the base obtuse to tapering, sometimes slightly decurrent on the petiole;
upper surface dark brownish-green, shiny, lepidote or not;
lower surface sparsely lepidote,
the smaller scales between 3 and 8 times their own diameter apart, pale yellow or golden,
the larger scales brown and widely separated.
Petiole 7-12mm long, sometimes slightly winged or ridged along the margins.
Inflorescence 3-6-flowered.
Pedicel 8-15mm long, shorter than the corolla.
Calyx leafy, the lobes 6-8mm long, with an obtuse apex,
their margins without a tuft of hairs at the apex.
Corolla 2 to 2.2cm long, campanulate,
bright yellow.
Style somewhat long, yet stout and sharply deflexed at the base,
shorter than the corolla.

Seed Collections:

KW 20845	1953
KW 21040	1953
KW 21556	1953

The most beautiful rhododendron resident in Subsection *Glauca* was the penultimate one to be discovered, although it was first considered and described as a variety of *R. glaucophyllum.* H. H. Davidian amended that view as cultivated plants matured and began to flower in British gardens and after reassessing the available dried herbarium material, in 1978, he raised *R. luteiflorum* to specific status in Volume 32, Number 2, of the *Quarterly Bulletin of the American Rhododendron Society*. Frank Kingdon-Ward was the plant hunter who had first encountered the species almost a quarter of a century earlier in June 1953 and he made a total of three separate seed collections before concluding what would be his last but one expedition. The plant populations were found growing at sites in the northern half of The Triangle, an area between two north-south flowing rivers, the Mali Hka and N'Mai Hka, in Myanmar's Kachin State.

Out-of-flower, the resemblance to *R. glaucophyllum* is very close, with specimens of *R. luteiflorum* differing only in their rounded, rather than pointed leaf tips, the sparse, not dense, covering of small yellow scales on the abaxial leaf surface, and on some plants, a slight ridge or wing along the petiole margins. When available for examination, the calyx lobe morphology follows that of the leaf tips in that they are obtuse rather than acute. They also lack a tuft of hairs at that apex. The bright yellow flowers, held on short pedicels, which appear from early April onwards, should eliminate any need for further speculation.

R. luteiflorum was introduced on Kingdon-Ward's return to the UK at the end of 1953 and has proved a little more difficult to grow than its other Subsection *Glauca* cohorts. The species is not as hardy, requiring a well-protected site when grown along the east coast and better shelter still if planted inland, especially as its developing flower buds are even more prone to frost or severe winter cold than its close relatives. Rhodophiles should accept the fact that basically, the species is temperamental, and averse to even the most paltry application of fertiliser (especially out of a box). Yet if happy where it has been stuck in the ground, *R. luteiflorum* will mature into what many considered to be the finest yellow-flowered small rhododendron in cultivation.

The political upheavals in Myanmar are well documented, less so the internecine conflict between Naypyidaw's Generals and the Kachin Independence Army, but both have effectively meant protection and preservation of the unique biodiversity found in the upper northeast of the country has been ignored for the last fifty years and regrettably, continues to be so. Until recently, hardly any mention at all could be found in the Western news media of the environmental desecration the state-sanctioned mining and indiscriminate industrial logging operations have wrought on The Triangle and Kachin State. The chances therefore, that a modern day plant hunter could retrace Frank Kingdon-Ward's steps and find more than a handful of the plants he collected, which were unique to Myanmar, is remote. For they are likely extinct, unless their range included territory inaccessible to humanity or his machinery.

Thankfully, *R. luteiflorum* seems to have escaped such a demise, as previously unknown plant populations on the Yunnan side of the border were found in 2004 and 2006 by teams carrying out the Gaoligongshan Biotic Survey, though only herbarium material was despatched to the UK's botanic institutions. In 2018, capsules were finally gathered by Rudi Perriard, a member of the Danish Rhododendron Society, from a population of plants established at 3,800m on Biluo Xue Shan, with the contents distributed via the ARS Seed Exchange in 2019. Hopefully, the germinated offspring will prove to be the real McCoy.



R. luteiflorum (KW 21040)



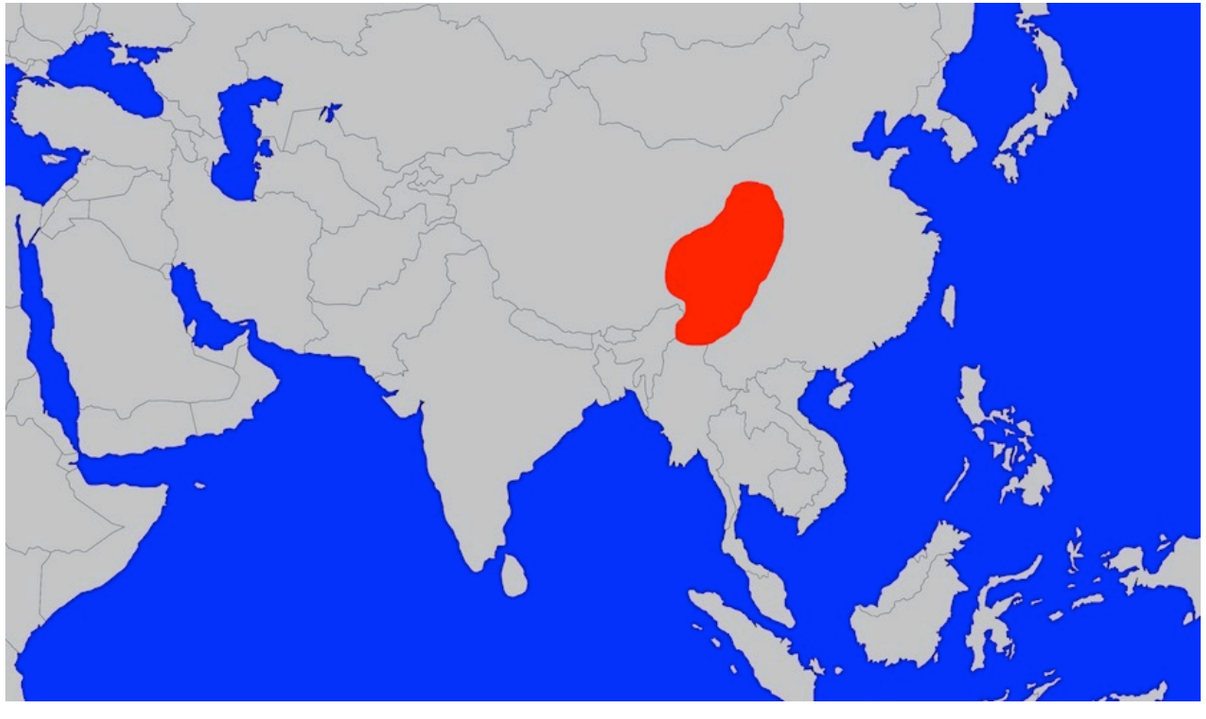
R. luteiflorum (KW 21040)

R. luteiflorum (KW 21556)

R. luteiflorum (KW 21040)

Section *Lepipherum* Subsection *Heliolepida:*


R. brevistylum



Taxa:

R. bracteatum
R. brevistylum
R. heliolepis
R. pholidotum
R. rubiginosum

Taxonomic Revision:

The placement of Subsection *Heliolepida* remains as designated in the 1996 Edinburgh Revision classification, but polyploidy issues have resulted in changes to the status and synonymy of *R. heliolepis*.

Subsection Morphology:

Shrubs or small trees, compact through broadly upright, 1 to 10m high;
young shoots usually densely lepidote, the scales often purple or reddish, glabrous or pubescent;
bark brown or greyish brown, striate.

Leaf bud scales persistent or deciduous.

Leaves evergreen, thinly coriaceous, often very aromatic when crushed,
lanceolate through elliptic to ovate and oblong,
1.3 to 12.5cm long by 0.9 to 4.6cm wide,
apex acute, acuminate or obtuse, and apiculate or mucronate,
base tapered, broadly cuneate, obtuse or rounded;
upper surface usually lepidote, otherwise glabrous or pubescent along the midrib;
lower surface usually densely lepidote, the scales variable,
large (to 0.25mm) or medium-sized, unequal or all similar,
yellow to brown, broadly-rimmed, overlapping, contiguous or distant,
1-4 or more rarely 5-6 times their own diameter apart.

Leaf anatomy comprises a 1- or 2-layered upper epidermis (*R. rubiginosum*),
with the cells in the top layer being smaller than those in the layer below;
the cuticle is around half to as thick as the top cells are deep; water tissue is absent;
the lower epidermis cells are usually not prolonged into papillae.
Sclereid cells are absent, or only sparsely present.

Petiole 3-18mm long, variably lepidote.

Inflorescence terminal, rarely terminal and axillary (in the uppermost 1-3 leaves),
umbellate, 3-10-flowered;
the bud scales deciduous.

Rhachis 1-15mm long, variably lepidote, sometimes puberulent.

Pedicel 4-30mm long, variably lepidote, sometimes puberulent.

Calyx usually disc-like and undeveloped,
but sometimes weakly 5-lobed,
these ovate or triangular, rarely oblong, and 0.5-4mm long,
their outer surface and margins variably lepidote,
the margins often ciliate.

Corolla 1.2 to 4.2cm long, 5-lobed,
funnel-shaped, sometimes openly so, funnel-campanulate or campanulate,
or tubular-campanulate,
often lobed to the middle,
white, pink, mauve, lavender to purple, or pale red,
with or without either or both a crimson-purple basal blotch and darker crimson spots,
the outer surface conspicuously lepidote, otherwise glabrous or sometimes pubescent,
the inner surface usually densely pubescent at the base of the tube.

Stamens 10, unequal;
filaments pubescent towards the base or glabrous.

Ovary oblong or conoid, 3-5mm long, 5-6-locular,
densely lepidote, often sparsely puberulent towards the apex.

Style slender, straight and shorter than the stamens,
or declinate and longer than them,
without scales,
glabrous or pubescent at the base,
impressed into a depression at the ovary apex.

Capsule cylindric, 7-18mm long, straight, occasionally slightly curved,
densely lepidote, occasionally pubescent at the apex.

Seeds elongate, unwinged, with or without appendages.



R. heliolepis



R. rubiginosum (F 21348)

R. rubiginosum (F10057)

R. rubiginosum
Hardiness:
H5.
Flowering Period:
March-May.
Distribution in the wild:
SE Tibet; SE & SW Sichuan, & Yunnan, China; NE Upper Myanmar.
Growing in mixed, deciduous, bamboo or rhododendron forest,
in open glades within or at the margins of conifer forests,
and in thickets on mountain slopes,
at elevations of 2,300-4,300m.

Identification:
Shrub or small tree,
rounded, spreading and bushy, or broadly erect, 1 to 10m high;
branchlets stout.
Leaf bud scales deciduous.
Leaves somewhat aromatic,
lanceolate through elliptic-lanceolate to elliptic or sometimes oblong-ovate,
3 to 12.5cm long by 1.2 to 4.5cm wide,
apex acute through acuminate,
base cuneate, sometimes broadly so, obtuse, tapered or rounded;
upper surface pale, olive- or dark green, shiny or matt,
densely lepidote at first, but usually caducous;
lower surface densely lepidote, the scales unequal,
medium to large, thin or gland-like, flaky,
pale or dark brown, greenish-brown or rusty-brown,
overlapping, touching or almost contiguous,
with the larger scales darker coloured,
closely or sometimes widely scattered, or present only alongside the midrib,
or sometimes absent.
Inflorescence terminal,
or sometimes terminal and axillary in the uppermost 1-3 leaves,
3-10-flowered.
Corolla 1.5 to 4.2cm long,
widely or openly funnel-shaped through funnel-campanulate,
pink through mauve-pink,
intense bluish-purple through rose to rose-red or pale red,
rarely white flushed purplish-pink,
with or without a crimson, brown or purple basal blotch,
but spotted crimson or reddish-purple.
Style declinate, longer than the stamens.
Capsule sometimes slightly curved.

Seed Collections:

F 5877	1910	R 18189	1929	SBEC 130	1981	C&H 7041	1995
F 10057	1912/1914	R 18384	1929	CHM 2635	1986	FED 62	1995
F 10073	1912/1914	F 28236	1930/1931	SBLE 83	1987	AC 1347	1996
F 10074	1912/1914	R 23514	1932	SBLE 200	1987	AC 1376	1996
F 14372	1917/1919	R 25329	1932	SBLE 317	1987	AC 1618	1996
F 14452	1917/1919	R 23590	1932	CLD 129	1990	AC 1626	1996
F 15219	1917/1919	R 24283	1932	CLD 512	1990	AC 1662	1996
F 15761 *	1917/1919	R 24599	1932	CLD 516	1990	AC 1663	1996
F 16597	1917/1919	R 25247	1932	CLD 719	1990	AC 1685	1996
F 17464	1917/1919	R 25326	1932	CEE 313	1991	AC 1686	1996
F 17483	1917/1919	R 25372	1932	SICH 960	1992	AC 1712	1996
F 17735	1917/1919	R 25438	1932	SICH 1014	1992	AC 1878	1996
F 17920	1917/1919	Yu 7933	1937	SICH 1053	1992	AC 1884	1996
F 18933	1917/1919	Yu 10961 *	1937	SICH 1185	1992	AC 1903	1996
F 19015	1917/1919	Yu 13886	1937	AC 685	1993	AC 1928	1996
Farrer 875 *	1919	Yu 14436	1937	AC 750	1993	AC 1981	1996
KW 4308	1921	Yu 14703	1937	KGB 174	1993	KR 4049	1996
F 20095	1921/1922	Yu 14755	1937	KR 2734	1993	Henriksen 035	1997
F 20625	1921/1922	Yu 14957	1937	KR 2745	1993	Henriksen 117	1997
F 21027	1921/1922	Yu 14990	1937	KR 2801	1993	Henriksen 121	1997
KW 5428	1922	Yu 15013	1937	CNW 101	1994	JN 940	1999
R 6073	1923/1924	Yu 19073	1937	CNW 119	1994	DGEY 214	2001
R 6828	1923/1924	Yu 19676	1937	CNW 198	1994	DGEY 286	2001
R 7640	1923/1924	Yu 20291	1937	CNW 352	1994	SICH 2204	2001
R 10943	1923/1924	Yu 20704	1937	CNW 381	1994	KR 7536	2002
R 11071	1923/1924	Yu 21069	1937	CNW 383	1994	KR 7538	2002
R 11263	1923/1924	Yu 22969	1937	CNW 406	1994	ZH-G 076	2006
F 24535 *	1924/1925	R 28	1948/1949	CNW 490	1994	C&N 5771	2007
F 25449	1924/1925	R 71	1948/1949	CNW 494	1994	CNC 12025	2012
F 25938	1924/1925	R 137	1948/1949	CNW 580	1994	JN 12244	2012
F 26482	1924/1925	R 186	1948/1949	CNW 683	1994	JN 12313	2012
F 26488	1924/1925	R 187	1948/1949	CNW 998	1994	JN 12351	2012
F 27473	1924/1925	R 189	1948/1949	Cox 6514	1994	BE 15-47	2015
F 27631	1924/1925	R 190	1948/1949	P&M 81	1994	MH 369-63	2018
R 18119	1929	SBEC 121	1981	SICH 1480	1994	MH 369-65	2018

Field numbers above highlighted with an asterisk are known collections
of *R. rubiginosum* Desquamatum Group, though others are present within the listing, but unmarked.



R. rubiginosum

R. rubiginosum is another of the species first found by Abbé Jean-Marie Delavay in western Yunnan during April 1886, this time on the Tsang Chan mountain range close to Tali (now of course, the Cangshan and Dali City). Adrien Franchet's description of the herbarium material would appear in Volume 34 of the *Bulletin de la Société Botanique de France,* which was published in 1887.

Post that first encounter, a bevy of marginally different forms were collected from across the taxon's endemic range and initially assigned specific status, only to be later sunk into synonymy, though a George Forrest 1917 find still retains horticultural status as *R. rubiginosum* Desquamatum Group due to its larger leaves and flowers, the latter being widely funnel-shaped. However, China's botanists have chosen to split the species into three varieties: var. *leclerei* having glabrous stamen filaments and a calyx that is only scaly along the lobe margins; var. *ptilostylum,* which is graced with hairs at the base of the style; and var. *rubiginosum,* which has a glabrous style.

Turning to the species polyploidy, two clones of *R. rubiginosum* were recorded as hexaploids in the chromosome study published in *The Rhododendron Year Book 1950,* with the other four samples tested - two of which were from Desquamatum Group - proving to be tetraploids. Because field numbers were absent from these entries in the listings, it has not been possible to ascertain if the two hexaploids were seed pan rogues or instead evidenced long-established $2n = 78$ wild populations. Currently therefore, no formal distinction can be made between the two different polyploid forms until multiple specimen sampling confirms the 1950 results, possibly allowing a *R. pseudorubiginosum* epithet to be applied to the hexaploids.

The obvious difference between *R. rubiginosum* and the other members of the subsection - apart from flowering significantly earlier in the season - is the declinate style, which is also longer than the stamens. The leaves are a good deal less aromatic and *R. rubiginosum* is the only member of the subsection to sometimes display axillary flower buds. To separate out plants belonging to Desquamatum Group when the larger corollas are still packed into those buds, reliance must be placed on the presence of the darker, closely to widely scattered larger scales on the leaf abaxial surface. But this characteristic is iffy at best. If absent, then *R. rubiginosum* will be to hand; present, and the specimen might be a member of Desquamatum Group, but could just as equally be *R. rubiginosum*.

Seed gathered by Père Delavay from another collection of *R. rubiginosum* arrived in Paris during 1889 and was successfully germinated, with seedlings despatched across the Channel to Kew by the Jardin des Plantes. Innumerable reintroductions followed, with Forrest's initial batch of *R. desquamatum* under F 15761 docking in 1917. A wide variety of forms are now established in UK cultivation, from dense 2m high rounded domes to quite open, multi-stemmed small trees of 7m or more. All are easily grown, being fully hardy, forbearing of neutral soils skating close to alkalinity, and bloom from a young age, the display ballooning year-on-year. However, while quantity may not be in doubt, the quality of the flowers is quite varied, with some decidedly muddy if not inferior individuals. The best clones are those with darker-hued corollas or the steely, bluish-purple members of Desquamatum Group. The latter, although in possession of a 1938 Award of Merit and a 2004 First Class Certificate from the RHS, are a touch less hardy, coming from the western enclaves of the species distribution.

R. rubiginosum



R. rubiginosum (CLD 129)



R. rubiginosum (KW 4308)



R. rubiginosum (SBEC 121)



R. rubiginosum (Yu 14703)

R. rubiginosum Desquamatum Group ‘Ted Millais’

R. heliolepis

Hardiness:
H5.
Flowering Period:
June-July.
Distribution in the wild:
SE Tibet; SW Sichuan & Yunnan, China; NE Upper Myanmar.
Growing in and at the margins of conifer or mixed forests,
and in rhododendron or mixed thickets, at elevations of 2,400-4,000m.

Identification:
Shrub or small tree, straggly or erect, 1 to 6m high;
branchlets stout.
Leaf bud scales deciduous.
Leaves usually aromatic,
oblong through oblong-ovate to oblong-elliptic,
4 to 12cm long by 1.3 to 4.6cm wide,
apex acute or acuminate,
base truncate or rounded;
upper surface dark green, shiny, reticulate,
densely lepidote at first, the scales whitish and scurfy, but quickly deciduous,
the midrib often moderately through densely puberulous;
lower surface lepidote, the scales unequal or similar, large,
glistening, thin, flat or concave (dipping in towards the centre),
yellowish, golden or brown,
close but not contiguous,
0.5-2 times their own diameter apart, more rarely 4-6 times.
Inflorescence 5-8-flowered.
Corolla 1.8 to 3.5cm long,
funnel-shaped, funnel-campanulate or campanulate,
white through pink to rose and purplish-red, pale violet or lavender-purple,
with or without a crimson-purple basal blotch,
heavily spotted reddish, greenish or brownish on the upper lobes.
Style straight and shorter than the longest stamens.
Capsule sometimes pubescent at the apex.

Seed Collections:

F 8938	1912	SBEC 258	1981	FED 365	1995
F 15933	1917/1919	SBEC 363	1981	AC 1359	1996
F 17622	1917/1919	SBLE 219	1987	AC 1582	1996
Farrer 878	1919	SSNY 66	1992	AC 1590	1996
Farrer 1065	1919	SSNY 304	1992	AC 1966	1996
F 20005	1921/1922	CNW 234	1994	AC 1988	1996
R 6270	1923/1924	CNW 443	1994	AC 2069	1996
R 11072	1923/1924	CNW 921	1994	JN 83	1996
R 11368a	1923/1924	CNW 944	1994	JN 299	1996
R 11704	1923/1924	CNW 950	1994	CCHH 8222	1997
F 24577	1924/1925	CNW 951	1994	Henriksen 106	1997
F 26961	1924/1925	CNW 974	1994	Henriksen 159	1997
F 30977	1930/1931	CNW 985	1994	JN 758	1999
KW 10020	1931	CNW 1027	1994	JN 1053	1999
Yu 7896	1937	CNW 1033	1994	DGEY 426	2001
Yu 7905	1937	CNW 1038	1994	SICH 2158	2001
Yu 10701	1937	CNW 1048	1994	JN 11059	2011
Yu 13913	1937	CNW 1049	1994	CNC 12002	2012
Yu 13919	1937	CNW 1238	1994	JN 12158	2012
Yu 13986	1937	Cox 6530	1994	JN 12357	2012
Yu 19813	1937	AC 903	1995	BE 15-08	2015
R 129	1948/1949			BE 15-12	2015

R. heliolepis was first found in Heqing County (then spelt Hokin), part of the Dali Bai Autonomous Prefecture in western Yunnan. It was the French missionary priest, Jean-Marie Delavay, who came upon the species while exploring the region in July 1886. Dried specimens were sent back to Paris where Adrien Franchet composed a botanic description for Volume 34 of the *Bulletin de la Société Botanique de France,* this published in 1887.

For an 1898 edition of the *Journal de Botany,* Franchet would catalogue a discovery made by Jean-Andre Soulié in western Sichuan during 1895, *R. brevistylum*.

The two rhododendrons were clearly similar, but differed from one another in the shape of the leaf base - this rounded or truncate for *R. heliolepis,* but cuneate for *R. brevistylum* - and in the number of corollas in their flower truss - respectively 4 to 8, rather than 6 to 10.

Both species however, retained their specific status until the publication of *A Preliminary Synopsis of the Genus Rhododendron* in 1978 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), written by James Cullen and David Chamberlain, with the ranking changes subsequently confirmed in the full Subgenus *Rhododendron* revision, which was solely penned by Doctor Cullen and sent to the printers in 1980 (*Notes,* Volume 39, Number 1). Varietal status under the first named taxon - *R. heliolepis* - was applied as it was now felt that these character variations did not justify retention of the original ranking because they were continuous across intergrading populations and showed no geographical separation.

In Volume 1 of his tetralogy *The Rhododendron Species,* published in 1982, H. H. Davidian asserted that rounded and tapering leaves were common to both rhododendrons, as was the style being shorter than the stamens. He therefore consigned *R. brevistylum* to synonymy under *R. heliolepis*.

Chinese botanists recognise three varieties and eschew the leaf base key to concentrate their identification on the presence of hairs on the outer surface of the corolla (var. *oporinum*), before assessing if the style is pubescent (var. *fumidum*) or glabrous (var. *heliolepis*), with *R. brevistylum* made synonymous under the latter (see the *Flora of China* entry online).

However, all fail to take account of the polyploidy.

Which shows that *R. brevistylum* is a tetraploid with fifty-two chromosomes, while *R. heliolepis* is a hexaploid with seventy-eight.

As such, they are genetically incompatible, with a reproductive barrier between the two. This means that one cannot be considered a variety of the other or made synonymous under it if the two plants cannot successfully breed with each other. Both are therefore returned to specific status herein.

The synonymy of two previously sunk rhododendrons must also change.

R. pholidotum is an octoploid where $2n = 104$, so its specific status is returned, while *R. oporinum,* a tetraploid, remains sunk, but transfers across to *R. brevistylum*.

R. porrosquameun also remains sunk under *R. brevistylum,* as outlined by Doctor Cullen, with *R. fumidum* and *R. plebeium* also remaining where they were assigned, unseen residents filed away under *R. heliolepis*.

Within the subsection, *R. heliolepis* can swiftly be keyed from *R. bracteatum* by a lack of persistent leaf bud scales, while from *R. rubiginosum,* the straight non-declinate style, shorter than the longest stamens, will do the trick.

George Forrest was the Western plant hunter who first introduced *R. heliolepis* into UK cultivation, doing so during 1912 under F 8938, though this was originally pigeonholed as *R. plebeium.* He, Reginald Farrer, Joseph Rock, Frank Kingdon-Ward and Te-Tsun Yu all made subsequent gatherings of capsules up until 1949, with the Sino-British Expedition to the Cangshan recording the first of forty-three reintroductions in 1981.

R. heliolepis is easily grown and has proved hardy, vigorous and free-flowering in the majority of British gardens where rhododendrons thrive outdoors. Some clones have astringently aromatic foliage, but the more *rubiginosum*-like forms can usually be excepted from any leaf crushing experiments. Those plants with blotched white flowers are the most striking, especially when the truss is a little less lax than the norm.

The Latin epithet translates as 'with glittering scales', accurately exemplifying the 0.25mm golden orbs liberally scattered across the leaf lower surface.



R. heliolepis

R. heliolepis (Farrer 878)

R. heliolepis

R. brevistylum

Hardiness:
H5.
Flowering Period:
June-July.
Distribution in the wild:
SE Tibet; SW Sichuan & Yunnan, China.
Growing in and at the margins of conifer or mixed forests,
and in rhododendron or mixed thickets, at elevations of 2,400-4,000m.

Identification:
Shrub or small tree, straggly or erect, 1 to 6m high;
branchlets stout.
Leaf bud scales deciduous.
Leaves usually aromatic,
oblong through oblong-ovate to oblong-elliptic,
4 to 12cm long by 1.3 to 4.6cm wide,
apex acute or acuminate,
base cuneate;
upper surface dark green, shiny, reticulate,
densely lepidote at first, the scales whitish and scurfy, but quickly deciduous,
the midrib often moderately through densely puberulous;
lower surface lepidote, the scales unequal or similar, large,
glistening, thin, flat or concave (dipping in towards the centre),
yellowish, golden or brown,
close but not contiguous,
0.5-2 times their own diameter apart, more rarely 4-6 times.
Inflorescence 6-10-flowered.
Corolla 1.8 to 3.5cm long, funnel-shaped, funnel-campanulate or campanulate,
white through pink to rose and purplish-red, pale violet or lavender-purple,
with or without a crimson-purple basal blotch,
heavily spotted reddish, greenish or brownish on the upper lobes.
Style straight and shorter than the longest stamens.
Capsule sometimes pubescent at the apex.

Seed Collections:

F 10438	1912/1914	KW 7108	1926
F 14135	1917/1919	R 22345	1932
F 14210	1917/1919	R 23301	1932
F 14291	1917/1919	R 23302	1932
F 15071	1917/1919	R 23569	1932
F 16576	1917/1919	R 23666	1932
F 18907	1917/1919	McLaren D148	1932/1939
R 10884	1923/1924	R 145	1948/1949
R 11283a	1923/1924	SBEC 240	1981
R 11453	1923/1924	KGB 28	1993
F 26928	1924/1925	KGB 496	1993
F 27489	1924/1925	CNW 73	1994
F 27642	1924/1925	C&N 5768	2007



R. brevistylum

R. brevistylum was a Jean-Andre Soulié discovery made at Tsekou (now Chigu) in western Sichuan on July 19th 1895. Herbarium material was returned to Paris where Adrien Franchet, at the Muséum National d'Histoire Naturelle, wrote the botanic description in 1898, his text appearing in Volume 12 of the *Journal de Botany*. George Forrest is officially recorded as introducing the species into UK cultivation during 1913 under the field number F 10438, which had been collected in July of that same year, but he had earlier returned herbarium material to Edinburgh Botanic on his first expedition to China between 1904 and 1906 - under F 694 and F 4162 - so seed may have accompanied the dried specimens. If it did, there is no record of a successful germination or subsequent distribution, this the sole responsibility of the expedition's principal sponsor A. K. Bulley, then owner of A. Bee & Co., shortly to become Bees Seeds Ltd, of which, sadly, enough has already been said.

Forrest returned another six collections during his 1917-1919 expedition, plus three more on his 1924-1925 trip (one of which - F 26928 - is the only documented introduction of *R. oporinum*). Joseph Rock encountered *R. brevistylum* on his first visit to China in 1923, securing seed under three field numbers, while Frank Kingdon-Ward added a batch of capsules in 1926. The species was therefore well represented in the major collections when samples were collected for chromosome counting at RHS Wisley in the late 1940s. The results from that study were published in *The Rhododendron Year Book 1950* and they showed that both *R. brevistylum* and *R. oporinum* were tetraploids, while the closely-related *R. heliolepis* was a hexaploid, and the somewhat similar *R. pholidotum* an octoploid. Instead of the standard 26 chromosomes therefore, the former pair each had 52, and the latter two, 78 and 104 respectively.

Regrettably, the full implications of those different DNA chromosome counts were not completely understood until the late 1990s, or even early on into the new century, most especially, the fact that genetically, polyploids are isolated from each other. If cell division proceeds without error, they can breed successfully on a horizontal plane - tetraploid x tetraploid, hexaploid x hexaploid, and so on - but not vertically - diploid x tetraploid, or tetraploid x hexaploid, for instance. So associating these rhododendrons as subspecies or varieties, or making one synonymic under the other - except of course, where the chromosome counts matched - was doomed from the outset, though the botanists who proposed such alliances were likely unaware of this reproductive barrier's existence at the time, although one gentlemen in particular continued to ignore the science in his post-millennial publications.

Consequently, without repeating the detail set out within the *R. heliolepis* entry, all the species listed above are herein restored to their original specific status except for *R. oporinum,* which is synonymically sunk under *R. brevistylum*.

Morphologically, *R. brevistylum* is most closely related to *R. heliolepis,* the two plants outwardly differing only in the number of corollas in their inflorescence - respectively, 6 to 10, as opposed to 5 through 8 - and in the shape of their leaf base - cuneate, rather than rounded or truncate. So genetics excepted, the rhododendron doyens of yesteryear were not playing fast and loose with their merger proposals. Elsewhere within the subsection, the quickly shed leaf bud scales key *R. brevistylum* from *R. bracteatum,* the sparsely lepidote leaf undersurface identifies it from the densely scaly *R. pholidotum,* and the straight, non-declinate style, which is shorter than the longest stamens - hence the inspired choice of Latin epithet - cleaves the species from *R. rubiginosum*.

Flowering late in the season, during June or July, *R. brevistylum* can provide a fine show when most other members of the genus have long since finished blooming. The shrub is hardy, easy to grow and not particular as to position in the garden.


R. brevistylum


R. brevistylum

R. bracteatum

Hardiness:
H5.
Flowering Period:
June-July.
Distribution in the wild:
C, W & NW Sichuan, China.
Growing in woodland and on cliffs, at elevations of 2,600-3,500m.

Identification:
Shrub, compact or erect, 0.9 to 3m high;
branchlets thin and puberulous.
Leaf bud scales persistent.
Leaves very aromatic,
oblong through ovate to elliptic,
1.3 to 5cm long by 0.9 to 2.5cm wide,
apex obtuse through ovate,
base broadly cuneate, obtuse or rounded;
upper surface olive- or dark green, reticulate, lepidote;
lower surface sparsely lepidote, the scales unequal, large,
yellowish, golden or pale brown,
and distant, 1-4 times their own diameter apart.
Inflorescence 3-6-flowered.
Corolla 1.2 to 2.5cm long, openly funnel-shaped, funnel-campanulate or campanulate,
white through white flushed pink or rose, or pale red,
with or without a crimson basal blotch,
usually heavily spotted reddish-purple.
Style straight, shorter than the longest stamens.

Seed Collections:

W 4253	1910
JN 12020	2012

Until the autumn of 2012, *R. bracteatum* had only been encountered in the wild by one Western plant hunter - Ernest Wilson.

It was in July 1908, towards the end of his first expedition for the Arnold Arboretum, while he was exploring the hills near Wen-ch'uan Hsien in the west of Sichuan that he discovered the species in flower and collected material for the type herbarium specimen under the field number W 3421. Two years later, in October 1910, he found a second population of the plants, this time around Moupin (Baoxing), and was able to secure seed under W 4253. This remained the only introduction of *R. bracteatum* into cultivation until Jens Nielsen rediscovered the species in Wenchuan County, in central Sichuan.

The taxon's botanic description, jointly written by Wilson and Alfred Rehder, can be found within the first volume of *Plantae Wilsonianae,* published in 1913.

Initially, *R. bracteatum* was placed into the old Triflora Series, first alongside *R. concinnum* (or more correctly for the times, *R. yanthinum*), then later, reassessed as an associate of *R. oreotrephes,* so it was not until H. H. Davidian revised the group in the early 1960s that the species was transferred-out and the correct relationship made with the rhododendrons of the Heliolepis Series, which the Edinburgh Revision botanists maintained on the basis of corolla shape and the large scales found on the lower leaf surface. Most closely related to *R. brevistylum* and to *R. heliolepis, R. bracteatum* differs in having persistent leaf bud scales, plus smaller flowers and foliage. Of the other members of the subsection, *R. pholidotum* has deciduous leaf bud scales, while *R. rubiginosum* is graced with leaves up to 12cm long that come with a far denser covering of scales on the underside and foliage that is far less aromatic. Flowering time is also a useful separator for these two - June into July for *R. bracteatum,* March through April into early May for *R. rubiginosum* - as is the ascension of the style, respectively straight, as opposed to declinate.

R. bracteatum is now a very rare find in UK cultivation - as the lack of any photographs regrettably confirms - though the 2012 seed gathering will hopefully result in it being more widely grown as the Nielsen collection featured on the 2013 seed exchange lists of both the American Rhododendron Society and the RHS's Rhododendron, Camellia and Magnolia Group. Reporting on the specimen that once grew at Edinburgh Botanic, Davidian notes it as being a fully hardy, compact and upright, free-flowering shrub. Peter and Kenneth Cox, in their 1997-published *Encyclopedia of Rhododendron Species,* state that *R. bracteatum* can be somewhat slow to begin blooming and when judged against the other subsection members, is the one most prone to attack by the powdery mildew fungus.

R. pholidotum
Hardiness:
H5.
Flowering Period:
June-July.
Distribution in the wild:
N & NW Yunnan, China.
Growing in open situations and amongst scrub, at elevations of 3,000-3,700m.

Identification:
Shrub, broadly upright, 1 to 2.5m high;
branchlets stout.
Leaf bud scales deciduous.
Leaves usually aromatic,
lanceolate through elliptic-lanceolate to oblong-lanceolate,
4 to 7.3cm long by 1.6 to 2.6cm wide,
apex acute or acuminate,
base obtuse or rounded;
upper surface dark green, shiny, reticulate,
moderately through densely lepidote,
the midrib densely puberulous;
lower surface lepidote, the scales unequal, very large,
glistening, thin, flat or concave (dipping in towards the centre),
yellowish, golden or brown,
half their own diameter apart.
Inflorescence 4-8-flowered.
Corolla 2.2 to 3cm long, funnel-campanulate or widely funnel-campanulate,
slightly zygomorphic,
rose, rose-purple or purple,
spotted reddish on the upper lobes.
Style straight and shorter than the longest stamens.
Capsule sometimes pubescent at the apex.

Seed Collections:

F 6762	1910
F 19014	1917/1919


R. pholidotum (F 6762)

An octoploid is a biological entity with eight sets of chromosomes.

Any rhododendron fitting this profile would be described as 2*n* = 104 = 8x, this indicating that fifty-two chromosomes would be present in any haploid gamete (an egg or a sperm) and that eight sets of thirteen chromosomes comprise the total.

Only one such taxon is currently known to exist within the entire 1000+ species gamut that comprises Genus *Rhododendron,* namely, *R. pholidotum*.

The species was found growing on the eastern side of the Cangshan Mountains above Dali in northwestern Yunnan during August 1910, George Forrest making the discovery and returning herbarium specimens and seed under the field number F 6762. The only other documented collection of capsules is also down to the Scotsman, F 19014 gathered during his fourth expedition to China between 1917 and 1919, this despite any number of Western and Chinese botanists and horticulturalists combing those same locales across the more than ten decades that followed that last encounter. The species was described by Sir Isaac Bayley Balfour and William Wright Smith in Volume 10 of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1917, and their chosen epithet refers to the densely lepidote underside of the leaves, where very large, yellowish or brown scales may be found, these set just half their own diameter apart. One other feature - unique within the subsection, but not the genus - is the moderately zygomorphic corolla, which otherwise, is funnel-campanulate or widely funnel-campanulate in shape.

That 104 chromosome count reveals that *R. pholidotum* is the product of incorrect cell division, the result of either somatic genome doubling in a tetraploid zygote, the fusion of two unreduced tetraploid gametes, or some other combination that culminated in the octoploid total - for instance, an unreduced diploid gamete (26) pairing with an unreduced hexaploid gamete (78). Equally, the plant's genome might be comprised of DNA from just one rhododendron species, or from more than one, if two different taxa were involved in the pollination process, though such is also currently unknown. But if the former were the case - termed 'autopolyploidy' - the high number of identical chromosomes present in each cell would cause the new plant to exhibit distinct 'inbred' characteristics, as well as result in reduced fertility. If the latter - 'allopolyploidy' - the presence of dissimilar genes in the pool might promote more vigorous growth, as well as increase the range of locales at which the newly evolved plant's offspring could successfully establish. In both cases, the octoploid's survival as an entity would be aided by its ability to self-pollinate.

Very little of the science outlined above was known in 1978 and 1980 when James Cullen and David Chamberlain made *R. pholidotum* synonymous under *R. heliolepis* var. *brevistylum* in their *Preliminary Synopsis* paper and in Cullen's subsequent full revision of Subgenus *Rhododendron* (*Notes,* Volume 36, and Volume 39, Number 1, respectively), though knowledgeable horticulturalists such as Peter Cox of Glendoick, Perth, were warning of the incompatibilities between species made synonymic with respect to their chromosome counts in the late 1970s (*The Larger Rhododendrons,* 1979), so later claims of complete ignorance can be dismissed as self-serving. The *heliolepis-brevistylum* combination itself is in conflict with the rules of polyploidy - as outlined above - for a tetraploid cannot be made a variety of a hexaploid because conception between the two would require the fusion of a haploid gamete containing 39 chromosomes, with another holding 26 - an impossibility.

Horticulturally, in the interim, Pholidotum Group was maintained by rhodophiles to preserve the epithet, while some experts suggested the species could be an intermediate between *R. heliolepis* and *R. rubiginosum,* or a natural hybrid of such a match (Cox and Cox, *The Encyclopedia of Rhododendron Species,* 1997). Input from a tetraploid or possibly hexaploid form of *R. rubiginosum* into the *R. pholidotum* genome is a distinct possibility, but as an octoploid, specific status must be restored regardless of the chromosome mix.

The densely lepidote abaxial leaf surface of *R. pholidotum,* with each scale only half its own diameter distant from its neighbour, keys the species from both *R. brevistylum* and *R. heliolepis,* with the often widely funnel-campanulate and somewhat zygomorphic corollas providing backup confirmation of a positive identification. A straight style, shorter than the longest stamens, cleaves the species from *R. rubiginosum,* which has a long declinate style projecting-out beyond the stamen anthers, while the quickly deciduous leaf bud scales are in contrast to those that persist on the branchlets of *R. bracteatum*.

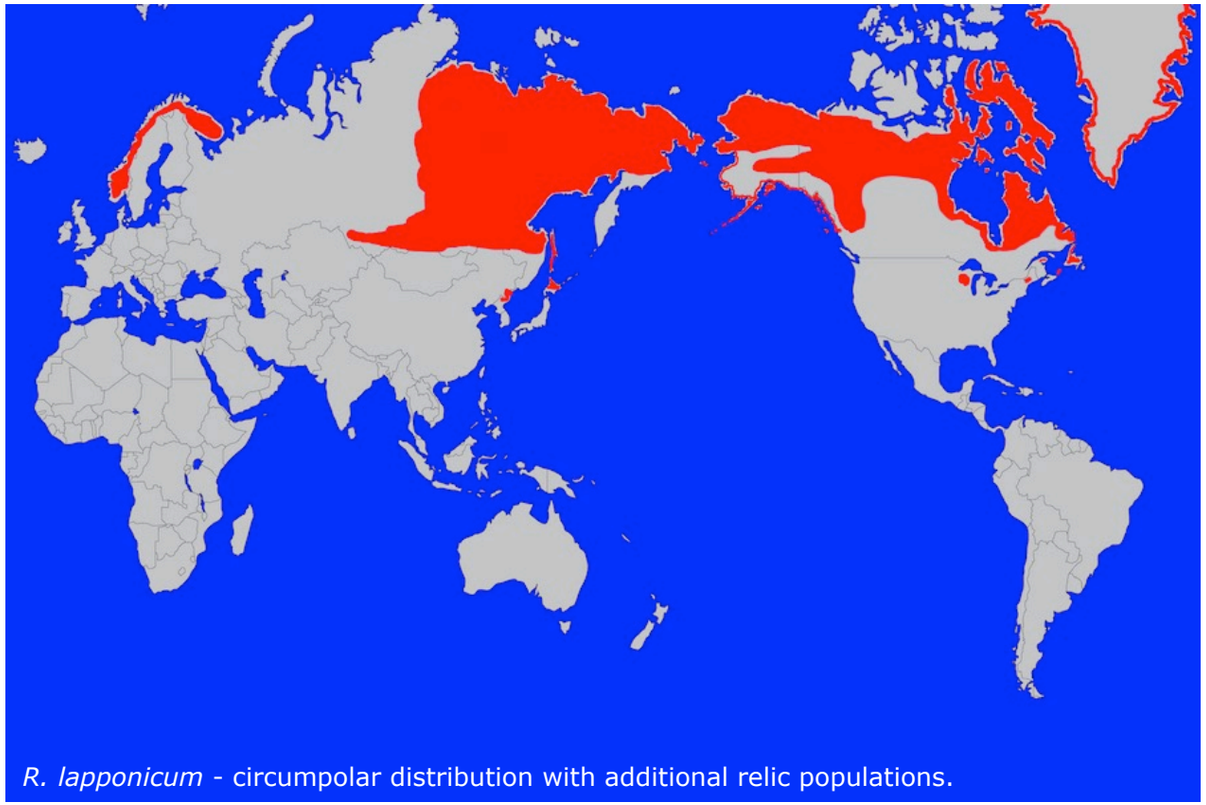
In cultivation, *R. pholidotum* is fully hardy in all but the coldest gardens, flowers freely from a young age, the rose-purple blooms appearing in June or July, and is usually grown without problem, developing into an upright bush around 2m high. The shrub is a rare find however, with specimens almost certainly labelled as *R. heliolepis* in the gardens of the botanic institutes and only one of the two Forrest field numbers, etched into a tied-on label, currently giving the game away.



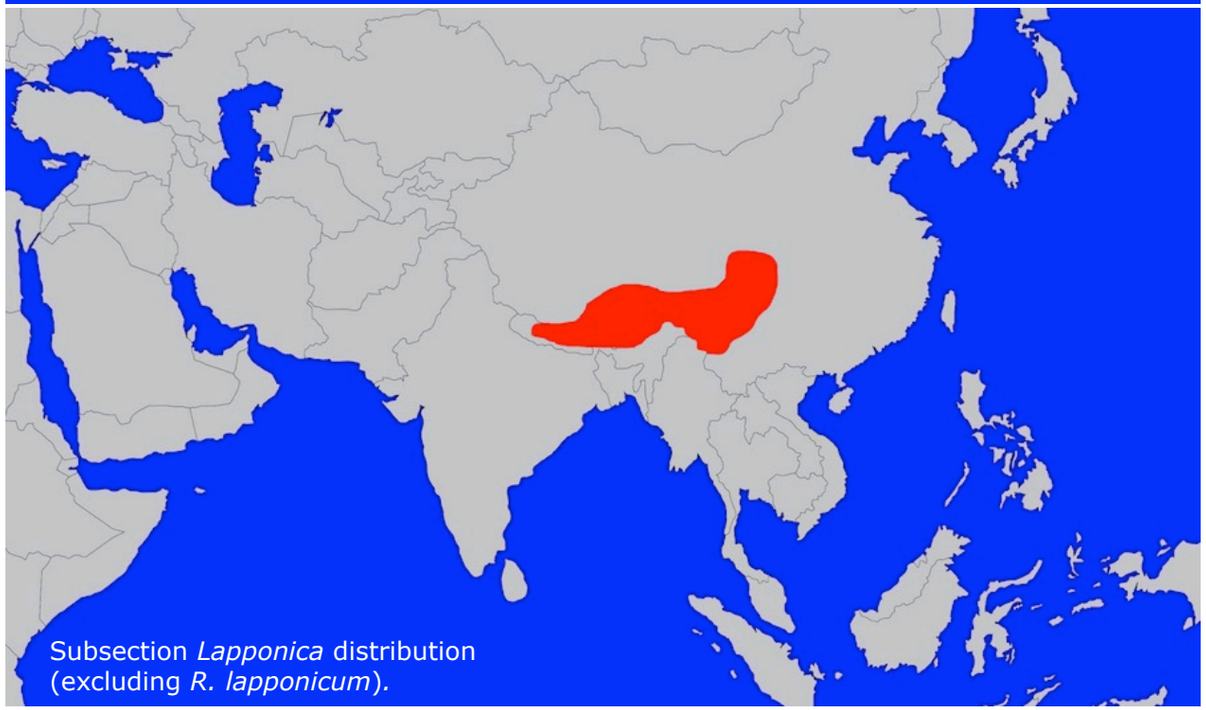
R. pholidotum (F 6762)

R. pholidotum (F 6762)

Section *Lepipherum* Subsection *Lapponica:*



R. lapponicum - circumpolar distribution with additional relic populations.



Subsection *Lapponica* distribution
(excluding *R. lapponicum*).

Taxa:

- *R. capitatum*
- *R. complexum*
- *R. dasypetalum*
- *R. drumonium*
- *R. fastigiatum*
  - *R. fastigiatum* ssp. *fastigiatum*
  - *R. fastigiatum* ssp. *impeditum*
- *R. flavidum*
- *R. glomerulatum*
- *R. hippophaeoides*
  - *R. hippophaeoides* var. *fimbriatum*
  - *R. hippophaeoides* var. *hippophaeoides*
  - *R. hippophaeoides* var. *tsaii*
- *R. intricatum*
- *R. lapponicum*
- *R. nitidulum*
- *R. nivale*
  - *R. nivale* ssp. *bulu*
  - *R. nivale* ssp. *nigropunctatum*
  - *R. nivale* ssp. *nivale*
- *R. orthocladum*
- *R. pseudoidoneum*
- *R. pseudorupicola*
- *R. ramosissimum*
- *R. rupicola*
  - *R. rupicola* ssp. *chryseum*
  - *R. rupicola* ssp. *rupicola*
- *R. russatum*
- *R. scintillans*
- *R. tapetiforme*
- *R. telmateium*
- *R. thymifolium*
- *R. websterianum*
- *R. yungningense*

Taxonomic Revision:

The Edinburgh Revision of Genus *Rhododendron* consolidated the specific-ranked plethora of Lapponicum Series species into a far less populous but more coherent listing.

Written by William and Melva Philipson in 1975,
(*Notes from the Royal Botanic Garden, Edinburgh,* Volume 34),
their paper was completed before China re-opened its hillsides to Western botanists and extensive field study of the wild populations could once again take place.
This showed far greater merging of the species on the ground than previously suspected, with the characteristics used to separate one taxon from a near relative proving inconsistent despite the Philipsons' wholesale amalgamation.

The further integration set out herein reflects that fieldwork and where necessary,
spotlights a species, subspecies or variety from the morass by disregarding a minor
intergrading feature that would otherwise muddy a clear identification:
the occasional presence or absence of a few larger,
widely-scattered dark brown scales on the leaf abaxial surface.

Previously taken into account and given undue prominence,
in essence these nudniks were compromising a de facto monomorphic or dimorphic
characteristic prevalent across the vast bulk of a taxon's population.

The wood was not so much being hidden from the botanists by the trees,
but by speckles on the bark.

Note too, that as elsewhere throughout this text,
ICNAFP rules have been strictly applied and polyploidy issues addressed.

Subsection Morphology:

Shrubs, erect through compact, to prostrate, creeping or mound-forming,
multi-branched, 0.1 to 1.7m high, rarely more;
young shoots short or long, mostly densely lepidote with brown scales,
these flaky or not, and usually glabrous;
bark brown, greyish-brown or yellowish-brown, striate, sometimes ridged.

Vegetative bud scales quickly deciduous.

Leaves usually evergreen, small, sometimes aromatic,
linear-lanceolate through obovate, oblong and oval to near orbicular,
0.2 to 4cm long by 0.1 to 1.7cm wide,
apex acute, rounded or obtuse,
usually mucronate, but occasionally not or sometimes obscurely so,
base obtuse, rounded, tapering or cuneate;
upper surface shiny or matt, usually densely lepidote;
lower surface usually papillose, densely lepidote,
the scales monomorphic or dimorphic, large, broadly-rimmed,
overlapping, contiguous, near contiguous or somewhat distant,
the latter between 2 and 6 times their own diameter apart,
yellow, brown or grey, but sometimes 2-coloured.

Leaf anatomy comprises a single-layered upper epidermis;
the cuticle is around half as thick as the cells are deep, but may sometimes be thinner;
water tissue is absent; the lower epidermis cells are prolonged into papillae.
Sclereid cells are absent.

Petiole 0.5-4mm long, rarely to 6 or 9mm long, densely lepidote, usually glabrous.

Inflorescence terminal, occasionally axillary in the uppermost 1-6 leaves,
umbellate, 1-7-15-flowered;
the bud scales deciduous, semi-persistent or persistent.

Rhachis 0.5-2mm long, lepidote or not, usually glabrous.

Pedicel usually short, 0.5-6mm long, rarely to 9 or 12mm long,
usually densely lepidote, usually glabrous.

Calyx minute to conspicuous, variously coloured, persistent in fruit,
5-lobed, these 0.1-12mm long and sometimes unequal,
their outer surface usually lepidote, rarely pubescent,
their margins usually long-ciliate and often lepidote.

Corolla usually small, often frost hardy, 0.5 to 2cm long, 5-lobed,
broadly funnel-shaped in all but two species,
slightly zygomorphic, rarely hypercrateriform,
usually lavender through purple to violet,
but sometimes blue, pink, plum-crimson, white or yellow,
the outer surface usually elepidote, but sometimes pubescent,
the throat pubescent.

Stamens 5-10, rarely less or more,
unequal, shorter, equal to or longer than the corolla, usually long-exserted, rarely included,
declinate or radially arranged, often actinomorphic;
the filaments pubescent or villous towards the base in all but two species.

Ovary usually conoid, occasionally ovoid or oblong, 1-3mm long,
5-locular, rarely 6-celled,
densely lepidote,
sometimes puberulous at the base or at the apex, more rarely entirely so.

Style long or short, impressed into a depression at the ovary apex,
slender, straight or declinate, but continuing the axis line of the pedicel,
glabrous or pubescent at the base,
sometimes lepidote at the base.

Capsule ovoid through cylindric-ovoid, 2-7mm long,
usually densely lepidote,
sometimes pubescent, more rarely at just the base or the apex.

Seeds elongate, without wings or appendages.

R. lapponicum Parvifolium Group (Kurashige 427)

R. lapponicum
Hardiness:
H6.
Flowering Period:
January-March.
Distribution in the wild:
Canada; Heilongjiang, Inner Mongolia, Jilin & Liaoning, China; Greenland;
N Japan; N Korea; Mongolia; Sakhalin & Siberia, Russia; Scandinavia;
Alaska, the Aleutian Islands, New Hampshire, New York & Wisconsin, USA.
Growing on mountains, tundra, bogs and moss,
in peat or clay-like soil, on igneous, limestone and serpentine rock,
often over permafrost, at elevations from sea level to 1,900m.

Identification:
Shrub, prostrate and spreading through rounded and upright, 0.2 to 1.m high;
branchlets sometimes puberulous.
Leaves often near deciduous,
oblong-elliptic through elliptic-ovate to oblong-ovate,
0.4 to 2.5cm long by 0.2 to 1cm wide,
apex obtuse or rounded, and mucronate, retained up to 1 year;
upper surface greyish through dark green, bronze during winter, matt,
the scales nearly contiguous to overlapping;
lower surface scales dimorphic, similarly sized, equal in number and intermixed,
some of a fawn, yellowish-brown or straw hue, others reddish-brown,
overlapping, contiguous or sometimes up to half their own diameter apart.
Petiole 1-4mm long.
Inflorescence terminal, 2-6-flowered.
Pedicel 2-12mm long, rarely puberulous.
Calyx pink, crimson-purple or reddish,
the lobes ovate, triangular or rounded and 0.5-2mm long,
their outer surface variably lepidote,
their margins rarely lepidote, but usually long-ciliate.
Corolla 0.7 to 1.6cm long,
violet- or magenta-rose through purple, or (rarely) white,
the outer surface elepidote.
Stamens 5-10, exserted, equal in length or slightly longer than the corolla.
Style longer than the stamens.
Capsule occasionally densely puberulous at the base.

Seed Collections:

Kurashige 427 *	1987	MFM 0347 *	2003
MW 318 *	1997	MFM 0349 *	2003
NACPEC 97125 *	1997	GMNW 1	2004
ESUS 107	1994	GMNW 2	2004

Field numbers marked with an asterisk are known collections of *R. lapponicum* Parvifolium Group.
In addition, the American Rhododendron Society Seed Exchange listed 22 unauthenticated *R. lapponicum* gatherings between 1978 and 2013, plus individual batches of Parvifolium Group in 1980, 1982, 1985 and 2013.


R. lapponicum Parvifolium Group


R. lapponicum Parvifolium Group (Kurashige 427)

R. lapponicum was described in 1812 by Göran Wahlenberg for his treatise on the plant life of northern Sweden, *Flora Lapponica (Wahlenberg),* the extended citation needed to avoid any confusion with the similarly titled Carl Linnaeus tome of 1737 vintage. As the map on page 168 shows, the species has a circumpolar distribution around the northern hemisphere, supplemented by a few relic populations in the northeastern American states of New Hampshire, New York and Wisconsin, plus a 1984 find 'on a calcareous ledge' in Corney Brook gorge, Cape Breton, Nova Scotia, Canada (the really small red dot southeast of Newfoundland on the map). It was introduced into the UK from Canada by a Mr Blair in 1825 and flowered for the first time in cultivation during July 1830, the blooms opening at the Comely Bank Nursery of the renowned Edinburgh horticulturalist James Cunningham.

The species can be split from its subsection associates by examining the lower leaf surface scales. These will be found to be similar in size, but bicoloured, roughly half of them a reddish-brown hue, the others uniformly shaded either fawn, straw or yellowish-brown. They are completely intermixed and usually touching or overlapping. A secondary confirmation of a correct identification is provided by the leaves turning bronze during the winter and hanging down dejectedly, almost as if dead, with the majority quite often discarded. Also, the very early flowering period is another useful pointer, as is - to a lesser degree - the mostly elliptic leaf shape (at least on cultivated plants).

R. lapponicum is a diploid with 26 chromosomes, although one sample tested in the late 1940s proved to be a tetraploid - where 2*n* = 52. More recent examination of multiple specimens from a number of wild populations have all proved to be diploids, the anomalous result therefore, a likely seedpan rogue.

The cultivation of *R. lapponicum* in the UK, at least for those not gardening halfway up a Munro, is problematic to impossible. Southern gardens are a no-no from the off, as the species is simply intolerant of heat, as the dwarf prostrate forms from the Arctic regions demonstrate by growing over permafrost. Clones hailing from the more balmy climes of Greenland, Labrador or Newfoundland, or those sampled from the relic population 1500m up the slopes of Mount Washington in the US Winter Sports state of New Hampshire, have a less active death wish, but still pine away despite the application of prodigious amounts of TLC. Sometimes that deterioration can be prolonged over a decade or more, with specimens offering fine shows of rose-purple flowers before their ultimate demise. Or - as the horticultural experts at Edinburgh Botanic will readily confirm - their life expectancy can be measured at just a few weeks. Luckily for bowled-over rhodophiles, the distribution of *R. lapponicum* extends down the Pacific coast of Siberia into northern Korea, and from Sakhalin onto the northeast corner of Hokkaido, and it is from here that plants more suited to British conditions have been found: those of Parvifolium Group.

Until 1975, *R. parvifolium* had managed to retain the specific ranking Johann Adams had assigned it when writing the species botanic description in 1834 (*Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou,* Volume 3) and it should be noted that the decision to reduce the taxon to synonymy, taken by the Philipsons for the Edinburgh Revision, is still disputed by Japanese and Russian botanists (who opt for varietal and subspecies ranking respectively). Certainly there are character differences between the two extremes - Parvifolium Group plants have an upright, taller growth habit, come with larger leaves and corollas, and consistently display 10 stamens, instead of the normal 5 to 10 variation - but these disparities are solely due to environmental factors, with populations morphing as height and climate adversity increase. The *R. parvifolium* endemic distribution also extends into the provinces of northeast China, plus Inner Mongolia, and runs on as far westward as Lake Baikal in Siberia, which was the original discovery site, and eastwards across the Aleutian Islands into Alaska.

Horticulturally, the difference between individuals from Parvifolium Group and the Arctic-domiciled forms of *R. lapponicum* is profound, as plants sourced from areas fringing the Sea of Japan thrive and are long-lived in northern UK gardens along the east coast and inland, though still pretty much inapt in the south, while those collected at or above the 60° latitude line, simply die.

R. parvifolium was first introduced from Siberia in 1877. It blooms from January through March, with the flowers usually able to shrug-off mild frosts with élan, and in time, the plants form a rounded, upright bush around a metre high and wide. However, specimens of Confertissimum Group - a group within a group, and the earliest forms to flower - only attain half that height.

Clones from Hokkaido have darker coloured corollas and open their blooms three to four weeks after their Russian cohorts, while white flowered plants discovered in Siberia have yet to be introduced into cultivation.



R. lapponicum Parvifolium Group

R. lapponicum Parvifolium Group

R. nivale (KW 5777)

R. nivale* ssp. *nivale

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
Nepal; SE & S Tibet; Sikkim & Arunachal Pradesh, India; Bhutan.
Growing in rhododendron thickets, alpine meadows and by open bogs,
on open mountainsides and screes, and in ice gorges,
at elevations of 3,000-5,800m.

Identification:
Shrub, prostrate, straggly, low or upright, 0.3 to 1.2m high;
branchlets short.
Leaves broadly elliptic through elliptic,
0.2 to 1cm long by 0.2 to 0.6cm wide,
apex rounded or obtuse, and obscurely mucronate or without a mucro;
upper surface pale greyish-green and matt, or dark green and shiny,
the scales grey-white or golden, and overlapping;
lower surface scales dimorphic, intermixed,
the majority pale gold and of a similar size, sometimes predominating,
nearly contiguous through overlapping,
a minority dark brown and larger, closely or widely scattered.
Petiole 0.5-2mm long.
Inflorescence terminal, 1-2-flowered.
Pedicel 0.5-1.5mm long.
Calyx pink, crimson-purple, purple or greenish,
the lobes triangular or oblong and 2-5mm long,
their outer surface moderately through densely lepidote,
their margins lepidote, the band of scales darker, and often sparsely ciliate.
Corolla 0.7 to 1.1cm long,
pink through lilac to magenta, reddish-purple and deep purple,
the outer surface often pubescent, but rarely lepidote,
the scales restricted to the middle of the lobes when present.
Stamens 8-10, exserted, shorter or longer than the corolla.
Ovary sometimes densely puberulous, but often only across the lower half.
Style longer than the stamens, the base sometimes pubescent.
Capsule puberulous.

Seed Collections:

Cooper 3483	1914	LS&T 5283	1938	C&S 1642	1990
Cooper 3838	1915	L&S 8653	1942	Kinmouth 96	1990
KW 5729	1924/1925	L&S 8824	1942	KR 1745	1990
KW 5735	1924/1925	L&S 9537	1943	CEE 477	1991
KW 5777	1924/1925	L&S 9575	1943	EMAK 557	1991
KW 5778	1924/1925	L&S 9979	1944	KGB 294	1993
KW 5792	1924/1925	LS&E 13125	1946/1947	KR 3448	1995
KW 5862	1924/1925	LS&E 13701	1946/1947	CC 7500	1996
KW 7001	1926	LS&E 15058	1946/1947	CC 7591	1996
KW 7058	1926	LS&E 15208	1946/1947	AC 3192	1997
KW 9609	1931	LS&E 15650	1946/1947	AC 3333	1997
KW 10521	1933	LS&E 15668	1946/1947	AC 3344	1997
KW 10531	1933	LS&H 16294	1949	AC 3350	1997
KW 10595	1933	LS&H 18960	1949	AC 3482	1997
KW 11016	1933	Polunin 352	1949	AC 3495	1997
L&S 1598	1936	KW 19606	1950	AC 3499	1997
L&S 1779	1936	PS&W 4	1952	AC 3523	1997
L&S 1788	1936	PS&W 28	1952	AC 3675	1997
L&S 2300	1936	PS&W 1141	1952	AC 4361	2000
LS&T 3805	1938	PS&W 1344	1952	AC 4389	2000
LS&T 3830	1938	PS&W 2205	1952	TARRVS 126	2002
LS&T 3999	1938	Bowes-Lyon 2098	1964	BE 05-50	2005
LS&T 4253	1938	Bowes-Lyon 3124	1966	TDA 345	2013
LS&T 4784	1938	SCH 2269	1977	TDA 346	2013
LS&T 4826	1938	McBeath 1171	1981	TDA 347	2013
		McBeath 1208	1981		

The endemic distribution of *R. nivale* extends from the Himalayan mountains of Nepal, Sikkim and Bhutan, across southern and southeastern Tibet into northwestern Yunnan and up into western Sichuan, eventually petering-out in southern Qinghai. As you would expect with such a wide range, the characteristics of the taxon vary significantly, especially as the species will be found growing at heights as low as 2,900m or as high as 5,800m. Two features however, are common across the whole population: leaves with a rounded or obtuse apex and base; and the presence of dimorphic scales on the leaf undersides. There is a variance in the colour contrast between the two types of abaxial scale, as well as in their relative numerical percentages, with the larger, usually dark brown integrants always in the minority, and sometimes significantly so.

Altitudinal, geographic and morphological factors allow this conglomerate populous to be divided into three subspecies: *R. nivale* ssp. *bulu* - larger in all parts, taller growing, and found below 3,900m on the mountains of south and southeast Tibet; *R. nivale* ssp. *nigropunctatum* - extending the distribution northeast into Yunnan, Sichuan and Qinghai, found between 3,100 and 5,400m, often with an obscure or rim-like calyx and little colour polarity dividing the abaxial scale types; and *R. nivale* ssp. *nivale* - domiciled along the southern flank of the range, low growing, often prostrate, with a cushion-forming habit at 5,800m, indeed the only rhododendron recorded at such altitude, with a significant, albeit small calyx, and clear differentiation between the abaxial scales.

R. nivale was the first of the trio to be discovered, the encounter taking place high-up on the mountains overlooking the Sikkim border with Tibet, Joseph Hooker the plant hunter involved, the date 1849. The species was described in the third volume of *Rhododendrons of Sikkim-Himalaya,* his botanic account of the expedition that was published in 1851, and it reports that:

> "The hard woody branches of this curious little species, as thick as a goose-quill, straggle along the ground for a foot or two, presenting brown tufts of vegetation where not half a dozen other plants can exist. The branches are densely interwoven, very harsh and woolly, wholly depressed; whence the shrub, spreading horizontally, and barely raised two inches above the soil, becomes eminently typical of the arid stern climate it inhabits. The latest to bloom and earliest to mature its seeds, by far the smallest in foliage, and proportionally largest in flower, it may be recognized, even in the herbarium, as the production of the loftiest elevation on the surface of the globe."

Sir Joesph then adds:

> "For eight months of the year it is buried under many feet of snow: for the remaining four it is frequently snowed and sunned in the same hour. During genial weather, when the sun heats the soil to 150° [Fahrenheit], its perfumed foliage scents the air; whilst to snow-storm and frost it is insensible, blooming through all, expanding its little purple flowers to the day, and only closing them to wither after fertilization has taken place. As the life of a moth may be indefinitely prolonged whilst its duties are unfulfilled, so the flowers of this little mountaineer will remain open through days of fog and sleet, until a mild day facilitates the detachment of the pollen and fecundation of the ovarium."

Back at near sea level, the lepidote nature of the lower leaf surface will be found key to identifying the subspecies from the other Subsection *Lapponica* rhododendrons, for not only are the scales bicoloured - the majority, pale gold; a minority, dark brown - but the darker type are clearly larger in size, usually widely scattered, and they never touch each other, whereas the bulk overlap and are contiguous, or nearly so. Leaves no more than 1cm in length and calyx lobes between 2 and 5mm long should distinguish ssp. *nivale* from its two sisters, but in addition, a band of darker scales will usually be found along the calyx lobe margins, these further cementing the determination from the previously specific *R. nigropunctatum* or *R. bulu.*

Morphologically, *R. telmateium* is very similar to *R. nivale* ssp. *nivale* in all respects but one - it has pointed leaves with a distinct mucro at the tip. In fact, much like *R. nivale* ssp. *australe,* a 1975 concoction Melva and William Philipson assembled from a cornucopia of herbarium plates that no longer fell within their revised determinations for ssp. *nivale,* but were markedly consistent with each other. Field reports indicate that both of these taxa - the old one (*R. telmateium*) and that newly described (ssp. *australe*) - are distributed across the same area of northwest and central Yunnan. However, the ssp. *australe* rhododendrons are now known to grow to the south of, and are isolated from, the ssp. *nigropunctatum* population. Logic therefore dictates the imposition of synonymy, with ssp. *australe* absorbed into *R. telmateium,* as ICNAFP nomenclature and precedence rules dictate. Those stipulations also cast the *australe* epithet aside, for its use here is illegal given that Isaac Bayley Balfour and George Forrest had already utilised the name in 1919 to describe a plant that although now synonymous under *R. leptothrium,* still precludes the moniker's further employment within Genus *Rhododendron* today, and in the future. It was therefore an unnecessary duplication, easily avoidable, had the authors concerned been fully versed in their subject matter. And one, moreover, which should have been corrected much sooner.

In 1978 or 1980, for instance.

Roland Cooper was the plant hunter who successfully introduced *R. nivale* ssp. *nivale* into British gardens, the seed gathered in Bhutan arriving under field number Cooper 3483 at the end of 1914. Cultivated plants flowered for the first time at Edinburgh Botanic on March 26th, 1920.

Forms of ssp. *nivale* with a high-altitude provenance, though difficult to impossible in all but east coast and inland northern gardens, are irresistible to rhodophiles as they have the smallest leaves of any plant in the genus. As would be expected, they are slow growers, with very short annual branch extensions; dislike and react aversely to prolonged periods of high temperatures; and require absolutely exceptional drainage. Cognoscente unable to provide such planting spots, but who nevertheless are still desperate to add the species to their collections, as well as those who garden well to the south of Hadrian's Wall, can turn to Paludosum Group, these taller-growing, more upright forms of ssp. *nivale* found at much lower elevations in southeastern Tibet. Leaf size is slightly larger, but stress levels - both for you, and the plant - will be considerably less.

The Latin epithet translates as 'snowy'.



R. nivale (KW 5777)



R. nivale Paludosum Group



R. nivale Paludosum Group

R. capitatum

Hardiness:
H4-5.
Flowering Period:
March-April.
Distribution in the wild:
E Tibet; Qinghai, NW Sichuan, Gansu & Shaanxi, China.
Growing in forests, moist grasslands and alpine meadows, and on rocky slopes,
at elevations of 2,500-4,300m.

Identification:
Shrub, laxly upright, 0.3 to 1.5m high.
Leaves elliptic through elliptic-oblong to oblong,
0.6 to 2.5cm long by 0.3 to 0.9cm wide,
apex obscurely mucronate;
upper surface pale or olive-green, shiny or matt,
the scales contiguous to overlapping;
lower surface scales dimorphic, the two types equal in number and intermixed,
pale (near colourless through yellow) with golden centres,
or dark (tan through dark amber) with darker centres,
contiguous, overlapping, or up to half their own diameter apart.
Petiole 1-4mm long.
Inflorescence terminal, 2-8-flowered.
Pedicel 0.5-3mm long, often puberulous,
usually moderately lepidote, rarely without scales.
Calyx yellowish, the lobes oblong or ovate and 1-6mm long, unequal,
their outer surface lepidote (at the base) or not, and sometimes puberulous at the base,
their margins elepidote and often ciliate.
Corolla 1 to 1.7cm long,
pale lavender through bluish-purple to deep purple,
the outer surface elepidote and glabrous.
Stamens 10, exserted, equal in length or slightly shorter than the corolla.
Ovary often pubescent at the base.
Style declinate, equal to (rarely) or longer than the stamens,
the base sometimes pubescent.

Seed Collections:

Farrer 119	1914	R 13634	1925/1926
Farrer 511	1914	R 13635	1925/1926
Farrer 512	1914	R 13674	1925/1926
R 13596	1925/1926	R 13688	1925/1926
R 13600	1925/1926	CHM 2523	1986
R 13605	1925/1926	CCH 4105	1989
R 13611	1925/1926	GEN 92	1995
R 13622	1925/1926	QLG 185	1996

The Polish-Russian explorer, army officer, bigot and racist Nicolai Przewalski, stumbled upon *R. capitatum* during the first of four expeditions he made into Central Asia, beginning in 1870. That premier three-year trip started from Kyakhta, a small town in Russia's Buryatia Republic close to the Mongolian border and involved journeying across the Gobi Desert to Beijing, visiting the upper reaches of the Yangtze River and then in 1872, crossing into Tibet. It was on the return leg later that same year, while negotiating China's Gansu Province, that *R. capitatum* was found, one of over nine thousand plant, insect, reptile, bird or mammalian specimens amassed on what was actually an intelligence gathering mission for the Russian General Staff, though ostensibly funded by that country's Imperial Geographic Society. Contemporarily, as recent 21st Century Russian history shows, in Moscow, old habits die hard.

Carl Maximowicz, at the Saint Petersburg Botanical Gardens, wrote the description for *R. capitatum* in 1877, his appraisal appearing in Volume 9 of *Mélanges Biologiques Tires du Bulletin Physico-Mathematique de l'Academie Imperiale des Sciences de St.-Pétersbourg*.

The laxly upright growth and ultimate height of *R. capitatum,* plus the shape and size of its leaves and flowers, clearly mirror *R. nivale* ssp. *bulu,* but the complete lack of any axillary flower buds, or scales on the outer surface of the corollas, quickly separate the two. The dimorphic abaxial scales on the leaf undersides are also different: *R. capitatum* having an equal number of both types, which are similarly sized and in close proximity to one another if not touching; *R. bulu* featuring a preponderance of smaller scales and a scattering of widely spaced larger ones. *R. nitidulum* is also closely related, with field reports suggesting that the two populations may cross over or even merge on the hillsides of Sichuan, but none of the published evidence so far explicitly confirms this to be the case. An inflorescence with only 1 or 2 corollas, as opposed to 2 through 8, is the obvious morphological telltale, while only one type of scale makes its home on the *R. nitidulum* abaxial leaf surface, compared with the two types that exist side by side on the foliage of *R. capitatum*. Should a further distinction be needed, *R. capitatum* will be found to be a tetraploid, the possessor of 52 chromosomes, each of which can be counted under a microscope during root cell division.

Officially, history records Joseph Rock as being the first plant hunter to successfully introduce the species into UK cultivation during 1925, with nine seed lots arriving from his expedition to northwestern Gansu. Two earlier gatherings made in the province by Reginald Farrer in 1914 were apparently collected too soon after flowering for the seed to be viable (H. H. Davidian, *The Rhododendron Species*, Volume 1, 1982), though Farrer 511 and 514 continue to appear on the published seed listings. As does Farrer 119, which otherwise, goes unremarked by the doyens. Modern-day re-introductions have all come from Sichuan or the neighbouring Ankang District in Shaanxi, so as their more northerly origins suggest, the Rock collections from Gansu will be the hardiest. Here, the plant populations densely cloak the hillsides and are considered the Chinese equivalent of heather, however, without a protective blanket of winter snow, in the UK, *R. capitatum* is still touch-and-go in areas climatically designated H6 by the RHS, although its absence from most of the major rhododendron collections is more mystifying and likely, unrelated.

R. thymifolium

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
E Tibet; Qinghai, N Sichuan & Gansu, China.
Growing in forests and thickets, on open alpine moorland and moist rocky slopes,
at elevations of 2,400-4,800m.

Identification:
Shrub, low and upright, 0.3 to 1.3m high;
branchlets thin and fastigiate.
Leaves narrowly obovate through oblanceolate,
0.3 to 1.8cm long by 0.2 to 0.7cm wide,
apex shortly mucronate;
upper surface pale green or greyish-green, matt,
the scales silvery or pale fawn, and overlapping;
lower surface scales monomorphic, similarly sized,
uniformly of a pale fawn, creamy-yellow, straw-yellow or pale brown hue,
contiguous through overlapping.
Petiole 1-2mm long.
Inflorescence terminal, 1-2-3-flowered.
Pedicel usually sessile or nearly so, 0.5-1mm long, rarely to 2mm.
Calyx pink, rose or reddish, rim-like or 5-lobed,
these triangular, ovate or rounded and 0.5-1.2mm long,
their outer surface lepidote,
their margins lepidote or not, but usually ciliate, the hairs long or short.
Corolla 0.5 to 1.2cm long,
purple through pale lavender-blue,
the tube very short,
the outer surface usually lepidote on the tube and the lobes.
Stamens 8-12, exserted, shorter, equal to or longer than the corolla;
filaments villous towards the base or not.
Style variable, shorter, equal to or longer than the stamens,
the base rarely sparsely lepidote or pubescent.

Seed Collections:

Farrer 510	1914	Cox 5044	1990
R 6460	1923/1924	SICH 552	1991
R 6743	1923/1924	SICH 702	1991
R 13303	1925/1926	AC 4589	2000
R 13598	1925/1926	AC 4628	2000
R 24320	1932	JN 12095	2012

R. thymifolium was another of Nicolai Przewalski's finds, made on his tour through Gansu in 1873. Herbarium specimens were gathered and just as for *R. capitatum,* Carl Maximowicz composed the species botanic description that appears in 1877's Volume 9 of *Mélanges Biologiques Tires du Bulletin Physico-Mathematique de l'Academie Imperiale des Sciences de St.-Pétersbourg*.

That concise appraisal has since been broadened to accommodate two similar and now synonymic species from northern Sichuan: *R. polifolium* and *R. spilanthum*. Both of these plants are, morphologically, very close to *R. thymifolium,* but the relative lengths of the stamens and style in respect to each other and to the corolla, plus the presence of scales on the lobes and tube of the flowers has been clouded, making identification within the subsection more difficult. As does the fact that instead of an inflorescence holding just one corolla, or more rarely two, the 1975 Philipson revision clumped together plants that regularly boast three, this actuality absent from their species description in *Notes from the Royal Botanic Garden, Edinburgh,* Volume 34, but not in the descriptions given by H. H. Davidian in Volume 1 of his *The Rhododendron Species,* published in 1982. To separate the amalgamated species from the rest of the *Lapponica* rhododendrons therefore, a quartet of features must be considered in combination: the monomorphic, equally-sized scales on the leaf abaxial surface; the overlapping adaxial scales; the near sessile pedicels; and the rim-like or very short-lobed calyx.

R. thymifolium was introduced into UK cultivation from Gansu by Reginald Farrer in 1914, with Joseph Rock the only other documented supplier of seed until Peter Cox reintroduced the species in 1990. Frank Kingdon-Ward and Te-Tsun Yu are mentioned as possibly returning seed in 1922 and 1937 respectively, but if so, the species epithet does not appear in their documented field number listings. *R. polifolium,* discovered by Jean-André Soulié in 1893, may have been resident in British gardens prior to the arrival of *R. thymifolium,* while *R. spilanthum,* a June 1922 Rock find, only arrived in the UK after the conclusion of the Austrian-American's 1932 expedition.

Cultivated specimens of *R. thymifolium* are quite slow growing, tend to be upright and open, but never exceed more than 0.6m in height. They have small leaves and flowers, are fully hardy despite their delicate appearance, and pretty in bloom and foliage. And although the perfect subject for a rock garden niche, the species will rarely be found outwith a connoisseur's collection, and even then - as illustrated overleaf by a subsumed *spilanthum* clone - be one of the multi-bloomed synonymic incorporates.

R. thymifolium

R. thymifolium

R. thymifolium

R. fastigiatum

R. fastigiatum* ssp. *fastigiatum

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
N, NE & C Yunnan, China.
Growing in open alpine stony pasture, on screes and cliffs,
and in pine forests or rhododendron thickets, at elevations of 3,000-4,900m.

Identification:
Shrub, dense and compact, often symmetrical,
prostrate, cushion-forming or mounding, spreading or broadly upright,
0.2 to 1.5m high;
branchlets usually short and thick.
Leaves broadly elliptic through ovate to oblong,
0.5 to 1.8cm long by 0.2 to 0.9cm wide,
apex obtuse or rounded, and mucronate;
upper surface glaucous-grey (markedly so in new leaves) or pale glaucous-green, matt,
the scales overlapping, near contiguous or up to half their own diameter apart;
lower surface scales monomorphic, similarly sized,
of a uniform white, milky-pink or greyish hue, and opaque,
contiguous in groups or not touching.
Petiole 1-3mm long.
Inflorescence terminal, 1-5-flowered.
Pedicel 1-3mm long.
Calyx pink, reddish-purple or greenish,
the lobes bluntly triangular or oblong and 2.5-6mm long,
their outer surface variably lepidote,
their margins elepidote and long ciliate.
Corolla 0.9 to 1.8cm long,
bright lavender-blue through pinkish-purple to rich purple,
the outer surface elepidote or sparsely scaly on the lobes, and occasionally finely hairy.
Stamens 6-11, long-exserted,
equal in length or slightly longer than the corolla.
Ovary sometimes with a tuft of hairs at the apex.
Style longer than the stamens,
the base sometimes lepidote and sometimes pubescent.
Capsule sometimes puberulous at the base or the apex.

Seed Collections:

F 4149	1906	R 25417	1932
F 5847	1910	R 188	1948/1949
F 5863	1910	SBEC 533	1981
F 6757	1910	SBEC 557	1981
F 10055	1912/1914	SBEC 749	1981
F 10284	1912/1914	SBEC 753	1981
F 11626	1912/1914	SBEC 804	1981
F 15091	1917/1919	SBLE 141	1987
F 15249	1917/1919	SBLE 364	1987
F 15612	1917/1919	CLD 1285	1990
F 15613	1917/1919	CLD 1334	1990
F 15614	1917/1919	CLD 1538	1990
F 15615	1917/1919	SSNY 354	1992
F 21507	1921/1922	KGB 805	1993
F 21533	1921/1922	AGS 2496	1994
F 21581	1921/1922	CNW 1006	1994
R 6334	1923/1924	C&H 7159	1995
R 11303	1923/1924	EGM 302	1995
F 25496	1924/1925	NN 0910	2009
F 25981	1924/1925	JN 12209	2012
F 25982	1924/1925	JN 12363	2012

R. fastigiatum was first found on Mount Tsang-chan, a peak in the Cangshan Range west of Dali City in Yunnan Province, during June 1883. Abbé Jean-Marie Delavay was the plant collector involved in the encounter and Adrien Franchet the botanist responsible for describing the species in Volume 32 of the *Bulletin de la Société Botanique de France* that was published in 1886.

Closely related to and often confused with *R. impeditum, R. fastigiatum* differs only in the glaucous upper leaf surface and the colour of the abaxial scales - pale and opaque, compared with brown or rusty. Field study has shown that the two species overlap and merge in only a small area, with the population of *R. impeditum* distributed in northern Yunnan and southwest Sichuan, these generally to the northeast of the *R. fastigiatum* dispositions. However, given those marginal character differences and their geographic spread, reduction to subspecies ranking under the first described taxon - *R. fastigiatum* - is more reflective of the information to hand and therefore the position adopted herein.

R. fastigiatum ssp. *fastigiatum* is the only Subsection *Lapponica* species to display white, greyish or milky-pink non-translucent scales on its lower leaf surface and the genes that determine these characteristics are clearly dominant, as such features are mirrored on the blade undersides of many of the hybrid crosses made with the plant. Identification within the subsection is further assisted by the glaucous-grey colour of the foliage, this especially pronounced in the young leaves.

George Forrest introduced the species into UK cultivation in 1906 under the field number F 4149, shortly after his first trip to China was disrupted by rampaging Tibetan religious fanatics, who would normally avoid stepping on small insects, but now regarded all Catholic priests and any other Westerner as fair game. To torture and kill. After all, their victims would surely be reborn in the endless cycle of life - saṃsāra - that these Buddhists wrongly believed governed all life, matter and existence.

Whether germination resulted from Arthur Kilpin Bulley's propagators also having a road to Damascus moment, or seed was retrieved by other hands from capsules on one of the herbarium sheets, we shall probably never know, but they evidence the fact that good old George did indeed collect viable rhododendron capsules on that premier expedition despite the dearth of material that emerged from the Bees Seeds nursery. Specimens of *R. fastigiatum* will usually flower within eighteen months of springing-up in a seed pan, as did those from a later Forrest gathering of 1911 vintage, these opening their blooms in the autumn of 1912, simultaneously at Caerhays, Edinburgh and Kew, as W. J. Bean details within the second edition of his *Trees and Shrubs Hardy in the British Isles* (Volume 2, page 355, 1919).

R. fastigiatum is actually one of the easiest Subsection *Lapponica* rhododendrons to grow, still perfect for cooler climes, yet more tolerant of conditions in the gardens of southern England, although specimens will still suffer in prolonged hot spells and require a swiftly draining soil medium. While not as fast growing as many of its relatives, when happily ensconced, the species will cover itself annually with a flush of blue-purple flowers, often completely obscuring the leaves and forms from the highest reaches of the distribution will often succeed in upland or quite exposed gardens. But note, the growth habit is most definitely not fastigiate, despite the epithet.

Two specimens of *R. fastigiatum* ssp. *fastigiatum* have had their chromosomes counted, one proving to be a diploid, the other a tetraploid. Yet given the swarm of natural hybrids that have been conceived with ssp. *impeditum,* and the bevy of directed pollination partners detailed on the pages of the *International Rhododendron Register and Checklist,* it is probably correct to conclude that ssp. *fastigiatum* is actually a diploid with twenty-six chromosomes, making the tetraploid, a likely rogue.



R. fastigiatum (F 5847)



R. fastigiatum (SBEC 804)



R. fastigiatum (SBEC 804)



R. fastigiatum



R. fastigiatum



R. nigropunctatum

R. nivale* ssp. *nigropunctatum
Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
E Tibet; S Qinghai, W Sichuan, NW & C Yunnan, China.
Growing in open moorland, on swampy grassland, and on rocky slopes,
at elevations of 3,100-5,400m.

Identification:
Shrub, prostrate, compact, low or upright, 0.3 to 1.2m high.
Leaves broadly elliptic through ovate to near circular,
0.4 to 1.3cm long by 0.2 to 0.6cm wide,
apex rounded, mucronate, but usually obscurely so;
upper surface pale greyish-green and matt, or dark green and shiny,
the scales grey-white or golden, nearly contiguous to overlapping;
lower surface scales dimorphic, intermixed,
the majority pale gold and of a similar size, sometimes predominating,
nearly contiguous through overlapping,
a minority dark brown and larger, closely or widely scattered,
the colour contrast between the two scale types often indistinct.
Petiole 0.5-3mm long.
Inflorescence terminal, 1-3-flowered, rarely more.
Pedicel 0.5-1.5mm long, sometimes pubescent.
Calyx pink, reddish or greenish, obsolete or rim-like with 5 lobes,
these triangular, rounded or oblong, and 0.5-2mm long,
their outer surface variably lepidote, occasionally without scales,
their margins lepidote or not, but often variably ciliate.
Corolla 0.7 to 1.6cm long,
pink through lilac to magenta and deep purple,
the outer surface rarely lepidote, but often pubescent.
Stamens 10, exserted, shorter, equal to or longer than the corolla.
Ovary rarely puberulous at the apex.
Style predominantly longer than the stamens, the base sometimes pubescent.
Capsule sometimes densely puberulous.

Seed Collections:

W 3465	1906/1909	F 29251	1930/1931	CCH 3928	1989	KGB 236	1993
W 3467	1906/1909	R 23410	1932	CCH 4030	1989	KGB 243	1993
F 16305	1917/1919	R 23616	1932	Cox 5069	1990	KGB 449	1993
F 16307	1917/1919	R 24385	1932	CEE 392	1991	AC 4067	1998
F 19597	1921/1922	LS&E 13872	1946/1947	CEE 430	1991	AC 4109	1998
F 20462	1921/1922	SICH 142	1988	KEG 313	1993	JN 841	1999
F 21301	1921/1922	SICH 342	1988	KGB 137	1993	JN 12037	2012

One of the new combinations that emerged from the Philipsons' 1975 revision of Subsection *Lapponica* was *R. nivale* ssp. *boreale*. The two botanists - husband and wife, William and Melva - fused no less than ten rhododendron species, each previously assigned specific ranking, into their newly described taxon, which in alphabetic order, were:

R. alpicola, discovered in July 1908 and introduced into cultivation by Ernest Wilson that same year, later described by the collector and Alfred Rehder in *Plantae Wilsonianae,* published during 1913;

R. batangense, a Jean-André Soulié find of June 1903, described by Sir Isaac Bayley Balfour in Volume 13 of *Notes from the Royal Botanic Garden, Edinburgh,* published in 1920, this previously having been made synonymous with *R. stictophyllum* in 1930 (*The Species of Rhododendron,* Stevenson);

R. nigropunctatum, found by Pierre Bonvalot and Prince Henri d'Orléans during May 1890, then jointly described by Louis Bureau and Adrien Franchet in 1891, when writing in Volume 5 of the *Journal de Botanique;*

R. oreinum, another Soulié discovery, but made in May 1904, which also received a Balfour description in *Notes,* Volume 13. This too had been made synonymous in 1930's *The Species of Rhododendron,* but with *R. alpicola;*

R. oresbium, a Frank Kingdon-Ward collection from July 1913, described by Ward and Balfour in Volume 9 of *Notes,* published in 1916.

R. ramosissimum, discovered by Henri-Georges Mussot during 1897 and described in Volume 12 of the *Journal de Botanique* by Franchet in 1898;

R. stictophyllum, another June 1903 collection by Soulié that was described by Balfour, but in Volume 11 of *Notes,* published in 1919;

R. vicarium, again a Jean-André find, but from June 1894, which was described by Balfour in Volume 12 of *Notes,* published in 1920, and then made synonymous with *R. telmateium* in 1930's *The Species of Rhododendron;*

R. violaceum, this find made by Wilson in June 1908, with its introduction into UK cultivation taking place in 1910, and its description also appearing within the pages of *Plantae Wilsonianae;*

R. yaragongense, a fifth Soulié discovery, made in June 1904, and again described by Balfour in *Notes,* Volume 13, this made synonymous with *R. ramosissimum* in 1930's *The Species of Rhododendron.*

And as Peter and Kenneth Cox state in their 1997 *Encyclopedia of Rhododendron Species,* on the ground, despite considerable variation, these species do seem to merge into one cline, so on the surface, the Philipsons were correct in making them all synonymous. Equally, the decision to go for a new taxon name was likely taken to avoid giving the characteristics of any one of the absorbed rhododendrons undue prominence, but as with their *australe* epithet, the moniker chosen here had likewise, previously been used within Genus *Rhododendron:*

Firstly, by Harry Tagg and George Forrest in 1926 to describe a smaller-leaved variety of *R. sinogrande* (*Notes,* Volume 15).

And secondly, by the Japanese botanist Junichi Sugimoto in 1972 for the combination *R. dilatatum* var. *boreale,* though the publication title this appears in currently eludes those responsible for maintaining the IPNI database.

So again, despite the fact that these older taxon names are now no longer in use, both plants having fallen victim to the synonymic whims of some other Edinburgh Revision botanist, the re-use of their epithet within the same genus is distinctly frowned upon by the ICNAFP. Made verboten in fact. As it will lead to confusion over exactly which rhododendron species is being discussed.

A new name for the merged conglomeration is therefore required; *R. nigropunctatum,* being the first of the ten to secure an official botanic description, the obvious candidate. Its selection moreover, complies fully with the ICNAFP nomenclature and precedence rules, so is happily adopted herein.

Even so, the regrouping is still distinctly untidy and does not answer the criticism voiced in 1997 by Peter and Kenneth Cox that although 'the Philipsons claim the style is predominantly shorter than the stamens, we cannot accept this, as the style is longer in many of the former species now made synonymous' (*The Encyclopedia of Rhododendron Species,* p. 270). However, the endemic situation as reported to exist on the ground across the consolidated population's range supports no other rearrangement.

Returning to that 'on the surface' dig, a deeper dive will reveal that eight of the ten are confirmed - or currently believed to be - diploids, whose individual cells each hold 26 chromosomes. The remaining two taxa however, are known to be tetraploids, where of course $2n = 52$, this making them reproductively incompatible with each of the other eight. Specific status must therefore be returned to *R. ramosissimum,* with *R. violaceum* conveniently and in accordance with ICNAFP rules, made a synonym of it given that these two plants can successfully mate.

An obscure calyx, which at most will be no more than a rim with lobes between 0.5 and 2mm long, allows *R. nivale* ssp. *nigropunctatum* to be keyed from her two sisters - *R. nivale* ssp. *nivale* and *R. nivale* ssp. *bulu* - as does the presence of a small mucro at the blade tip and less of a colour difference between the two types of scale on the abaxial leaf surface. Height is not a useful characteristic to employ in separating-out the three, as despite the generality that ssp. *nivale* plants are dwarf to low growing, ssp. *bulu* tall, and ssp. *nigropunctatum* somewhere between the two, in practice, this so called truism will be proven a lie. Potential plant hunters should also note that on the hills of Sichuan and Yunnan, *R. nigropunctatum* has been found to hybridise wantonly and merge with several other *Lapponica* rhododendrons making identification in the wild a particular joy.

For rhodophiles, one of the synonymous species listed above is distinctive enough in cultivation to warrant special status, so those lower-growing plants with small and shiny dark green leaves have been closeted under the banner of Stictophyllum Group, because as originally described, *R. nigropunctatum* displayed a more upright habit.

In the UK, cultivation of the subspecies, like many of the *Lapponica* rhododendrons, is again more successful in northern locales, rather than southern gardens, with plants of ssp. *nigropunctatum* not quite as fussy as specimens of ssp. *nivale* unless their altitudinal endemicity is matched (the capsules gathered from elevations bordering the top of their range). However, prospective purchasers should be aware that the adage 'a species for connoisseurs' will most definitely be found to apply.

Finally, despite the photograph taken at Arduaine Gardens in the Highlands opposite appearing to show flowers opening from axillary buds along the stem, the camera angle is deceiving, with the corollas themselves actually hiding very short branchlets, as will become evident from the images that follow overleaf.



R. nigropunctatum Stictophyllum Group



R. nigropunctatum



R. nigropunctatum



R. nigropunctatum

R. intricatum

Hardiness:
H5-6.
Flowering Period:
March-May.
Distribution in the wild:
SW, W & C Sichuan, and N Yunnan, China.
Growing in moist and dry alpine meadows, in moist ravines, on open hillsides,
in and at the margins of Abies forest, and in rhododendron thickets,
at elevations of 2,800-5,000m.

Identification:
Shrub, compact and bushy, matted or laxly upright, 0.15 to 1.5m high.
Leaves elliptic through oblong to near circular,
0.4 to 1.4cm long by 0.3 to 0.8cm wide,
apex rounded or obtuse, and usually mucronate;
upper surface pale greyish-green, matt, the scales golden,
translucent and overlapping, the margins often hairy;
lower surface scales monomorphic, similarly sized,
of a uniform greyish, buff, straw or pale yellow hue,
contiguous through overlapping.
Petiole 1-3mm long, rarely to 5mm.
Inflorescence terminal, 1-10-flowered.
Pedicel 1-2mm long, rarely to 5mm.
Calyx pink, reddish or greenish,
the lobes triangular through oblong and 0.5-2mm long,
their outer surface rarely lepidote,
their margins lepidote or not, with pale gold scales, but usually long ciliate.
Corolla 0.7 to 1.4cm long,
tubular-funnel-shaped, near hypercrateriform,
the tube short, with parallel sides, the lobes spreading,
pale lavender through mauve to dark blue, or (rarely) yellowish,
the outer surface elepidote.
Stamens 10, but sometimes 7-11,
very short, included within the tube.
Style very short, no more than half the length of the stamens.

Seed Collections:

W 1543	1904	F 29266	1930/1931	EGM 131	1990
KW 4184	1921	R 24446	1932	CEE 364	1991
F 20450	1921/1922	SICH 349	1988	CEE 393	1991
F 21031	1921/1922	Cox 5045	1990	Cox 6132	1992
F 21248	1921/1922	Cox 5060	1990	SICH 1070	1992
F 21344	1921/1922	Cox 5121	1990	JN 997	1999
R 18144	1929	EGM 125	1990	JN 12088	2012
R 18222	1929	EGM 130	1990	JN 12267	2012

R. intricatum was found during June 1891 growing around the town of Tatsienlu - now Kangding in Chinese, but historically, Dartsedo, in the local Tibetan dialect - which is located in the west of Sichuan. French missionary priest and amateur botanist, Jean-Andre Soulié, was the first knowledgeable Westerner to stumble upon the plant population and dried material for the herbarium at the Muséum National d'Histoire Naturelle was soon on its way to Paris care of the Society of Foreign Missions. The species botanic description, to be found in Volume 9 of the *Journal de Botanique,* published during 1895, is just one of nearly 4,000 plants new to science that Adrien Franchet catalogued over the course of his distinguished career (some 179 of these within Genus *Rhododendron*).

When the species is in bloom, *R. intricatum* is immediately identifiable from all of the other Subsection *Lapponica* members courtesy of its tubular-funnel shaped corollas. These have a short tube with parallel sides, and lobes that open out at near right angles, and they are very reminiscent of the Section *Pogonanthum* rhododendrons, although *R. intricatum* lacks any tiered abaxial leaf scales. The extremely short stamens and even more petite style, which is never more than half the length of the stamen filaments, are all included within the corolla tube, never emerging past its mouth, and are equally keyable features. The taxon is most closely related to *R. complexum,* differences in stamen number, corolla shape, and the colour of the scales on the leaf undersides cleaving the two apart: the customary 10, or more rarely 7 through 11, of *R. intricatum,* comparing with 5 or 6 for *R. complexum*; then respectively, tubular-funnel to narrowly funnel; and greyish through pale yellow, as opposed to rusty-brown.

Polyploidy-wise, *R. intricatum* is a diploid with 26 chromosomes, while *R. complexum* is a hexaploid with 78. Regrettably however, that *R. intricatum* count needs to be taken with a small pinch of salt, as a second sample tested turned out to be a tetraploid. Given that these are the only two results for the species ever to have been published, the choice to opt for the diploid value is somewhat arbitrary, though it is assisted by knowledge of a *R. intricatum* x *R. telmateium* natural hybrid collected by Frank Kingdon-Ward under the field number KW 5158 (*A Revision of Rhododendron Section Lapponicum,* Philipson and Philipson, *Notes from the Royal Botanic Garden, Edinburgh,* Volume 34, Number 1, 1975). Directed pollination hybrid crosses have been made with both diploid and tetraploid partners, though it is unknown if the later resulted in a few viable but likely sterile triploid seedlings or a high double-figure count of 'normal' progeny.

Ernest Wilson introduced *R. intricatum* into British gardens while collecting for the Veitch Nurseries, the seed arriving in 1904 under field number W 1543. Germinated plants flowered for the first time in cultivation during April 1907, collecting a First Class Certificate from the RHS for their trouble. Those flowers proved particularly frost-hardy, the corollas often emerging into a dawn whole and unblemished, while the blooms of every other rhododendron had been turned to mush. Plants from all but the lowest reaches of the wild distribution are fully hardy across the whole of the UK, they are quite fast growers, developing into broadly upright bushes around a metre high and wide, and are very free-flowering, the lavender-blue corollas usually opening in trusses of five. Yet strangely, the pretty blooms and tough constitution notwithstanding, the species will only rarely be encountered, even in the major collections.

Specimens of *R. intricatum* grown under the 'Forrest 20' sobriquet have been authenticated as the real deal, but the tag is not a bona fide field number; equally, while herbarium specimens collected by Joseph Rock in 1932 under the field number R 24446 are pukka, at least some of the seedlings raised from that gathering stray from the concept of being kosher.




R. intricatum (F 29266)


R. intricatum (F 29266)


R. intricatum (F 29266)


R. flavidum

R. flavidum

Hardiness:
H5.
Flowering Period:
April-May.
Distribution in the wild:
NE & W Sichuan, China.
Growing in alpine forests and moorland, on and amongst rocks,
at elevations of 3,000-4,300m.

Identification:
Shrub, upright or bushy, 0.4 to 1.5m high;
branchlets densely puberulous, rarely glabrous.
Leaves broadly elliptic through oblong,
0.7 to 1.8cm long by 0.3 to 1cm wide,
apex rounded, and shortly mucronate;
upper surface dark green, shiny, moderately through densely lepidote,
the scales near contiguous to overlapping;
lower surface scales monomorphic, prominent,
of a uniform brown, dark brown or reddish-brown hue,
between half to two times their own diameter apart.
Petiole 1-4mm long, often puberulous.
Inflorescence terminal, 1-5-flowered.
Pedicel 2-4mm long, often puberulous.
Calyx pink or greenish,
the lobes strap-shaped with pointed tips or triangular and 2-7mm long,
their outer surface variably lepidote or not, glabrous or minutely downy at the base,
their margins sparsely lepidote or not, and ciliate.
Corolla 1 to 1.8cm long,
pale yellow,
the outer surface sparsely lepidote and pubescent,
the inner surface and throat pubescent.
Stamens 8-10, long-exserted,
equal in length or slightly longer than the corolla.
Style longer than the stamens,
the base puberulous.

Seed Collections:

W 1773	1905
W 1202	1908
Cox 6143	1992
JN 12094	2012

It was Abbé Jean-Andre Soulié who discovered *R. flavidum,* making the find in the west of Sichuan at Kiala, near Tatsienlu, on June 3rd 1893, and despatching specimens swiftly back to France, where Adrien Franchet described the new-to-science species in Volume 9 of the *Journal de Botanique,* this published in 1895.

Just two Subsection *Lapponica* rhododendrons have yellow flowers - *R. flavidum* and *R. rupicola* ssp. *chryseum* - making an identification when in bloom much simpler, and the former's erect habit, densely pubescent branchlets and dark green shiny leaves with widely spaced abaxial scales, quickly cleaves it from the latter. At a cellular level, the true species is a diploid with 26 chromosomes.

Some authorities continue to maintain *R. flavidum* var. *psilostylum* as distinct. These plants have a slightly wider leaf and two types of scale on the abaxial surface - some dark brown, others golden - and no hairs at the base of the style. H. H. Davidian considered the taxon synonymous with *R. flavidum* (*The Rhododendron Species,* Volume 1, 1982), while in contrast, Melva and William Philipson opted for perpetuation (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 34, 1975). Field study has shown that the plant is far more likely to be a natural hybrid boasting a *R. flavidum* x *R. rupicola* ssp. *chryseum* parentage, though this has yet to be confirmed by the geneticists.

Continuing the subject of insect-led cross-pollination, cultivated plants labelled *R. flavidum* 'White' are almost certainly seed pan rogues, which while bountifully floriferous and highly garden-worthy, remain hybrids. They have a hexaploid chromosome count where 2*n* = 78, so - take a breath! - are the product of a somatically doubled triploid, two hexaploid haploid gametes fusing normally, a tetraploid-tetraploid match where one of the gametes is unreduced, or a diploid-tetraploid combination where both gametes are unreduced. When not in flower - sans a label - the larger leaves, more excessive habit and general rude wellbeing will usually separate false from true, and no matching plants to those that emerged in the pot have as yet been found in the wild.

R. lysolepis and *R. wongii* are also *R. flavidum* hybrids, the first a cross with *R. impeditum* - producing a plant with tiny glossy leaves and pinkish-purple flowers - the second, a mating with the Subsection *Triflora* species, *R. ambiguum* - cultivated specimens germinated from seed gathered from the wild natural hybrid populations having features midway in size and shape between the two parents, as indeed do those endemic plants, which indicates on-the-ground progress towards speciation. In theory, *R. x wongii* should be a triploid with 39 chromosomes, as it is the result of a diploid x tetraploid cross, so by extension, it could have spawned the *R. flavidum* 'White' zygote when cell division went wrong, though a count of its resident little maggots has yet to be made. The natural hybrid clearly has an augmented gene pool given the different parents, and if the above prognosis were in fact correct, this would definitely explain the vigour of its possible progeny.

Ernest Wilson was the plant hunter who introduced *R. flavidum* into British gardens, though at the time, his 1905 collection was named *R. primulinum,* which would later be made synonymous. First-flowering took place at the Coombe Wood nursery of J. Veitch and Sons, the expedition's sponsors, during April 1909. A second Wilson gathering arrived in 1908, with a Peter Cox reintroduction following some eighty-four years later in 1992. The Jens Nielsen 2012 find is the only other gathering made to date.

Yellow-flowering *R. flavidum* will be found in far fewer gardens than its milky-white hybrid namesake as it has proven to be one of the more difficult *Lapponica* species to grow well, often suffering partial die-back if cultural requirements stray even a modicum from optimum. Perversely, it is fairly easy to root from cuttings. Yet when happy, a fairly hardy domed bush, around one metre high and wide, is the attractive result, flushed with those pale yellow blooms from early April onwards.



R. flavidum

R. flavidum



R. ramosissimum

R. ramosissimum
Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
W Sichuan & NW Yunnan, China.
Growing in open moorland, on limestone screes, and on alpine slopes,
at elevations of 3,000-4,900m.

Identification:
Shrub, compact or upright, bushy, 0.1 to 1.2m high.
Leaves elliptic through ovate to oval,
0.3 to 1.2cm long by 0.2 to 0.6cm wide,
apex rounded or obtuse, and mucronate;
upper surface pale or dark green, matt or shiny,
densely lepidote, the scales overlapping;
lower surface scales dimorphic, intermixed,
the majority large, pale or dark brown,
nearly contiguous through overlapping,
a minority dark brown and larger, closely or widely scattered,
the colour contrast between scale types often indistinct.
Petiole 1-3mm long.
Inflorescence terminal, 1-3-flowered.
Pedicel 0.5-3mm long, glabrous.
Calyx reddish or pink, rim-like with 5 lobes,
these ovate, oblong or oval, and 0.5-3mm long,
their outer surface moderately through densely lepidote,
their margins lepidote or not (rarely), glabrous or ciliate.
Corolla 0.8 to 1.2cm long,
deep bluish, violet-purple, purple, purplish-red or pinkish-violet,
the outer surface rarely lepidote, glabrous.
Stamens 8-10, exserted, shorter, equal to or slightly longer than the corolla.
Ovary glabrous.
Style shorter, equal to or longer than the stamens,
glabrous, rarely puberulous at the base.
Capsule puberulous at the base or glabrous.

Seed Collections:

W 3468	1908
W 3469	1908
W 4269	1910/1911
R 23310	1932

In addition to the four authenticated gatherings of *R. ramosissimum* listed above,
additional introductions are likely to have been made from the early 1980s onwards,
but will be filed under the Philipsons' *R. nivale* ssp. *boreale* catchall.

Henri Georges Mussot (1854-1905), was another of the French missionary priests sent to China by the Catholic Société des Missions Étrangères de Paris to convert the heathen. Ordained in mid-December 1880, just a month later he was on his way to Tibet, where he would spend the rest of his life. Like many of his colleagues, he soon developed an interest in the vast array of plants found in the vicinity of the mission station at Cha-pa, located close to Tatsienlu (now Shaba and Kangding, respectively, and part of the Garzê Tibetan Autonomous Prefecture in northwest Sichuan), and began to collect specimens for the Muséum National d'Histoire Naturelle. One of these, gathered to the south of Tatsienlu during 1897, was *R. ramosissimum*. Dried material was returned to Paris under the field numbers 265 and 266, and an Adrien Franchet botanic description subsequently appeared in Volume 12 of the *Journal de Botanique,* published in 1898.

All of the specimens under Mussot 266 were later determined to be *R. thymifolium* by William and Melva Philipson during preparatory work for their 1975-published *Revision of Rhododendron Section Lapponicum* (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 34), but the material gathered under Mussot 265 kept its *R. ramosissimum* designation, although it fell within the scope of their newly defined *R. nivale* ssp. *boreale* combination, so was made synonymous under that epithet along with the other nine specific species detailed on page 187.

As already outlined, the '*boreale*' epithet chosen by the Philipsons is illegal under the ICNAFP nomenclature rules and scientific study has shown that *R. ramosissimum* is a tetraploid with 52 chromosomes in each of its cells, rather than the standard diploid with 26, so cannot remain within that merged conglomeration given the reproductive barriers now known to exist between polyploid rhododendrons. The same holds true for one of the other merged species, *R. violaceum*. In consequence, *R. ramosissimum* is herein returned to specific status, with *R. violaceum,* first described in 1913 and therefore loosing out in the precedence stakes, made synonymous.

Such a merger is imposed despite the fact that officially *R. ramosissimum* has a short style, equal to or shorter than the stamens, which are roughly the same length as the corolla, while *R. violaceum* has a long style that exceeds both its corolla and stamens in length. This is due to their endemic distribution, as currently reported; the morphologic match across the rest of the feature set; and the duplicated chromosome count. And as the photographs illustrate, the fact that style length variation - shorter, equal, longer - can be found across the same plant.

R. ramosissimum was first introduced into UK cultivation by Ernest Wilson on his third expedition to China that took place between 1906 and 1909, the seed arriving at Kew via the Arnold Arboretum in 1908 under two field numbers, W 3468 and W 3469. A third gathering was made on the plant hunter's next trip - W 4269 - and Joseph Rock sent a batch of seed in 1932 after securing herbarium specimens in June 1928. As indicated opposite, the species may have been reintroduced post China's reopening to Western botanists and horticulturalists, with seed possibly gathered between 1988 and 2012, but it has not been possible to determine if this was actually the case because of the Philipsons' wholesale imposition of synonymy in 1975.

In British gardens, *R. ramosissimum* forms a multi-branched, bushy dome to around 0.7m high that is completely covered in purplish-red, violet-purple or deep bluish blooms during spring, the latter clones highly prized. Averse to excessive summer heat, the species thrives in the rock gardens of northeast England and eastern Scotland, but requires exemplary drainage if attempted anywhere along the northwestern seaboard. Rhodophiles further south may score an occasionally victory and satisfy its predilections for a while, but the clock will usually be ticking down towards an ultimate, if long-winded demise.


R. ramosissimum


R. ramosissimum

R. nitidulum

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
NW & C Sichuan, China.
Growing in alpine meadows, on moorland and rocky slopes,
and on damp areas alongside streams, at elevations of 3,000-5,000m.

Identification:
Shrub, spreading or broadly upright, 0.2 to 1.3m high;
branchlets short and thick.
Leaves elliptic through ovate,
0.5 to 1.2cm long by 0.3 to 0.7cm wide,
apex obtuse or rounded, and obscurely mucronate or without a mucro;
upper surface dark green and shiny,
the scales nearly contiguous or contiguous;
lower surface scales monomorphic, similarly sized,
of a fawn hue with golden centres,
overlapping, contiguous or near contiguous.
Petiole 1-2mm long, densely lepidote.
Inflorescence terminal, 1-2-flowered.
Pedicel 0.5-1.5mm long.
Calyx pink,
the lobes ovate, oblong-oval or rounded and 1.3mm long,
their outer surface lepidote,
their margins elepidote, but usually ciliate.
Corolla 1.2 to 1.5cm long,
rosy-lilac through violet-purple,
the outer surface elepidote.
Stamens 8-10, exserted, equal in length or slightly longer than the corolla.
Style longer than the stamens.

Seed Collections:

Cox 5031	1990
Cox 5043	1990
EGM 156	1990
CEE 365	1991
CEE 391	1991
JN 12089	2012
JN 12303	2012

Ernest Wilson was the first Western collector to come across *R. nitidulum,* a native of the hills of China's Sichuan Province. He found a population of dwarf plants above Tatsienlu in November 1903 while collecting for the Veitch Nurseries and returned early in July 1908 for additional specimens, these destined for the Arnold Arboretum. A week or so before that encounter, while exploring near Mupin, Baoxing County, in late June, taller-growing forms of the species were discovered. Both types were described in 1913 for *Plantae Wilsonianae,* the book he wrote jointly with Alfred Rehder, the guardian of the Harvard University herbarium, with the smaller plants tagged as *R. nitidulum* var. *nubigenum,* a combination that has now been made synonymous under the specific species.

A quartet of features must be examined to cleave *R. nitidulum* from the other members of Subsection *Lapponica:* the abaxial leaf scales - monomorphic, fawn-coloured, with golden centres; the adaxial leaf surface - dark green and shiny; the pedicels - very short, no more than 1.5mm long; and finally, the flower truss - populated by only 1 or 2 corollas.

Even then, despite ticking all of those identification boxes, the species will still be mistaken for *R. nivale,* which although graced with dimorphic scales on the abaxial leaf surface, is often found with very few of the larger, darker type, especially when these are widely scattered, or the colour difference between the two scale types is so indistinct that distinguishing one species from the other becomes near impossible. To this end, plants previously classified from their herbarium specimens as *R. nitidulum* var. *omeiense,* which have a few widely scattered darker scales amongst the fawn majority (but of course are therefore dimorphic) are likely to be forms of, or a stabilised natural hybrid of *R. nivale* ssp. *nigropunctatum,* mirroring the morphologic example of *R. x edgarianum*. Equally, the var. *omeiense* name is actually a misnomer, because *R. nitidulum* also grows on Emei Shan. And yet again, the choice of epithet made by the Philipsons for their new combination is illegal under the international nomenclature rules, for in 1913 Wilson and Rehder had used that very same appellation to christen a variety of *R. argyrophyllum* discovered by the plant hunter on Mount Omei a decade earlier (Mount Emei and Mount Omei are one and the same, a 3,099m-tall peak situated on the western rim of the Sichuan Basin).

Current endemic reporting details the wild distribution of *R. nitidulum* to be restricted to the central and northwestern areas of Sichuan, well away from the populations of *R. nivale* ssp. *nivale,* which are resident on the Himalaya and in southeast Tibet, however the species does share those same mountain slopes with another *nivale* adaptation, the widely variable ssp. *nigropunctatum*. Additional fieldwork plus genetic study may one day establish that *R. nitidulum* is merely an adjunct of the latter, albeit with a non-obscure calyx and just one type of scale on the leaf underside, but until then, the taxon remains in possession of its specific status.

Officially, Ernest Wilson introduced *R. nitidulum* into UK cultivation during 1908, except the two field numbers traceable to that name - W 3458 and W 3461 - refer to herbarium material with pressed corollas collected early in the season. The November 1903 gathering under W 3935 is therefore the more likely candidate as by then, the capsules would have matured and the seed become viable. That it was gathered from plants growing above the 4,300m contour probably explains why the species was later lost to cultivation, though apparently some specimens survived for many years (H. H. Davidian, *The Rhododendron Species,* Volume 1, 1982). Peter Cox and Ted Millais were jointly responsible for rediscovering *R. nitidulum* and reintroducing seed in 1990.

In British gardens, the plants make neat, dense domes, usually around 0.7m high when mature, with very small leaves and light or dark violet-purple flowers. Some clones flower freely while others are somewhat shy. Drainage as ever needs to be near perfect.

R. websterianum

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
NW Sichuan, China.
Growing in woodland and amongst scrub, on moorland and boggy ground,
at elevations of 3,200-4,900m.

Identification:
Shrub, broadly or laxly upright, 0.2 to 1.5m high;
branchlets fastigiate.
Leaves elliptic-oblong through ovate to ovate-lanceolate,
0.5 to 2cm long by 0.2 to 0.9cm wide,
apex mucronate or not;
upper surface pale greyish-green and matt, the scales overlapping;
lower surface scales monomorphic, similarly sized,
uniformly of a fawn, straw or creamy-yellow hue,
contiguous through overlapping.
Petiole 1-5mm long.
Inflorescence terminal, 1-2-flowered.
Pedicel 1-3mm long.
Calyx pink, purple, lavender or yellowish-red,
the lobes oblong or broadly rounded and 3-5mm long,
their outer surface usually lepidote,
their margins rarely lepidote, but usually ciliate.
Corolla 1 to 1.9cm long,
purplish-blue through pale purple,
the outer surface elepidote, sometimes pubescent.
Stamens 10, long-exserted, slightly shorter or equal in length to the corolla.
Style reddish-purple, longer than the stamens,
the base sparsely lepidote or not, and sparsely pubescent or not.

Seed Collections:

W 1225	1908	CEE 394	1991
W 1328a	1908/1909	CEE 407	1991
Cox 5080	1990	CEE 429	1991
Cox 5123	1990	CEE 559	1991
EGM 146	1990	FB31-2018	2018

R. websterianum was also an Ernest Wilson find, made in June 1908 while he was again collecting near Tatsienlu in western Sichuan. The plant hunter described the species in *Plantae Wilsonianae*, published in 1913, the text written with Alfred Rehder, and named the rhododendron for Frank G. Webster, a prominent Boston banker and sponsor of the Arnold Arboretum.

The species is closely related to *R. nitidulum* and when out of flower, often confused with *R. hippophaeoides,* however, the distinctly erect habit and dull yellow, rather than golden, abaxial leaf surface scales identify *R. websterianum* from the former, especially as the young growth, coincident with or already quite well established when the flowers open, is a characteristic not found on specimens of that taxon. The *R. websterianum* inflorescence usually produces just a solitary corolla, occasionally doubling that to two, but never comes close to the profligacy displayed by the three *R. hippophaeoides* varieties.

In 1975, William and Melva Philipson determined that a Joseph Rock 1929 herbarium collection under the field number Rock 17492, with white to pale yellow flowers, was a new form of the species and designated it *R. websterianum* var. *yulongense,* their epithet choice acknowledging the location where it was found on the grasslands of Yulong-Hsi, in Minya County, to the south of Tatsienlu. Hands-on horticultural expert Peter Cox however, believes that the dried material is identical to *R. rupicola* var. *chryseum,* stating this to be so in his 1985 book *The Smaller Rhododendrons,* which is how the taxon is treated herein.

Ernest Wilson is credited with introducing *R. websterianum* during 1908, but expert opinion is now of the view that the seedlings that germinated were actually forms of *R. hippophaeoides*. George Forrest too reportedly reintroduced *R. websterianum* many times, but as the species name fails to appear on any of his published seed lists - be these pre or post their Edinburgh Revision redetermination adjustments - the claim likely results from a slip of Mr Davidian's pen (*The Rhododendron Species,* Volume 1, 1982). Peter Cox and Ted Millais can therefore rightly receive the dues for the first successful introduction following their 1990 expedition to Sichuan, with the species recorded as first flowering at Glendoick during the spring of 1994.

R. websterianum (EGM 146)

R. websterianum (EGM 146)

R. impeditum

R. fastigiatum* ssp. *impeditum

Hardiness:
H4-6.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan & N Yunnan, China.
Growing on open rocky slopes and in alpine meadows,
in mixed and rhododendron thickets, at elevations of 2,500-4,900m.

Identification:
Shrub, dense and compact, cushion-forming or mounding, spreading or rounded,
often symmetrical, 0.1 to 1.2m high;
branchlets usually short and thick.
Leaves broadly elliptic through ovate to oblong,
0.4 to 1.6cm long by 0.3 to 0.8cm wide,
apex mucronate;
upper surface dark green, somewhat shiny, sparsely through moderately lepidote,
the scales pale, contiguous or between half and their own diameter apart;
lower surface scales monomorphic, similarly sized,
of a uniform amber, brown, dark brown or rusty hue,
near contiguous to widely spaced, rarely touching.
Petiole 1-3mm long.
Inflorescence terminal, 1-4-flowered.
Pedicel 1-3mm long.
Calyx pink, purple or greenish,
the lobes oblong (strap-shaped) and thin, and 2-4mm long,
their outer surface sparsely through moderately lepidote,
the scales forming a central band, rarely elepidote,
their margins usually elepidote and long ciliate.
Corolla 0.7 to 1.6cm long,
violet through purple to deep purplish-blue, sometimes rose-lavender, rarely white,
the outer surface elepidote or sparsely scaly, and sometimes pubescent.
Stamens 5-11, long-exserted,
equal in length or slightly longer than the corolla.
Ovary sometimes with a tuft of hairs at the apex.
Style very variable in length, shorter or longer than the stamens,
the base sometimes pubescent.
Capsule sometimes puberulous at the base or the apex.

Seed Collections:

F 5876	1910	F 16277	1917/1919	R 18223	1929	R 24464	1932
F 10035	1912/1914	F 16284	1917/1919	F 29268	1930/1931	R 24569	1932
F 10056	1912/1914	F 16292	1917/1919	F 30941	1930/1931	CCHH 8253	1997
F 10311	1912/1914	F 20454	1921/1922	R 24278	1932	JN 1038	1999
F 15076	1917/1919	F 20492	1921/1922	R 24369	1932	FB10-2018	2018
F 15091	1917/1919	R 11469	1923/1924	R 24460	1932		

R. impeditum was discovered by George Forrest during June 1910, with a population of plants found on the eastern flank of the Lichiang Range in China's Yunnan Province. Isaac Bayley Balfour and William Wright Smith wrote the botanic description, their assessment appearing in the 1916-published Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh*.

The species is very closely related to *R. fastigiatum,* differing only in minor characteristics: a denser, slightly lower-growing habit; dark green, non-glaucous foliage; darker coloured, non-opaque abaxial leaf surface scales. In addition, recent field study has found intermediates bridging the two populations in northern Yunnan. For these reasons, *R. impeditum* is treated herein as a subspecies of *R. fastigiatum*.

The Edinburgh Revision paper detailing the Subsection *Lapponica* species, written in 1975 by William and Melva Philipson, made *R. litangense* synonymous with *R. impeditum*. The habit of the former is more reflective of ssp. *fastigiatum,* while the leaf and scale characteristics mirror ssp. *impeditum*. A geographic distribution along the border regions of Yunnan and Sichuan, sandwiched as it is between the distinct populations of the two subspecies, further confirms its status as a probable intermediate. Currently maintained under ssp. *impeditum* as Litangense Group, further fieldwork may prompt a review of this association and lead to the addition of a small 'x' in front of the epithet. Forrest's 16277 (the type specimen) and F 16284, both gathered in 1918, plus Joseph Rock's 18223 of 1929 and 24369 of October 1932, are the only seed collections of this form made to date.

R. fastigiatum ssp. *impeditum* was introduced into UK gardens by George Forrest towards the end of 1910, with additional collections by the Scotsman and the Austrian-American arriving up until 1932. Strangely, given the distribution, very few new batches of seed have been secured since then, despite Chinese hillsides reopening to Western botanical expeditions in the 1980s.

Cultivation in the UK is straightforward, except in areas where long, hot summers will stress the plants even when copious amounts of water are available to prevent the root ball from completely drying-out. In this respect, the gardens of southern and central England do not equate to the high moorland pastures where the species is found. Yet despite this, young plants of *R. impeditum* will be found at most good horticultural emporiums across the country as the deep purple-blue flowers are stunning and appear in quantity from a young age. Mature shrubs around one metre across and half that in height, often symmetrical in shape, will be found in innumerable rhododendron collections, both public and private, and no self-respecting rock garden would be without a specimen. A few of these boast specimens of the high altitude form, which will be no more than 15cm high and wide after several decades of growth.

R. impeditum is fully hardy, but provenance should be checked if the planting site is in an upland area or exposed to very low temperatures as plants grown from seed collected from either extreme of the distribution will not be as tough in cultivation as those from the middle reaches. Lack of a prolonged and protective covering of snow lays the dwarf clones bare to temperatures not experienced in the wild, while forms from the lower elevations of the range are simply not as rugged.

The Latin epithet translates as 'tangled', which does indeed reflect the growth habit.

R. impeditum (CCHH 8253)

R. impeditum (F 20454)

R. impeditum (R 24278)

R. impeditum (R 24278)

R. impeditum (F 20454)

R. rupicola (KW 7048)

R. rupicola* ssp. *rupicola

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; W Sichuan, N & C Yunnan, China; NE Upper Myanmar.
Growing at forest margins, in rhododendron thickets, and on rocky slopes,
at elevations of 2,800-4,300m.

Identification:
Shrub, matted and cushion-forming, compact and rounded, or broadly upright,
0.1 to 1.2m high.
Leaves broadly elliptic through elliptic to oblong or near orbicular,
0.6 to 2.5cm long by 0.3 to 1.4cm wide,
apex mucronate;
upper surface green and matt, the scales contiguous to overlapping;
lower surface scales dimorphic, intermixed, both types of a similar size,
the predominant majority of a dark brown or reddish-brown hue,
a minority either amber or golden,
and all nearly contiguous through overlapping.
Petiole 1-3mm long.
Inflorescence terminal, 2-8-flowered.
Pedicel 1-4mm long.
Calyx reddish-purple, sometimes deeply so, rarely pink,
the lobes broadly ovate or oblong and 2-6mm long,
their outer surface densely lepidote,
the scales pale and in a wide central band on the lobes, rarely pubescent,
their margins lepidote or not, and ciliate or (rarely) not.
Corolla 0.8 to 1.8cm long,
intense purple through reddish-purple, rarely white, magenta or deep crimson,
the outer surface lepidote along the middle of the lobes, the scales pale,
and sometimes pubescent.
Stamens 5-10, variable amongst the corollas forming a single inflorescence,
long-exserted, equal in length or slightly longer than the corolla.
Ovary sometimes entirely pubescent,
but often only hairy at the base or across the lower half,
more rarely with a tuft of hairs at the apex.
Style longer than the stamens, the base often pubescent.
Capsule pubescent,
rarely entirely so, more often across the lower half or at the base.

Seed Collections:

F 5865	1910	F 25529	1924/1925	R 25258	1932
F 10314	1912/1914	F 25532	1924/1925	R 25277	1932
F 10367	1912/1914	F 25907	1924/1925	R 25302	1932
F 15270	1917/1919	F 25941	1924/1925	KW 10531	1933
F 15367	1917/1919	F 26987	1924/1925	KW 13365	1937
F 15391	1917/1919	F 27119	1924/1925	SBLE 557	1987
F 16579	1917/1919	F 27571	1924/1925	CLD 1097	1990
F 16583	1917/1919	F 27591	1924/1925	KEG 347	1993
F 16617	1917/1919	KW 7048	1926	KGB 26	1993
Farrer 1047	1919	KW 7084	1926	KGB 375	1993
KW 3304	1919	R 18365	1929	KGB 654	1993
F 20708	1921/1922	R 18367	1929	KGB 750	1993
F 21490	1921/1922	R 18442	1929	CNW 1187	1994
F 21529	1921/1922	F 28343	1930/1931	AC 1565	1996
F 21975	1921/1922	F 29894	1930/1931	JN 588	1996
F 22295	1921/1922	F 30395	1930/1931	JN 962	1999
R 11243	1923/1924	KW 9710	1931	CNC 12020	2012
R 11434	1923/1924	R 22063	1932	JN 12157	2012
F 24574	1924/1925	R 23467	1932	BE 15-03	2015

George Forrest was the first Western plant hunter to find *R. rupicola,* discovering a population of plants on the western flank of the Lichiang mountain range in Yunnan during June 1910, seed of which he introduced into British gardens later that same year. The species was described by William Wright Smith in Volume 8 of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1914.

Much as the yellow flowers of *R. rupicola* ssp. *chryseum* distinguish that species from all the other members of Subsection *Lapponica* bar one - *R. flavidum* - so the dark, reddish-purple to almost black-purple corollas of *R. rupicola* ssp. *rupicola* likewise cleave it away from all its other cohorts except the closely related *R. russatum*. Out in the wild, the populations of these two rhododendrons merge and intergrade, with the characteristics gradually morphing from one species to the other, however, the lack of a densely pubescent style, hairy along the lower half, will split *R. rupicola* from *R. russatum* when the plants are in flower, as will the lepidote nature of the outer surface of the corolla and the calyx, both of which display a band of pale scales running along the centre of each lobe, the calyx densely so. Out of flower, the generally larger leaves and longer petioles of *R. russatum* will be the only method of telling the two apart, this key only really reliable for individuals at either end of the morphological feature spectrum.

In cultivation, *R. rupicola* ssp. *rupicola* usually grows into an upright spreading bush around 0.6m high, with specimens free-flowering, though sometimes not abundantly so. The Latin epithet translates as 'dweller in stony places', which perfectly describes the ideal choice of planting spot, while the darker, reddish-purple hued clones have been gathered into Luridum Group by some rhodophiles.

Which leaves only the issue of ploidy to be discussed:

R. rupicola ssp. *rupicola* is a diploid with 26 chromosomes, *R. russatum* a tetraploid where 2*n* = 52, so a clear genetic division exists between the two rhododendrons. In fact, as stated previously, a reproductive barrier, which would seemingly preclude the existence of all those intermediates field reporting has conclusively stated bridge the populations. The answer to this conundrum lies with a pair of George Forrest field collections that fall within the ssp. *rupicola* feature set: F 20464 and F 30889. For as reported in the article *Chromosome Numbers in Species of Rhododendron* - written and researched by three members of the science team at RHS Wisley: E. K. Janaki Ammal, D.Sc., I. C. Enoch, B.Sc., and Margery Bridgwater; and published in *The Rhododendron Year Book 1950* - specimens from each of these gatherings were found to be tetraploids. Which means that *R. russatum* almost certainly evolved from these plants as they moved into territory their parent species had been unable to colonise.

The concept is termed 'abrupt speciation' - the creation of a new species through the formation of natural polyploids within a population of plants - and it is a premise now widely accepted in the scientific community (see *Understanding Polyploidy,* by Thomas Ranney and Jeff Jones, published in *The Azalean,* Winter 2008). Its strictures require the two Forrest gatherings currently filed under *R. rupicola* ssp. *rupicola* to be separated-out and given a new identity, because even though they may look like mirror images of the subspecies, and despite the fact that historically botanists accepted multiple chromosome counts within a single taxon without demur, genetically they are very different entities.

The practice adopted herein for such instances retains the linkage to the parent species by inserting a 'pseudo' - false - addition into the epithet so that the F 20464 and F 30889 gatherings of *R. rupicola* ssp. *rupicola,* now become *R. pseudorupicola,* as described in the out-of-sequence entry opposite.



R. rupicola (F 16579)



R. rupicola (KW 7048)

R. pseudorupicola

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
Sichuan & NW Yunnan, China.
Growing at forest margins, in rhododendron thickets, and on rocky slopes,
at elevations of 2,800-4,300m.

Identification:
Shrub, matted and cushion-forming, compact and rounded, or broadly upright,
0.1 to 1.2m high.
Leaves broadly elliptic through elliptic to oblong or near orbicular,
0.6 to 2.5cm long by 0.3 to 1.4cm wide,
apex mucronate;
upper surface green and matt, the scales contiguous to overlapping;
lower surface scales dimorphic, intermixed, both types of a similar size,
the predominant majority of a dark brown or reddish-brown hue,
a minority either amber or golden,
and all nearly contiguous through overlapping.
Petiole 1-3mm long.
Inflorescence terminal, 2-8-flowered.
Pedicel 1-4mm long.
Calyx reddish-purple, sometimes deeply so, rarely pink,
the lobes broadly ovate or oblong and 2-6mm long,
their outer surface densely lepidote,
the scales pale and in a wide central band on the lobes, rarely pubescent,
their margins lepidote or not, and ciliate or (rarely) not.
Corolla 0.8 to 1.8cm long,
intense purple through reddish-purple, rarely white, magenta or deep crimson,
the outer surface lepidote along the middle of the lobes,
the scales pale, and sometimes pubescent.
Stamens 5-10, variable amongst the corollas forming a single inflorescence,
long-exserted, equal in length or slightly longer than the corolla.
Ovary sometimes entirely pubescent,
but often only hairy at the base or across the lower half,
more rarely with a tuft of hairs at the apex.
Style longer than the stamens, the base often pubescent.
Capsule pubescent,
rarely entirely so, more often across the lower half or at the base.

Seed Collections:

F 20464	1921/9122
F 30889	1930/1931

The description of *R. pseudorupicola* is identical to that for *R. rupicola* ssp. *rupicola* as outwardly - morphologically - the two species are indivisible. However, the latter is a diploid with twenty-six chromosomes, the former a tetraploid with fifty-two, making them entirely separate entities, albeit with a common genetic heritage.

Until fairly recently - the late 1990s, or even the first decade of the new millennium - many botanists would have regarded the two as one, and indeed, some may continue to hold this view. The 1996 Edinburgh Revision classification, for instance, with many of its major papers published in the mid to late 1970s and the early 1980s, was written without really taking any of the known chromosome counts into account, so in consequence, a number of species ended up with a membership comprised of diploid and tetraploid individuals, while even more - due to the widespread application of synonymy - were an amalgam of multiple classes of polyploid. *R. rupicola* falls into the first category.

The paper detailed in the *R. rupicola* entry opposite - *Chromosome Numbers in Species of Rhododendron* - listed values for 360 rhododendrons from over 550 individual counts. Two specimens of *R. rupicola* were reported to be diploids, with twenty-six chromosomes in each cell, two others, tetraploids with fifty-two, these last from collections made by George Forrest under the field numbers F 20464 and F 30889. The first was a gathering made in Sichuan on his 1921-1922 expedition, the second, in Yunnan, on the 1930-1931 trip. So at two widely separated locales in the endemic distribution of *R. rupicola,* tetraploids were present in the population.

Three quick quotes:

‘In contrast to the gradual evolutionary process whereby new species evolve from isolated populations, new species of plants can also arise abruptly. The most common mechanism for abrupt speciation is through the formation of natural polyploids’.
Understanding Polyploidy: Insights into the Evolution and Breeding of Azaleas.
Thomas Ranney and Jeff Jones.
The Azalean, Winter 2008.

‘Importantly, polyploid formation can occur recurrently and independently within populations, to such an extent that multiple origins are considered the rule, rather than the exception’.
Genomic Clues to the Evolutionary Success of Polyploid Plants.
Matthew Hegarty and Simon Hiscock.
Current Biology, Volume 18, May 2008.

Moreover:

‘Once a tetraploid arises in a population, it can generally hybridise with other tetraploids. However, these tetraploids are reproductively isolated from their parental species. Tetraploids that cross with diploids of the parental species will result in triploids that are typically sterile. This phenomenon provides a “reproductive barrier” between the polyploids and the parental species - a driving force for speciation’.
Understanding Polyploidy, Ranney & Jones.

Because the F 20464 and F 30889 tetraploids cannot successfully breed with *R. rupicola,* their putative parent, they cannot be subsumed within the *R. rupicola* population and must therefore be established as a new species at specific status.

To this end, *R. pseudorupicola* is formulated herein, the chosen epithet clearly maintaining precursor linkage, while emphasising divergence. The type specimens for both Forrest collections are held at the Edinburgh Botanic Herbarium.

R. drumonium

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; SW Sichuan & NW Yunnan, China.
Growing in open pine forest, in open rocky pasture and on cliffs,
at elevations of 3,100-4,300m.

Identification:
Shrub, prostrate, matted or cushion-forming, or broadly upright, 0.1 to 1m high;
branchlets long or short.
Leaves elliptic through ovate to ovate-oblong,
0.3 to 1cm long by 0.2 to 0.4cm wide,
apex acute and distinctly mucronate;
upper surface dull greyish-green or dark green, matt or somewhat shiny,
the scales pale gold and overlapping;
lower surface scales dimorphic, intermixed,
the majority of a uniform pale gold, fawn, creamy-yellow or reddish-brown hue,
of similar size, and overlapping,
a minority uniformly rufous-brown or dark brown,
larger, and closely or widely scattered.
Petiole 1-2mm long.
Inflorescence terminal, 1-2-flowered.
Pedicel 0.5-1mm long.
Calyx pink, reddish-purple or greenish,
the lobes triangular, ovate, oblong or rounded,
usually unequal, and 0.5-2mm long,
their outer surface moderately through densely lepidote,
their margins lepidote or not, and ciliate or not.
Corolla 0.7 to 1.1cm long,
purplish-blue through rose-purple,
the outer surface lepidote along the middle of the lobes, glabrous.
Stamens 8-10,
exserted, the longest equal in length or slightly shorter than the corolla.
Ovary occasionally pubescent at the base or at the apex.
Style variable, equal to or shorter than the stamens and the corolla.
Capsule glabrous.

Seed Collections:

F 10434	1913	F 15268	1917/1919	F 15467	1917/1919
F 13768	1917/1919	F 15370	1917/1919	F 16289	1917/1919
F 15210	1917/1919	F 15386	1917/1919	R 25377	1932

R. drumonium was first encountered within an open pine forest in the Chung River valley of northwest Yunnan, during May 1913. The plant hunter who made the discovery and with Isaac Bayley Balfour co-authored the species botanic description, was Frank Kingdon-Ward, their text appearing in *Notes from the Royal Botanic Garden, Edinburgh,* Volume 9, which was published in 1916. That early in the growing season, only herbarium material could be gathered, but George Forrest too found the species, later in 1913, and was able to return seed. He made several additional collections during his 1917-1919 expedition, Joseph Rock secured capsules in 1932, and Jens Nielsen reintroduced the species in 2002 after a seventy-year hiatus, his gathering available via the American Rhododendron Society Seed Exchange of 2003. These collections extended the known endemic distribution into southwest Sichuan and southeast Tibet.

In 1971, the New Zealand botanists Melva and William Philipson, tasked to produce a revision of the *Lapponica* species that would appear in Volume 34 of *Notes* in 1975, examined the Kingdon-Ward, Forrest and other herbarium specimens and decided that *R. drumonium* was identical to *R. diacritum, R. idoneum, R. pycnocladum* and *R. telmateium,* so made all five synonymous under the latter taxon. Criticism has been voiced concerning this merger, which is discussed fully in the entry for *R. telmateium* on page 237.

Equally, absolutely no account was taken of the number of chromosomes each species had within its cells as the ramifications of such were then unknown. That is not the case today, especially with regard to the reproductive barrier that exists between a normal diploid species and the polyploid rhododendron it may have birthed. *R. telmateium* holds 26 chromosomes inside each of its cells so is a diploid, while *R. drumonium* has 52, making it a tetraploid. Morphologic mirror images though they may be, what they cannot be, is combined under a single epithet because one cannot successfully breed with the other. Synonymy is therefore revoked and *R. drumonium* herein restored to specific status.

In fact, there is one crucial identifying characteristic that separates the mêlée of the *R. telmateium* amalgam from *R. drumonium:* the style. In *A Revision of Rhododendron Section Lapponicum,* when discussing *R. drumonium,* the Philipsons state that ‘there is no justification for segregating taxa on the basis of style length’, and technically that is true if considered in isolation. What they fail to note however, is that the *R. drumonium* style is never longer than the stamens or the corolla; it is only equal in length or shorter. And as the detailed descriptions in Volume 1 of H. H. Davidian’s 1982 tome *The Rhododendron Species* make clear, *R. diacritum, R. idoneum, R. pycnocladum* and *R. telmateium* have a style that is always longer than the stamens, as well as being longer than the corolla, regardless of the exact number of millimetres involved. Such morphology will also save those attempting to make an identification from breaking out the microscopes and counting the chromosomes evident in dividing root tip cells.

Two forms of *R. drumonium* are in UK cultivation, a prostrate shrub barely more than 20cm high and only 30cm across when mature, and a broadly upright clone that hits the dizzy heights of 50cm. Both have very small grey-green to dark green leaves, are free-flowering, fully hardy in Britain’s maritime climate, and easy to grow given the usual Subsection *Lapponica* provisos on excessive summer heat and first-class drainage. But to report their presence in the woodland gardens of England, Scotland and Wales as scarce, would be taking the art of understatement to a whole new level.

R. hippophaeoides* var. *hippophaeoides

Hardiness:
H4-6.
Flowering Period:
March-May.
Distribution in the wild:
SW Sichuan, C, N & W Yunnan, China.
Growing in *Picea* and *Pinus* forests, in rhododendron thickets,
on moist stony pasture and grassy marshes, at elevations of 2,400-4,800m.

Identification:
Shrub, compact or open, upright or straggly, 0.25 to 1.7m high.
Leaves elliptic through oblong to oblong-lanceolate or narrowly obovate,
0.6 to 4cm long by 0.4 to 1.7cm wide,
apex mucronate;
upper surface pale greyish-green, somewhat glaucous, matt, the scales contiguous;
lower surface scales monomorphic, transparent, similarly sized,
of a uniform creamy-yellowish hue, overlapping to (rarely) contiguous.
Petiole 2-6mm long.
Inflorescence terminal or terminal and axillary in the uppermost 1 or 3 leaves,
3-8-flowered.
Pedicel 2-5mm long.
Calyx pink or reddish,
the lobes ovate or rounded, often unequal and 1-2mm long,
their outer surface moderately through densely lepidote,
their margins lepidote or not, and often long-ciliate.
Corolla 1 to 1.3cm long,
bright rose through bluish-purple to lavender-blue, or (rarely) white,
the outer surface elepidote.
Stamens 8-10, exserted, much shorter than the corolla.
Style 4-11mm long, shorter than the corolla, shorter or as long as the stamens.

Seed Collections:

F 10333	1912/1914	F 15265	1917/1919	SBLE 316	1987	KGB 265	1993
F 11487	1912/1914	F 15450	1917/1919	CLD 302	1990	AGS 1619	1994
F 12461	1912/1914	F 15459	1917/1919	CLD 511	1990	CNW 16	1994
F 13791	1917/1919	F 16128	1917/1919	CLD 515	1990	CNW 29	1994
F 13792	1917/1919	R 6830	1923/1924	CLD 1019	1990	CNW 288	1994
F 13793	1917/1919	R 11363	1923/1924	CEE 557	1991	CNW 291	1994
F 13794	1917/1919	R 11364	1923/1924	SSNY 14	1992	CNW 472	1994
F 13799	1917/1919	R 11365	1923/1924	SSNY 46	1992	CNW 654	1994
F 13800	1917/1919	R 25402	1932	SSNY 229	1992	KR 4085	1996
F 13842	1917/1919	Yu 13845	1937	AC 718	1993	JN 946	1999
F 15251	1917/1919	Yu 13937	1937	AC 724	1993		
F 15264	1917/1919	Yu 15010	1937	KGB 262	1993		

R. hippophaeoides* var. *fimbriatum

Hardiness:
H5.
Flowering Period:
March-May.
Distribution in the wild:
SW Sichuan, C & N Yunnan, China.
Growing on moist open stony slopes and on marshy pasture at forest margins,
at elevations of 3,500-4,300m.

Identification:
As var. *hippophaeoides* except:
Leaves lanceolate through oblong, 1.5 to 3.5cm long by 0.5 to 1.5cm wide;
upper surface pale green, not glaucous, the scales overlapping or nearly contiguous;
lower surface scales uniformly fawn or creamy-yellowish, overlapping or nearly contiguous.
Inflorescence terminal, not terminal and axillary, 3-9-flowered.
Pedicel 3-9mm long.
Corolla 1.2 to 1.6cm long, mauve-purple through purple.
Stamens 10, long-exserted, equal to or a little shorter than the corolla.
Ovary sometimes hairy at the apex.
Style 13-16mm long, equal to or longer than the corolla, longer than the stamens,
the base sometimes pubescent.

Seed Collections:

F 21462	1921/1922	F 22197	1923/1924	AC 1518	1996
F 21476	1921/1922	R 18458	1929	JN 12126	2012

R. hippophaeoides* var. *tsaii

Hardiness:
H5-6.
Flowering Period:
March-May.
Distribution in the wild:
NE Yunnan, China.
Growing amongst scrub, and on open moorland at elevations of 2,900-3,400m.

Identification:
As var. *hippophaeoides* except:
Leaves 0.6 to 1.2cm long by 0.3 to 0.5cm wide;
upper surface pale green, not glaucous, matt, the scales overlapping;
lower surface scales pale fawn, overlapping.
Petiole 1-1.5mm long.
Inflorescence terminal, not terminal and axillary, 3-7-flowered.
Pedicel 1-2.5mm long.
Calyx lobes 0.5-1mm long.
Corolla 0.5 to 0.7cm long, pale pink (purplish-white).
Stamens 4-7; filaments glabrous.

Seed Collections:

JN 11034	2011



R. hippophaeoides (Yu 13845)

Credit for the discovery of *R. hippophaeoides* goes to Frank Kingdon-Ward, who gathered herbarium material during May 1913 under the field number KW 269b, just two months ahead of his rival, George Forrest. The population of plants Ward found grew in the upland valley cut by the Chung River in northwestern Yunnan, while Forrest's find was on the mountains to the northeast of the Yangtze Bend (F 10333). Plants grown under the designation 'Forrest 21' have been authenticated as *R. hippophaeoides* by Dr. James Cullen (*Hardy Rhododendron Species,* 2005), but these are not from the Scotsman's very first expedition to China in 1904, but part of a consignment of around 100 unnumbered packets of seed that arrived at Edinburgh Botanic a few months after the plant hunter's death in the field on January 5th, 1932. Isaac Bayley Balfour and William Wright Smith had described the species sixteen years before that tragic event, actually in 1916, writing in Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh*.

The creamy-yellow, overlapping scales, on the underside of the somewhat glaucous leaves, together with the very short stamens and style - both integrants shorter than the corolla; the style sometimes shorter than the stamens - in combination, separate *R. hippophaeoides* from all the other members of Subsection *Lapponica,* with the species most closely related to *R. fimbriatum:*

John Hutchinson had described this rhododendron in 1932 from cultivated plants grown under F 22197 (*The Gardeners' Chronicle,* Volume 91), although the dried material linked to this field number is clearly *R. cuneatum.* However, the germinated seedlings are most definitely not.

Forrest found this now botanically 'suspect' gathering in southwestern Sichuan during August 1922, and just one month later, while he or his trained Chinese helpers were exploring the Chien Chuan-Mekong Divide in northwest Yunnan, secured the actual type specimen of *R. fimbriatum* that is filed under the field number F 23149. This differs from *R. hippophaeoides* in having either uniformly coloured fawn or creamy-yellow abaxial scales; non-glaucous somewhat narrower leaves; stamens that can equal the length of the corolla; and a style that is usually longer than both the corolla and the stamens. The inflorescence moreover, is only terminal, not terminal and axillary, and the corollas themselves are predominantly purple or deep mauve-purple.

Before China allowed Western botanists and horticulturalists to once more wander relatively freely across the mountains of Sichuan and Yunnan, William and Melva Philipson had completed a treatise, incorporated into the Edinburgh Revision, which merged much of the membership of the old Lapponicum Series. It consigned *R. fimbriatum* to a synonymic existence under *R. hippophaeoides*. Yet at the same time, the couple created a new taxon, *R. hippophaeoides* var. *occidentale,* assigning dried material George Forrest had also collected on the Chien Chuan-Mekong Divide - F 23341 is the type specimen - to this new combination. According to their citation, var. *occidentale* differs from var. *hippophaeoides* in basically having a longer style and narrower leaves. But as Peter and Kenneth Cox quite rightly state in their 1997-published *Encyclopedia of Rhododendron Species,* those features make it identical with *R. fimbriatum*.

Field study has now shown that these two forms of *R. hippophaeoides* are in fact geographically indiscriminate in the wild, therefore varietal ranking is the only appropriate designation under ICNAFP rules to delineate the variance in style and leaf. However, to comply with the code, new infraspecific names should avoid using epithets that have already been used elsewhere in the same genus. *R. hippophaeoides* var. *hippophaeoides* is fine, but the Philipsons use of var. *occidentale* breaks the nomenclature rule because *R. occidentale,* described in 1876, is a specific ranked member of Section *Pentanthera*. Their choice of appellation is therefore invalid, the obvious replacement being the combination *R.*

hippophaeoides var. *fimbriatum,* which is adopted herein. Raucous cheering at this change is not encouraged, though it is understood, with the choice of *occidentale* so blatant a duplication one has to wonder if it was deliberate on their part, the Philipsons knowing it would be corrected in the full revision that was to follow. Except of course, it wasn't, as James Cullen, author of the Subgenus *Rhododendron* text (*Notes,* Volume 39, Number 1, 1980), accepted their paper without change. Yet it would be inconceivable for the good doctor not to have been aware of that particular deciduous azalea species, especially given its prominent presence in the garden he presumably walked through to get to work every day, unless for some unknown reason he deliberately avoided the Azalea Lawn throughout the entirety of his employment at Edinburgh Botanic?

R. tsaii was described by the renown Wen-Pei Fang in Volume 12 of *Contributions from the Biological Laboratory of the Science Society of China,* this published in 1939. The species was named for H. T. Tsai, who had discovered the plant growing at Chao-tung Hsien, in eastern Yunnan, during mid-May 1932.

Known only from the original collection site on the Yunnan side of the Yangtze River, where it is reported to be populous on open 'moss' land at around 2,900m, the pale pink flowered species had not been introduced into cultivation until Jens Nielsen visited the area in 2011 and secured seed, as the four previous gatherings - SICH 1428, AC 930, C&H 7022 and C&N 5990 - had all been assigned an affinity tag. Plant populations found to be intermediate between *R. tsaii* and *R. hippophaeoides,* which grow on the Sichuan side of the river, were known of and considered natural hybrids by the Philipsons in 1975, but more recent field reports now describe them as a cline between the two species (Peter and Kenneth Cox, *The Encyclopedia of Rhododendron Species,* 1997). Treatment of *R. tsaii* as a variety of *R. hippophaeoides* is therefore appropriate, this again, accurately reflecting the endemic situation on the ground.

Overall, *R. hippophaeoides* var. *tsaii* is graced with more petite features than either of its sisters, with two integrants proving distinctive: the presence of only 4 to 7 stamens in the corolla; and the complete lack of any hairs at the base of the stamen filaments. This last characteristic will separate the variety from all the other *Lapponica* rhododendrons.

R. hippophaeoides var. *hippophaeoides* was introduced into the UK during 1913 by George Forrest. Cultivation is straightforward and almost without problem for a *Lapponica* species, though susceptibility to the powdery mildew fungus is quite high, so a planting position well away from any known offenders and with good air movement will minimise the risk of infection. The terminal and axillary flower buds often combine to produce fairly large flower balls, the corollas of which will come through several degrees of frost completely unscathed, even when fully open. Somewhat straggly domes around a metre high and wide are the norm, but more upright-growing clones, as well as lower-growing forms, are also extant. Mature, free-flowering specimens of the species will be found in most rhododendron-friendly gardens, although colder inland and upland sites will require clones gathered from the highest elevations of the range.

R. hippophaeoides var. *fimbriatum* is a touch less hardy, its wild distribution not ascending quite as high up as its sister. Cultivated forms are a little more upright in habit and the corollas shades of purple, rather than lavender-blue. With only terminal flower buds, compound trusses do not occur, so specimens are a lot less showy. They will also be found in far fewer gardens, with even some specialist collections devoid of an example.

R. hippophaeoides var. *tsaii* will more often be found as the affinity form, sourced from one of the four gatherings listed above. Plants germinated from the Jens Nielsen 2011 collection were being offered for sale at the end of 2015. They are fully hardy - H5 is the figure given - and open pale lavender-mauve blooms at the beginning of May.



R. fimbriatum (AC 1518)



R. hippophaeoides (CLD 302)



R. hippophaeoides (CLD 515)



R. hippophaeoides (R 11363)



R. hippophaeoides (R 11364)

R. hippophaeoides


R. fimbriatum


R. fimbriatum


R. fimbriatum

R. fimbriatum

R. tsaii aff. (C&H 7022)

R. tsaii aff. (C&H 7022)

R. scintillans (F 19450)

R. scintillans

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
N, NW & C Yunnan, China.
Growing in open alpine meadows amongst scrub, at forest margins,
on rocky slopes and cliffs, at elevations of 3,000-4,400m.

Identification:
Shrub, low, upright and spreading, straggly, 0.2 to 1.2m high;
branchlets long and arching, upright and slender.
Leaves lanceolate, narrowly elliptic through elliptic, or oblong,
0.8 to 2.3cm long by 0.2 to 0.7cm wide,
apex mucronate;
upper surface dark green, shiny,
the scales overlapping, contiguous or nearly so;
lower surface scales monomorphic, similarly sized, large,
of a uniformly dark brown or reddish-brown hue,
near contiguous or half their own diameter apart, rarely overlapping.
Petiole 1-4mm long.
Inflorescence terminal, 2-5-flowered.
Pedicel 1-5mm long.
Calyx pink, purple, reddish or yellowish, rim-like or 5-lobed,
these ovate, rounded or lanceolate, and 0.5-2mm long, rarely to 4mm,
their outer surface lepidote or not,
their margins lepidote or not, ciliate.
Corolla 1-1.5cm long,
lavender through deep purplish-blue to purplish-red,
the outer surface elepidote, glabrous.
Stamens 10, long-exserted, equal in length or longer than the corolla.
Ovary 5-celled, rarely hairy at the apex.
Style longer than the stamens, the base rarely pubescent.
Capsule rarely pubescent at the base.

Seed Collections:

F 10014	1913	R 11319	1923/1924
F 13899	1917/1919	F 25498	1924/1925
F 19450	1921/1922	F 25555	1924/1925
F 21483	1921/1922	F 25904	1924/1925
F 21487	1921/1922	SBLE 481	1987
F 21528	1921/1922	SBLE 494	1987
F 21559	1921/1922	JN 746	1999
F 22108	1921/1922	JN 12188	2012
F 22299	1921/1922		



R. scintillans ‘Policy’ FCC 1934

R. scintillans was discovered growing at the summit of the Lankong-Hoching Pass in Yunnan by George Forrest during May 1913. It was described by Isaac Bayley Balfour and William Wright Smith in Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh,* which was published in 1916. In 1975, within the paper *A Revision of Rhododendron Section Lapponicum,* published in Volume 34 of *Notes,* the New Zealand botanists William and Melva Philipson made the species synonymous under *R. polycladum,* this a Jean-Marie Delavay discovery of May 1884-vintage that had been described by Adrien Franchet in Volume 33 of the *Bulletin de la Société Botanique de France,* published in 1886, this taxon rightly taking precedence in accordance with the nomenclature rules.

Yet the Philipsons write that in the herbarium of the Muséum National d'Histoire Naturelle, the type sheet for *R. polycladum:*

> 'indicates that the numbers Delavay 267 and 737 became mixed, and are mounted together. *R. fastigiatum* was also mixed with *R. polycladum* and is labelled as Delavay 267'.

The Philipsons' revision also made *R. compactum* a synonym of *R. polycladum*.

This species was described by John Hutchinson in Volume 91 of *The Gardeners' Chronicle,* published in 1932, his text based on a cultivated plant grown under F 13905, which is the type number for *R. dasypetalum* in the Edinburgh Botanic herbarium.

The research paper *Chromosome Numbers in Species of Rhododendron,* written by members of the science team at RHS Wisley and published in *The Rhododendron Year Book 1950,* reports that *R. compactum* is in fact a tetraploid with 52 chromosomes, while *R. scintillans* is a diploid with 26. There is no count for *R. polycladum* as this species had not been introduced into cultivation at that time, and moreover, this may still be the case today as most, if not all the authenticated wild collections, are referable to *R. scintillans,* this fact reported by Peter Cox in his 1985 book *The Smaller Rhododendrons,* as well as by John McQuire and Mike Robinson, in their 2009 publication *The Pocket Guide to Rhododendron Species*.

As a tetraploid placed under a diploid, the synonymy with regard to *R. compactum* cannot be maintained and it is herein designated to be a seed pan rogue, *R. x compactum*. This choice is made despite claims that the George Forrest 1925 collection under F 25555, which has long been pigeonholed as *R. scintillans* affinity, reintroduced *R. compactum* from northern Yunnan. Because live specimens examined at Edinburgh Botanic and elsewhere conform to the identification bullet points given above for *R. scintillans* and are without axillary flower buds or compound inflorescences.

Equally, the provenance of the Delavay *R. polycladum* specimens is questionable, with the herbarium mix-up leaving them open to challenge. Moreover, in the 1982-published text of *The Rhododendron Species,* Volume 1, its author, H. H. Davidian, reports that even this herbarium material is 'scanty'. And he also confirms that the species 'has not been introduced into cultivation'.

Morphologically, there are also physical differences between the two taxa: the upper leaf surface scales of *R. polycladum* are almost contiguous, while those of *R. scintillans* are overlapping, touching or nearly contiguous; respectively, the lower leaf surface scales are overlapping or near contiguous, as opposed to nearly contiguous to half their own diameter apart; the calyx lobes of *R. polycladum* are 0.5 to 1mm long, while those of *R. scintillans* are 0.5 to 2 to occasionally 4mm long; the inflorescence is 2-3-flowered compared with 2-5-flowered; and the branchlets are short as opposed to long and slender. Many will remark that these variances are minor, yet within this specific subsection, where minutiae hold sway, *R. scintillans* cannot be said to be a mirror of *R. polycladum*. For these reasons therefore, *R. scintillans* is herein restored to specific status, whilst *R. polycladum* is treated as a yet un-introduced species.

Amongst the Subsection *Lapponica* rhododendrons, *R. scintillans* is clearly similar to *R. orthocladum,* although it differs in having longer stamens, a much longer style, and monomorphic scales on the leaf underside. The foliage shape too is different, being narrowly elliptic through oblong, rather than linear-lanceolate. Those slim and shiny leaves, plus the open, straggly, spreading habit, and quite long and slender, arching branches, will also - usually - distinguish the taxon from the remainder of the subsection membership, making a detailed examination of the scales unnecessary. This is particularly true for the two low and compact *R. fastigiatum* subspecies, which share the characteristic of monomorphic near contiguous scales, touching, but never overlapping.

R. scintillans was first introduced into UK cultivation by George Forrest during 1913, with close to a dozen other gatherings returned by the Scotsman subsequently. Just one collection was made by Joseph Rock in the early 1920s and post China's re-opening, a mere quartet of lots were added to the total. Not that such would have made a horticultural impact as virtually all the specimens of *R. scintillans* grown in UK gardens today have been propagated from the FCC-awarded 'Policy' clone, which was shown by Lionel de Rothschild of Exbury Gardens, Hampshire, in 1934. They boast the bluest flowers to be found in the entire subsection and literally cover themselves with bloom each season. So it will only be in the botanic gardens and a few other major collections where one of the alternate clones will be on display. All are fully hardy; thrive in locales from Land's End to John O'Groats; and prefer an open site with good drainage. But their green-fingered guardians should note that in prolonged hot spells, the rootball should never be allowed to completely dry out, and in the southern counties, specimens will benefit if dappled shade is available to filter the most intense afternoon sunlight.

On occasion, the sprawl of an untidy clump of *R. scintillans* can be neatened for a while with a short-back-and-sides from a pair of secateurs, but as most aficionados will agree, the species is never going to win awards for its grace and decorum.



R. scintillans (F 10014)

R. scintillans

R. chryseum (KW 4023)

R. rupicola* ssp. *chryseum

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; SW Sichuan & NW Yunnan, China; NE Upper Myanmar.
Growing in forest clearings and at their margins,
on open moorland and rocky slopes, and in alpine meadows,
at elevations of 3,000-4,900m.

Identification:
Shrub, matted and cushion-forming, through compact and rounded, to broadly upright,
0.1 to 1.2m high.
Leaves broadly elliptic through elliptic to oblong or near orbicular,
0.6 to 2.5cm long by 0.3 to 1.4cm wide,
apex mucronate;
upper surface green and matt, the scales contiguous to overlapping;
lower surface scales dimorphic, intermixed, both types of a similar size,
the predominant majority of a dark brown or reddish-brown hue,
a minority either amber or golden,
and all nearly contiguous through overlapping.
Petiole 1-3mm long.
Inflorescence terminal, 1-6-flowered.
Pedicel 1-5mm long.
Calyx reddish-purple, pink or yellow,
the lobes broadly ovate, rounded or oblong and 2-6mm long,
their outer surface densely lepidote,
the scales pale and in a wide central band on the lobes, rarely pubescent,
their margins lepidote or not, but ciliate.
Corolla 0.8 to 1.8cm long,
pale yellow,
the outer surface lepidote along the middle of the lobes,
and sometimes pubescent.
Stamens 5-10,
variable amongst the corollas forming a single inflorescence,
long-exserted, equal in length or slightly longer than the corolla.
Ovary conoid, rarely pubescent.
Style longer than the stamens, the base often pubescent.
Capsule sometimes pubescent.

Seed Collections:

F 13947	1917	KW 9636	1931	KGB 440	1993
F 14000	1917	KW 9909	1931	KGB 589	1993
F 14005	1917	Yu 8624	1937	AGS 1506	1994
F 16252	1918/1919	Yu 14641	1937	AGS 2258	1994
F 16580	1918/1919	Yu 19065	1937	CNW 311	1994
F 16681	1918/1919	Yu 19358	1937	CNW 318	1994
KW 4023	1921	Yu 19792	1937	CNW 324	1994
F 19607	1921/1922	Yu 20606	1937	Cox 6515	1994
F 19866	1921/1922	Yu 20778	1937	FED 311	1995
F 19993	1921/1922	Yu 20820	1937	AC 1737	1996
F 20432	1921/1922	Yu 22133	1937	AC 1738	1996
F 20956	1921/1922	Cox 6012	1992	AC 1739	1996
R 10914	1923/1924	SICH 1071	1992	AC 1751	1996
R 11126	1923/1924	SSNY 149	1992	AC 1767	1996
R 11148	1923/1924	EGM 173	1993	AC 1785	1996
R 11198	1923/1924	KEG 799	1993	AC 1936	1996
F 29249	1930/1931	KGB 203	1993	JN 862	1999
F 30942	1930/1931	KGB 291	1993	JN 12268	2012
KW 9609	1931			FB9-2018	2018

R. chryseum was one of the finds Frank Kingdon-Ward made while exploring the Ka-gwr-pw Valley on the border between then-independent Tibet and China's Yunnan Province in June 1913, though only herbarium material was gathered that early in the season. He described the species with Isaac Bayley Balfour in Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh,* which was published in 1916, and would finally secure seed in 1921, though George Forrest won the first introduction credit some years earlier. The actual date and field number of that collection are murkily indeterminate, but the species is documented as flowering for the first time at Caerhays Castle towards the tail end of March 1918, which means that F 13947 of 1917 vintage, had an undocumented predecessor.

Or so goes the official history.

The unofficial reportage is somewhat different however, for the species was actually discovered by Jean-Andre Soulié at Sela (Si La) in the 1890s, but his specimens were misidentified, so the credit went to Kingdon-Ward, who - perhaps unknowingly - may also have returned some viable seed under the field numbers KW 540 and KW 577 if capsules from the previous season were included amongst the dried material.

A similar state of affairs applies to George Forrest with regard to *R. muliense,* apropos the discovery credit. The plant hunter described the species with Balfour in 1919 (*Notes,* Volume 11), from specimens he collected in southwest Sichuan during June 1918, but again, the narrative does not reflect the fact that Heinrich Handel-Mazzetti and Camillo Schneider had returned specimens four years earlier in 1914. So despite these also being wrongly identified, herein, they get the belated discovery veneration.

Both plants have yellow corollas, but otherwise, are near mirrors of *R. rupicola,* the presence or not of scales on the calyx lobe margins or a trend towards more oblong-shaped leaves notwithstanding, as these characteristics are found on specimens of all three taxa. However, on the hillsides of Upper Myanmar, southwest China and occupied Tibet, the duo's range extends some 600m above that of their purple-flowering sisters, a fact that should influence their botanic status. H. H. Davidian regarded *R. muliense* as a synonym of *R. chryseum,* but maintained the latter at specific ranking, while William and Melva Philipson retained their individuality, but opted first for subspecies status in 1971, then varietal ranking in 1975 (as evidenced by the herbarium plates at Edinburgh Botanic). An isolated geographic distribution likely influenced their thinking, as *R. muliense* was then only known from southwest Sichuan, but recent field study has found plant populations to be resident in northwest Yunnan too, so that distinction has been blurred. Subspecies status therefore, with *R. muliense* made synonymous under *R. rupicola* ssp. *chryseum,* will most accurately reflect the endemic situation.

Note too, that the species is a diploid with 26 chromosomes.

The only other yellow-flowering *Lapponica* species is *R. flavidum,* easily distinguished from ssp. *chryseum* by the hairy young branches and shiny, dark green leaves. The abaxial leaf surface scales are also different, with those on the foliage of *R. flavidum* widely spaced and of only one colour, while in comparison, those of ssp. *chryseum* are bicoloured and close to overlapping.

A third yellow-flowering *Lapponica, R. websterianum* var. *yulongense,* is actually a red herring. A Bill and Melva determination of 1975 vintage, Joseph Rock collected the dried material in 1929 while botanising high-up on the grasslands of Yulong-Hsi, to the south of Tatsienlu, in Sichuan Province, and his field notes indicate white to pale yellow flowers. However, the herbarium specimens precisely match *R. rupicola* var. *chryseum* - as stated by Peter Cox in *The Smaller Rhododendrons,* 1985 - which means that herein, it is treated as a synonym of that taxon.

Reflecting the 1,900m altitudinal endemicity of *R. rupicola* var. *chryseum,* a bevy of forms will be found in UK cultivation, from tiny, prostrate creepers, a few centimetres high and wide, to broadly-upright even lax shrubs close to a metre high and more across. Those from the middle reaches of the range - compact and spreading, or low and upright - are the ones most often found in gardens, planted to contrast with the purples, mauves, lavenders and blues of the rest of the subsection, much as *R. x microleucum* has become the de facto white-flowered antithesis.

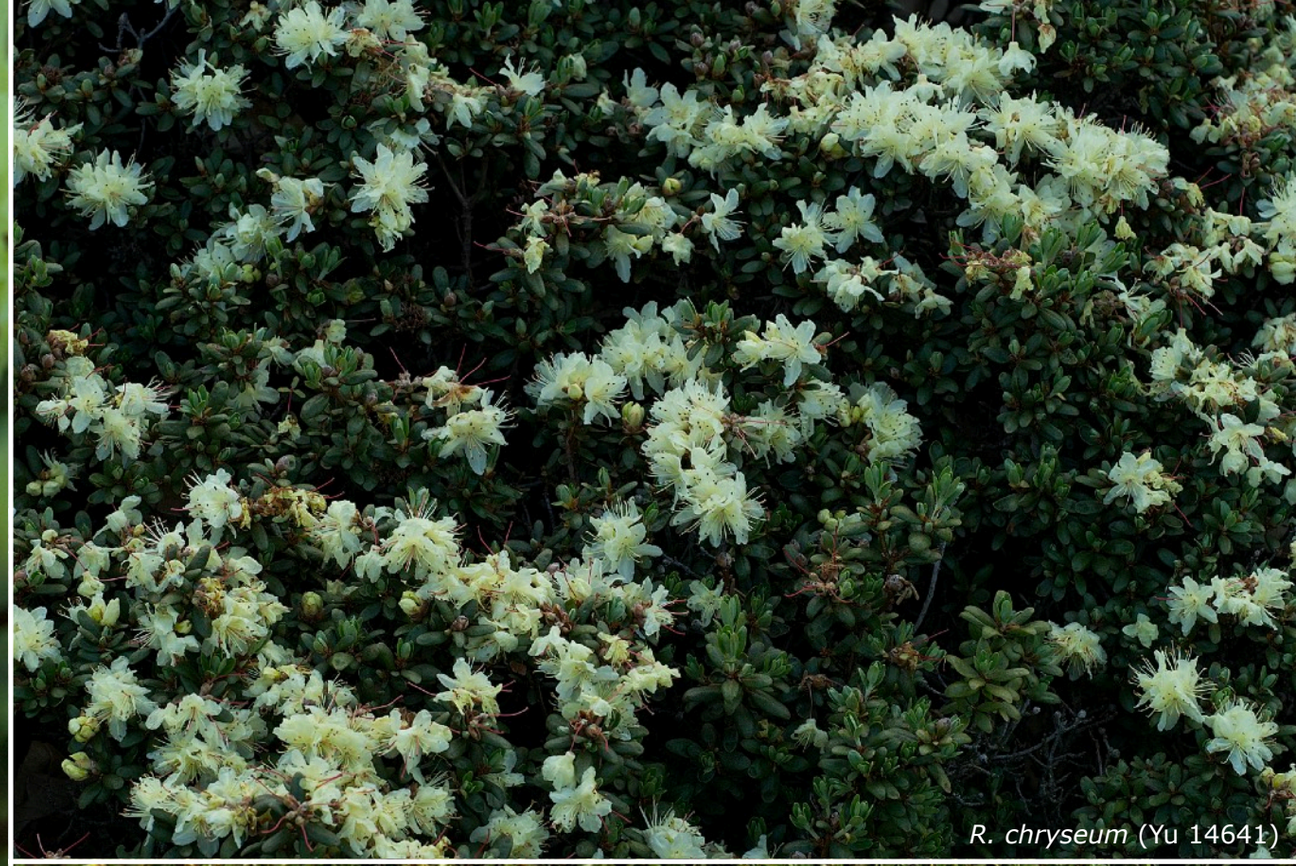
As would be expected, the dwarf to matt-forming clones, with a provenance tied to the highest elevations of the natural distribution, succeed best in northern gardens where prolonged, overly hot summers are not usually a feature. They are miniature gems, and must-have plants for every rhodophile's rock garden.



R. chryseum (Yu 14641)



R. chryseum (KW 4023)



R. chryseum (Yu 14641)



R. chryseum

R. orthocladum

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan & N Yunnan, China.
Growing at forest margins, in thickets, on alpine slopes and cliffs,
at elevations of 2,500-4,500m.

Identification:
Shrub, rounded to broadly upright, 0.3 to 1.3m high.
Leaves lanceolate through linear-lanceolate,
0.5 to 2cm long by 0.3 to 0.6cm wide,
apex rarely rounded, shortly or obscurely mucronate;
upper surface green or pale green, or slightly glaucous and grey-green, matt or shiny,
the scales pale and translucent, nearly contiguous to overlapping;
lower surface scales dimorphic, intermixed,
the majority of a uniformly golden, reddish-yellow or yellow-brown hue,
and of a similar size, nearly contiguous through overlapping,
a minority dark brown, larger, closely or widely scattered.
Petiole 1-3mm long.
Inflorescence terminal, 1-5-flowered.
Pedicel 1-3mm long.
Calyx pink or reddish,
the lobes triangular or rounded, unequal, and 0.5-1.5mm long,
their outer surface densely lepidote at the base,
their margins lepidote or not, and long-ciliate or not.
Corolla 0.7 to 1.4cm long,
pale or deep lavender-blue through purple,
the outer surface sometimes sparsely lepidote on the lobes.
Stamens 8-11, exserted, shorter or (rarely) equal in length to the corolla.
Style very short, shorter or (rarely) equal in length to the stamens,
the base sometimes sparsely lepidote.

Seed Collections:

F 10481	1913	F 21288	1921/1922
F 11450	1913/1914	F 21289	1921/1922
F 16287	1917/1919	SBLE 111	1987
F 20488	1921/1922	Henriksen 122	1997
F 20493	1921/1922	JN 919	1999
F 21241	1921/1922		

George Forrest was the first Western plant hunter to find *R. orthocladum,* discovering a population of plants on the mountains of the Yangtze Bend's northeastern flank during July 1913. He introduced the species into British gardens that same year and wrote the botanic description, which appears in Volume 11 of *Notes from the Royal Botanic Garden, Edinburgh,* published in 1919, jointly with Sir Isaac Bayley Balfour.

Within Subsection *Lapponica,* the species is most closely related to *R. scintillans* and *R. thymifolium*. The former has stamens equal to or longer than the corolla, a style longer than the stamens and monomorphic brown abaxial leaf surface scales; its habit is also more open and untidy. The latter has just one or two corollas in the flower truss on very short stalks, monomorphic pale fawn-coloured abaxial scales, and a distinctly erect and upright habit.

R. orthocladum has historically been sub-divided into three varieties, the true species joined by var. *longistylum* and var. *microleucum.* However, both are now known to be natural hybrids. The first has been identified as a pairing with *R. scintillans,* displaying characteristics midway between the two, especially in regard to the longer style. Its name is also illegitimate, breaking ICNAFP rules on mirroring a specific epithet used elsewhere within the genus, specifically, in Subsection *Tephropepla*. The second, is a seed pan rogue not found in the wild. It comes with a very dubious provenance; has more oblong-shaped leaves with monomorphic abaxial leaf scales; a medium-length style that is equal to or longer than the stamens; and pure white corollas.

Despite Forrest and Joseph Rock gathering capsules in 1921 and 1928, it is doubtful if any plants with a var. *longistylum* pedigree currently survive in cultivation. The opposite is true for what must now correctly be named *R. x microleucum:*

This plant was raised in the rock garden at Exbury by Lionel de Rothschild. It was apparently germinated from Forrest seed, but lacks an accompanying field number. Volume 93 of *The Gardeners' Chronicle* holds John Hutchinson's 1933 botanic description in which he gave the shrub specific status. Free-flowering, fully hardy, and an undoubted gem, it received an FCC award from the RHS in 1939 and has been very widely distributed ever since, for it is the perfect foil to site in a bed of *Lapponica* purples and blues. The extent of that popularity probably preserved the name when in 1975 Melva and William Philipson revoked the ranking and - incorrectly - reduced the taxon to a variety of *R. orthocladum,* rather than declare it a natural hybrid, despite its documented history.

The true species is a rare find in British gardens, despite forms with near linear-shaped leaves and mid purple-blue flowers in trusses of five being highly garden-worthy. Cultivation is easier than most other Subsection *Lapponica* rhododendrons, reflecting the lower elevations across which *R. orthocladum* may be found in Yunnan and Sichuan, though plants still perform best in northern locales along the east coast and inland.

R. orthocladum (F 20488)



R. tapetiforme (F 16450)

R. tapetiforme

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; NW Yunnan, China; NE Upper Myanmar.
Growing in rhododendron thickets, on open alpine moorland and bare screes,
at elevations of 3,300-4,800m.

Identification:
Shrub, low and matted, prostrate or rounded, 0.2 to 0.9m high.
Leaves broadly elliptic through oblong to near orbicular,
0.4 to 1.7cm long by 0.2 to 1cm wide,
apex usually without a mucro;
upper surface dark green and matt,
the scales large, translucent and overlapping;
lower surface scales monomorphic, similarly sized,
of a uniformly rufous hue, and contiguous.
Petiole 1-3mm long.
Inflorescence terminal, 1-4-flowered.
Pedicel 1-3mm long, rarely puberulous.
Calyx pink, purple or greenish,
rim-like or 5-lobed, these triangular or rounded and 0.5-2mm long,
their outer surface variably lepidote or not, rarely puberulous,
their margins lepidote or not, and long-ciliate or not.
Corolla 0.9 to 1.6cm long,
purplish through purplish-blue to rose, sometimes violet or lavender,
or (very rarely) yellow,
the outer surface elepidote, and occasionally pubescent.
Stamens 10, rarely 5-6, long-exserted,
equal in length to or slightly longer than the corolla.
Ovary rarely puberulous.
Style usually longer than the stamens, rarely the same length,
the base rarely puberulous.
Capsule rarely puberulous at the base.

Seed Collections:

F 15356	1917	R 11088	1923/1924	KW 6960	1926	KGB 292	1993
F 16450	1917/1919	R 11091	1923/1924	KW 7633	1926	AC 1714	1996
F 16577	1917/1919	R 11092	1923/1924	R 22288	1932	AC 1754	1996
F 19674	1921/1922	R 11093	1923/1924	KW 10521	1933	AC 1773	1996
F 20208	1921/1922	R 11098	1923/1924	KW 13370	1937	JN 861	1999
KW 5385	1922	R 11109	1923/1924	SSNY 160	1992		
R 11086	1923/1924	R 11130	1923/1924	SSNY 173	1992		

R. tapetiforme was another of the finds made by Frank Kingdon-Ward during his exploration of the Ka-gwr-pw Valley on the Tibet-Yunnan border during the early summer months of 1913. It was on July 18th that the species was spotted, carpeting a vast area of moorland, but that early in the season, only dried material for the herbarium was gathered. Ward would later describe the species, writing with Isaac Bayley Balfour, in Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh,* published in 1916.

The small, elliptic to near circular leaves, without a mucro, and monomorphic abaxial scales that are rusty-brown coloured, touching but never overlapping or in any way distant from one another, are the morphological features that key *R. tapetiforme* from all the other Subsection *Lapponica* species. *R. yungningense,* its closest ally, shares leaf shape and size, as well as corolla shape, size and colour, so the two are easily confused, but four factors differentiate the two: habit - prostrate through rounded for *R. tapetiforme,* but erect for *R. yungningense;* upper surface leaf colour - dark green compared to greyish-green, the former with obvious translucent scales; the absence or presence of a distinct mucro at the leaf tip; and the abaxial scales, contiguous and uniformly rusty-brown coloured, as opposed to contiguous or close but not touching and either uniformly fawn or rusty-brown coloured, and often with darker centres. Those with portable DNA testing kits to hand will find *R. tapetiforme* to be a hexaploid, possessor of 78 chromosomes, while *R. yungningense* is a bog-standard diploid with 26.

George Forrest was the first of the plant hunters to introduce the species into British gardens, doing so in 1917, with the additional collections he made in later years rubbing shoulders with those of Kingdon-Ward and Joseph Rock. The joint Kunming-Edinburgh Sino-Scottish expedition to northwestern Yunnan reintroduced seed in 1992.

R. tapetiforme, while undoubtedly pretty, is fairly low down the list of garden-worthy *Lapponica* rhododendrons. Domed shrubs around 0.6m high will be found in most large collections, certainly those with extensive rock gardens graced with cool summers, but the species will be a rare find elsewhere.



R. tapetiforme (F 16450)



R. tapetiforme (F 16450)

R. complexum (F 15392)

R. complexum

Hardiness:
H5.
Flowering Period:
April-May.
Distribution in the wild:
W Sichuan & N Yunnan, China.
Growing in rhododendron thickets, on alpine moorland and rocky slopes,
at elevations of 3,000-4,600m.

Identification:
Shrub, fastigiate, matted, low and compact, or upright and rounded, 0.1 to 0.6m high;
branchlets short.
Leaves elliptic through ovate,
0.3 to 1.2cm long by 0.2 to 0.6cm wide,
apex obtuse or rounded, and mucronate or not;
upper surface pale greyish-green, matt, the scales overlapping;
lower surface scales monomorphic, uniform and rust-coloured,
contiguous or overlapping, rarely to half their own diameter apart.
Petiole 0.5-2mm long.
Inflorescence terminal, 2-6-flowered.
Pedicel 1-2mm long.
Calyx minute, pink, reddish or green,
rim-like or 5-lobed, these triangular or rounded and 1-1.5mm long,
their outer surface lepidote or not,
their margins lepidote or not, and often long-hairy.
Corolla 0.9 to 1.3cm long,
narrowly funnel-shaped,
pale lilac through rosy-purple, rarely white or pink,
the outer surface occasionally pubescent.
Stamens 5-6, rarely 8,
included within the tube, shorter than the corolla.
Style very short (± 3mm long), rarely to 6 or 8mm long,
usually shorter than the stamens,
the base sometimes pubescent.

Seed Collections:

F 10311	1912/1914	SSNY 296	1992
F 15159	1917/1919	KEG 1219	1993
F 15267	1917/1919	KGB 745	1993
F 15269	1917/1919	JN 957	1999
F 15392	1917/1919	JN 959	1999
F 15400	1917/1919	NN 0911	2009

George Forrest was first to encounter *R. complexum,* finding a population of plants on the Chungtien Plateau in Yunnan Province on June 15th 1914. The species was described by Sir Isaac Bayley Balfour and William Wright Smith in Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1916.

The very short stamens, which never emerge beyond the confines of the corolla tube, are the key characteristic that separates *R. complexum* from all the other members of Subsection *Lapponica,* especially as there are usually just five or six present. That number can occasionally rise to seven or eight, but it never hits ten, the customary total found in the tubes of its closest relative, the slightly taller-growing *R. intricatum*. Both of these rhododendrons have equally short styles, but a visual check of the leaf underside will find pale grey scales if *R. intricatum* is to hand, and distinctly ferruginous ones if *R. complexum* is being examined. Further proof of the taxon's uniqueness is provided by the hexaploid chromosome count, *R. complexum* boasting 78 as opposed to the normal 26.

Most sources report that Forrest introduced the species into British gardens in 1917 under the field number F 15392, but four additional lots secured over the course of that two-year expedition have also now been determined to be *R. complexum*. Equally, he may also have inadvertently returned seed to the UK earlier, from his 1912/1914 trip, as the revised entry in the 1998 RHS *Rhododendron Handbook* for the field number F 10311, now denotes it to be both *R. impeditum* and *R. complexum.* Equally confusing is Joseph Rock's collection of the species under the USDA 3970 tag, this gathered in October 1922. For the Harvard University herbarium determination records it as *R. complexum,* while the British listings equate that number with a 1929 harvest of *R. floccigerum* seed (R 18469). The Sino-Scottish expedition to northwestern Yunnan conducted with the Kunming Institute of Botany reintroduced the species in 1992, with five additional gatherings made since then, the last three of these by Jens Nielsen, who clearly has a knack for relocating rare items hidden away on Chinese hillsides.

R. complexum is the perfect subject for a swiftly draining nook in a rock garden, fully hardy and free-flowering, forming an intricately branched dome to around 50cm high and wide. But rarely will a specimen be found outwith a connoisseur's hoard.



R. complexum (KEG 1219)

R. telmateium (F 21250)

R. telmateium (F 21250)

R. telmateium

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan, N, NW & C Yunnan, China.
Growing at forest margins, in rhododendron thickets, on open moorland,
on boggy ground, on rocky slopes and cliffs, at elevations of 2,700-5,000m.

Identification:
Shrub, prostrate, matted or cushion-forming to upright and spreading, 0.1 to 1m high;
branchlets often slender and fastigiate.
Leaves lanceolate through elliptic to ovate-oval,
0.3 to 1.4cm long by 0.2 to 0.7cm wide,
apex acute and distinctly mucronate;
upper surface dull greyish-green or green, matt or somewhat shiny,
the scales pale gold and overlapping;
lower surface scales dimorphic, intermixed,
the majority of a uniform pale gold, fawn, creamy-yellow or reddish-brown hue,
of similar size, and overlapping,
a minority uniformly rufous-brown or dark brown, larger, and closely or widely scattered.
Petiole 1-3mm long.
Inflorescence terminal, 1-3-flowered.
Pedicel 0.5-2mm long.
Calyx pink, reddish-purple or greenish,
the lobes triangular, ovate, oblong or rounded, usually unequal, and 0.5-3mm long,
their outer surface moderately through densely lepidote,
their margins lepidote and ciliate, the hairs often long.
Corolla 0.6 to 1.4cm long,
purplish-blue through rose-purple to rose-pink or lavender-pink,
the outer surface lepidote,
sometimes only along the middle of the lobes, or sometimes in bands,
rarely without scales, but often pubescent.
Stamens 8-11, exserted, the longest equal in length to the corolla.
Ovary sometimes pubescent at the base or at the apex.
Style variable, longer than the stamens and the corolla,
the base often sparsely lepidote and sometimes pubescent.
Capsule sometimes pubescent.

Seed Collections:

F 5879	1910	KW 4733	1921	F 25707	1924/1925
F 12568	1914	F 20457	1921/1922	F 28344	1930/1931
F 12623	1914	F 20461	1921/1922	F 29269	1930/1931
F 13847	1917/1919	F 20477	1921/1922	R 24319	1932
F 15085	1917/1919	F 21239	1921/1922	R 24336	1932
F 15120	1917/1919	F 21250	1921/1922	R 24361	1932
F 15132	1917/1919	F 21377	1921/1922	Yu 7994	1937
F 15154	1917/1919	F 21492	1921/1922	Yu 15155	1937
F 15468	1917/1919	F 21547	1921/1922	SBLE 24	1987
F 15645	1917/1919	F 21577	1921/1922	SBLE 236	1987
F 16257	1917/1919	F 21932	1921/1922	SBLE 333	1987
F 16288	1917/1919	F 21972	1921/1922	CLD 715	1990
F 16296	1917/1919	F 21974	1921/1922	SSNY 129	1992
F 16300	1917/1919	R 10553	1923/1924	JN 630	1999
F 16313	1917/1919	R 11249	1923/1924	JN 908	1999
KW 4102	1921	R 11304	1923/1924	JN 12245	2012
KW 4268	1921	R 11465	1923/1924	JN 12419	2012



R. telmateium

R. telmateium was another of George Forrest's discoveries, made in June 1914 while the plant hunter was botanising on mountains to the west of the Fengkow Valley in Yunnan Province. The species description was penned by Isaac Bayley Balfour and William Wright Smith, and appeared in Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh,* which was published during 1916.

As a consequence of the synonymy applied in the Edinburgh Revision texts, the taxon now encompasses:

R. diacritum.
A May 1906 Forrest find, discovered on the eastern flank of the Lichiang mountain range in northwestern Yunnan and introduced by him in 1910, yet only described by Balfour and Smith in Volume 9 of *Notes.*

R. drumonium.
A Frank Kingdon-Ward find dated to May 1913, spotted in Yunnan's Chung River valley, this described by Ward and Balfour, again in Volume 9 of *Notes,* with the species introduced by Forrest a few months after the original discovery.

R. idoneum.
Another Forrest-Balfour-Smith entry in *Notes,* Volume 9, encountered and collected in July 1914 off the Chungtien Plateau and introduced later that same year.

R. pycnocladum.
Made synonymous with *R. diacritum* back in the 1930s (within the pages of *The Species of Rhododendron,* Stevenson), it had been collected by Forrest in May 1906, and described by Bayley Balfour and Wright Smith for *Notes,* Volume 9. The taxon was then resurrected by William and Melva Philipson following an examination of the dried material in the Edinburgh herbarium and elsewhere (at least, during the initial phase of their work).

The resulting amalgamation, to quote hands-on doyens Peter and Kenneth Cox, is 'hard to identify conclusively, as few characters are constant and the former species placed in synonymy here are very varied' (*The Encyclopedia of Rhododendron Species,* 1997).

On the ground in Yunnan and Sichuan, the situation is made even more confused by the widespread occurrence of intergrading intermediates, especially those with *R. nivale*.

The description given opposite therefore, spotlights the feature set that must be present for a specimen to be described as *R. telmateium,* namely:

1 - a pointed leaf apex that is strongly mucronate;

2 - overlapping, pale golden scales on the adaxial leaf surface;

3 - overlapping, dimorphic scales on the abaxial surface, though in some cases the minority will comprise very few individuals;

4 - a small calyx with lobe margins that are both lepidote and ciliate;

5 - corollas with scales on their outer surface.

Outwith these stipulations, specimens will likely fall under one of the three subspecies of *R. nivale,* or *R. fastigiatum* ssp. *impeditum*.

Polyploidy issues must also be addressed as the synonymic mix detailed by the Philipsons and accepted without correction by James Cullen includes both diploids, a tetraploid and a hexaploid:

R. drumonium has been determined to have 52 chromosomes, so it is herein restored to specific status as detailed on page 210.

A gathering of *R. idoneum* under the field number McLaren S127a was found to have 78 chromosomes, while *R. idoneum* itself, like *R. telmateium,* has 26. The hexaploid is therefore regarded herein as the new species *R. pseudoidoneum,* while synonymy under *R. telmateium* is maintained for *R. idoneum*.

R. nivale ssp. *australe,* which was described for the first time in the Philipsons' 1975 paper *A Revision Of Rhododendron Section Lapponicum,* published in *Notes,* Volume 34, also has pointed leaves and hairy calyx lobe margins. Found in northwest and central Yunnan, in close association with *R. telmateium,* it is isolated and remote from *R. nivale* ssp. *nigropunctatum.* Herein therefore, it is made synonymous under *R. telmateium*.

Cultivated plants of *R. telmateium* are dainty, open and erect shrubs, around 0.6m high, with short, thin branches, these often fastigiate, which bear very small leaves. The flowers come in trusses of 1 or 2 corollas, with the display pleasing, but not particularly profuse. George Forrest first introduced seed in 1914.

Diacritum Group plants in comparison are low and compact, quite dense, and vigorous growers. They have thick branches, which may be long or short, and are very free-flowering.

Mature specimens from Idoneum Group are rounded domes that rarely exceed 0.3m in any direction, with the majority of their abaxial scales coloured fawn or creamy-yellow. J. G. Millais reports that several plants were in flower at Lamellen, the garden of E. J. P. Magor, located near St Tudy in North Cornwall, during April 1917 (*Rhododendrons and the Various Hybrids,* Volume 1, 1917).

Pycnocladum Group plants have wider leaves and a less fastigiate habit than the 'true' species.

All these forms, and of course, *R. telmateium* itself, are hardy and easy to please in northern or east coast gardens if spared an excessively hot or prolonged summer, and they make perfect subjects to fill a vacant spot in a rock garden. Equally, while not rare in UK cultivation, they will likely only be found in the larger rhododendron collections.



R. telmateium (KW 4268)

R. dasypetalum (F 13905)

R. dasypetalum

Hardiness:
H5.
Flowering Period:
April-May.
Distribution in the wild:
NW Yunnan, China.
Growing in open stony pasture at elevations of 3,300m.

Identification:
Shrub, compact, rounded or spreading, 0.3 to 0.75m high;
branchlets long.
Leaves elliptic through elliptic-oblong,
0.8 to 2cm long by 0.3 to 0.9cm wide,
apex obtuse or rounded, and mucronate;
upper surface dark green, matt, variably lepidote,
the scales overlapping to between half or two times their own diameter apart;
lower surface scales monomorphic, similarly sized,
of a fawn, brown or dark brown uniform hue, contiguous or overlapping.
Petiole 1-3mm long.
Inflorescence terminal, 1-4-flowered.
Pedicel 3-12mm long, sometimes puberulous.
Calyx crimson-purple, reddish, pink or greenish,
the lobes broadly oblong and 2-4mm long,
their outer surface sparsely through moderately lepidote and pubescent,
their margins elepidote and long-ciliate.
Corolla 1.2 to 1.8cm long,
bright purplish-rose,
the outer surface elepidote,
conspicuously pilose on the tube and at the base of the lobes.
Stamens 10, long-exserted, equal in length or slightly shorter than the corolla.
Ovary occasionally puberulous at the base.
Style longer than the stamens, the base usually puberulous.

Seed Collections:

F 13905	1917
F 21304	1921/1922

George Forrest was responsible for the only two collections of *R. dasypetalum* made to date, initially finding a population of the species on the Li-ti-ping Range in northwestern Yunnan during June 1917. The plant hunter would later describe his find, writing with Sir Isaac Bayley Balfour in Volume 11 of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1919, and make a second gathering of seed during his 1921-22 expedition under the field number F 21304.

The chosen Latin epithet refers to the hairs on the outside of the flower petals, their presence at the lobe bases and along the tube a unique feature, which in combination with an absence of any scales, will distinguish *R. dasypetalum* from each and every other member of Subsection *Lapponica*. Equally, the long fine hairs on the non-scaly calyx margins are another useful identifier, while genetically, the species has been shown to be a tetraploid with 52 chromosomes.

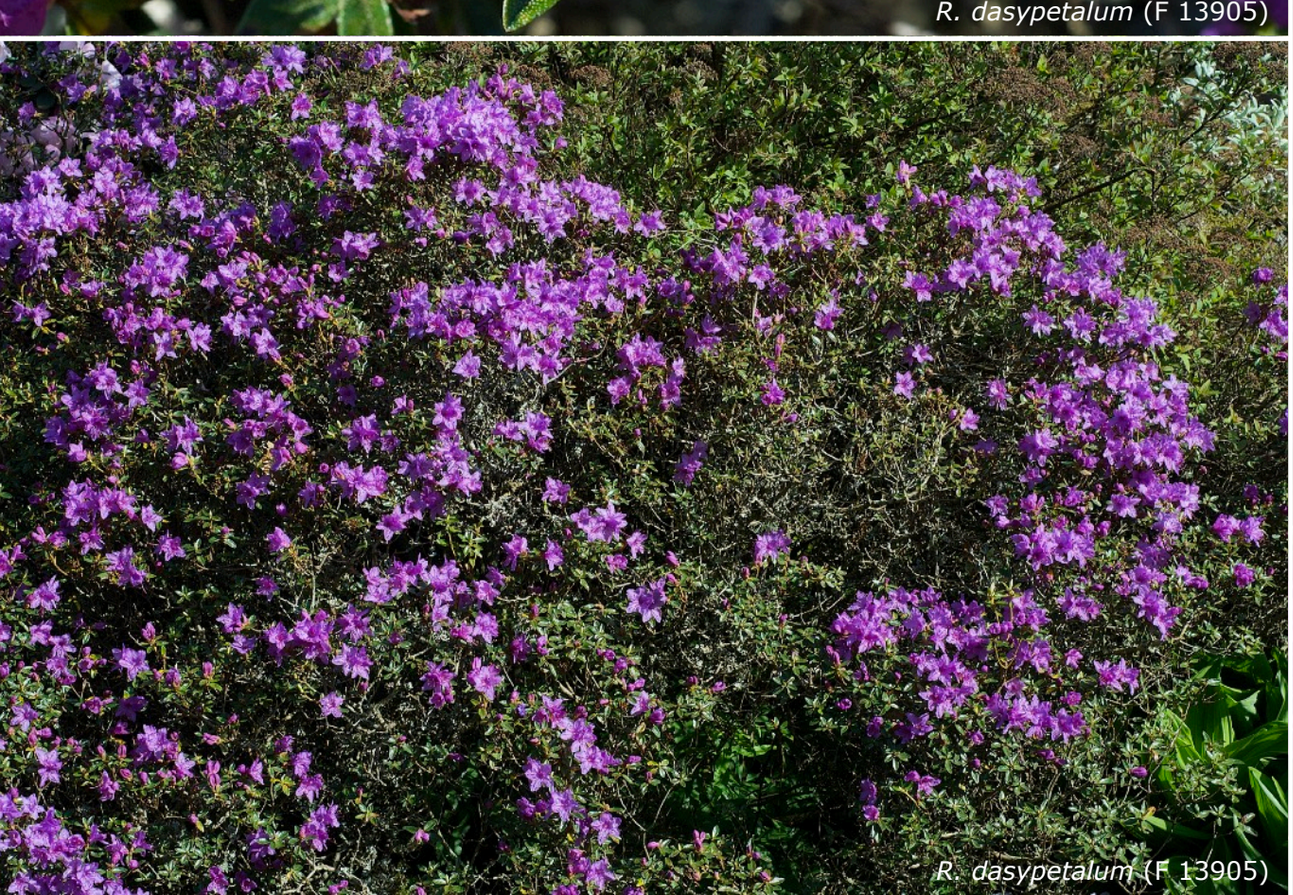
Plants grown from the first introduction of *R. dasypetalum* - the Forrest type specimen, collected under the field number F 13905 - show distinct differences with the specimens attached to their associated herbarium sheets. Specifically, the dried material has matt rather than shiny foliage and far smaller corollas, with few leaves exhibiting any sign that a majority might once have had a U- or V-shaped upward curving cross-section (even allowing for the flattening pressure of the drying process). In his 2005-published book *Hardy Rhododendron Species,* James Cullen remarked that most cultivated plants bearing a F 13905 label are incorrectly named, while Peter Cox is convinced that a natural hybrid - a *Lapponica* x *Saluenensia* cross - is to hand (*The Smaller Rhododendrons,* 1985), and even H. H. Davidian admits that the leaf bending characteristic is inconsistent (*The Rhododendron Species,* Volume 1, 1982).

Clearly, much of the seed gathered concurrently with the herbarium material did not germinate true and is suspect, potentially throwing doubt on the validity of the original determination, especially as to date, no other expedition has rediscovered the original or a similar population of plants in the wild. However, even if the taxon does remain elusive on the ground, DNA testing will be able to offer an answer to the hybridity question once such resources are applied. Until that time, the plant's specific status should be maintained.

The second collection - F 21304 - is listed in the 1952, 1967 and 1980 editions of the RHS *Rhododendron Handbook* as being in cultivation, but is absent from the most recently published volume, the 1998 revision. Herbarium specimens are held at Edinburgh Botanic under this field number (though the sheets are no longer available to view online), as well as at other institutions, but a labelled plant in a UK garden has so far proved illusive.

Cultivated specimens of *R. dasypetalum,* with or without the augmented leaf cross-section, are hardy, fairly fast growing and when in flower, quite striking, at least until the rose-purple corollas pale, though as with all the *Lapponica* rhododendrons, drainage will need to be exemplary and maintained as such over the longterm.


R. dasypetalum (F 13905)


R. dasypetalum (F 13905)


R. dasypetalum

R. dasypetalum

R. russatum

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan, N & NW Yunnan, China; NE Upper Myanmar.
Growing at forest margins, in rhododendron scrub and alpine pastures,
on rocky slopes and cliffs, at elevations of 2,500-4,300m.

Identification:
Shrub, matted and cushion-forming,
through low and compact to rounded and broadly upright,
sometimes straggly, 0.3 to 1.8m high.
Leaves sometimes aromatic,
broadly elliptic through narrowly elliptic to oblong,
0.8 to 6.5cm long by 0.4 to 2.3cm wide,
apex mucronate;
upper surface pale or dark green, matt or shiny,
the scales nearly contiguous to overlapping;
lower surface scales dimorphic or monomorphic, near contiguous through overlapping,
when bicoloured, both types of a similar size and intermixed,
some a dark brown or reddish-brown hue,
others coloured pale brown, yellow or pale gold,
when uniformly coloured, reddish-brown, dark or pale brown.
Petiole 1-9mm long.
Inflorescence terminal,
usually 4-6-flowered, but occasionally 10-15-flowered.
Pedicel 1-4mm long, rarely pubescent.
Calyx reddish-purple, pink, or greenish,
the lobes broadly oblong, rounded or ovate and 3-6mm long,
their outer surface lepidote or not,
the few scales when present, at the base, or in a central band,
their margins elepidote or (rarely) sparsely lepidote, but usually long ciliate.
Corolla 1 to 2cm long,
deep indigo purple through reddish-purple, rose to pink,
the outer surface elepidote, sometimes pubescent on the tube.
Stamens 5-10, long-exserted, equal in length or slightly longer than the corolla.
Ovary sometimes entirely pubescent,
but often only hairy at the base or across the lower half,
or with a tuft of hairs at the apex.
Style longer than the stamens, usually densely pubescent along the lower half.
Capsule usually pubescent, sometimes only at the apex.

Seed Collections:

F 13915	1917	F 21990	1921/1922	R 18462	1929
F 19440	1921/1922	F 21995	1921/1922	F 28254a	1930/1931
F 19458	1921/1922	F 22295	1921/1922	LS&E 12397	1946/1947
F 20950	1921/1922	R 11294	1923/1924	LS&E 15729	1946/1947
F 21490	1921/1922	R 11295	1923/1924	SBLE 458	1987
F 21506	1921/1922	R 11296	1923/1924	SSNY 83	1992
F 21529	1921/1922	R 11318	1923/1924	AGS 2102	1994
F 21987	1921/1922	F 25500	1924/1925	AC 1538	1996
		F 25553	1924/1925		



R. russatum



R. russatum

R. russatum was first encountered in June 1917 on an ascent of the Kari Pass in northwest Yunnan by George Forrest, the plant hunter later describing the species with Sir Isaac Bayley Balfour in 1919 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 11). Maintained at specific ranking since then and escaping unscathed from the Edinburgh Revision redeterminations, more recent field studies in China have found that it merges wholesale with *R. rupicola,* the two species intergrading wherever they meet. Out of flower, in cultivation or on the ground in the wild, the pair will prove very hard to individually split apart. Placement of *R. russatum* as a subspecies of *R. rupicola* would therefore appear appropriate and fully justified, but one fact prevents this: the former is a tetraploid; the latter a diploid; and as such, a reproductive barrier exists between them.

Two Forrest collections of *R. rupicola* explain how nature has worked its magic, with the first, F 20464, gathered in Sichuan, and the second, F 30889, in Yunnan. For both were found to be tetraploids in a study of chromosome numbers in rhododendron species carried out by the RHS science team at Wisley in the late 1940s, their results published in *The Rhododendron Year Book 1950*. Yet morphologically, those two collections fit perfectly into the *R. rupicola* specification, despite being genetically enhanced by a doubling of their DNA. The extra oomph those additional chromosomes provided began to become evident as the distribution of the tetraploids - only able to breed with each other - spread away from that of their parent species into new geographic areas, the plants adapting to overcome the different environmental challenges. In the process, they became *R. russatum*.

Because the scientifically accepted rules of polyploidy frown harshly upon multiple chromosome counts within a single taxon, the F 20464 and F 30889 entities are herein treated as a new species, *R. pseudorupicola* (see page 209).

Three specimens of *R. russatum* were listed in the 1950 Year Book as 2*n* = 52, while a fourth - gathered under Rock 59209, the quoted USDA number equating to the field number R 11294 - was reported to be a triploid where 2*n* = 39. This is almost certainly a seed pan rogue and natural hybrid, where in the wild, prior to the capsules being collected, the pollen that fertilised them came from a nearby diploid lepidote species that was not *R. rupicola,* as the seed would then have likely not been viable. The herbarium material under this number at Edinburgh Botanic has been confirmed as being true *R. russatum* in the paper *A Revision of Rhododendron Section Lapponicum,* by William and Melva Philipson, published in *Notes,* Volume 34, Number 1, 1975. Moreover, Tower Court, Ascot, is given as the source of the actual specimen tested at Wisley and it can be taken for granted that any standout in a tray of seedlings would certainly have caught the eye of John Barr Stevenson or his wife Roza, and prospered accordingly.

Subsection *Lapponica* rhododendrons often have short, soft hairs at the base of the style, but only *R. russatum* will be found with a fairly dense covering of such all along the lower half of the shaft. That feature, and a lack of scales on the outer surface of the corolla, key the species from its closest ally, the aforementioned *R. rupicola* ssp. *rupicola,* which has similar, deep purple-blue flowers. Completists will also point to the wider and often larger leaves, and the longer hairs on the calyx lobe margins, but to be of use morphologically, these characteristics must be consistent across the population as a whole, and they are not.

Forrest introduced the species into British gardens late in 1917, securing a further nine lots on subsequent expeditions. Joseph Rock added five more between 1923 and 1929, with two batches arriving from the Ludlow, Sherriff and Elliott foray into southeast Tibet during 1946, though these have not been officially incorporated into accounts of the taxon's endemic distribution (see Volume 1, page 175). *R. russatum* was reintroduced in 1987, with another three collections completing the tally of twenty-five. A variety of forms are therefore available to prospective purchasers, yet surprisingly, few make garden worthy plants, especially the taller growing clones, which have a straggly habit and decidedly second-rate flowers. The two RHS award clones are certainly well worth seeking out - the AM form shown by Alfred Williams of Werrington Park, Launceston, in 1927, which is gifted with intense violet-blue corollas; and the Exbury FCC plant shown by Lionel de Rothschild in 1933, this opening deep purple blooms in a good truss - both low, upright shrubs around 1m high. However, connoisseurs will find that plants bearing a 'Collingwood Ingram Form' label have the darkest purple-black flowers.

Cultivation has proven to be remarkable uncomplicated for a *Lapponica* species, with specimens succeeding in southern as well as northern gardens, a bonus almost certainly resulting from the presence of those fifty-two chromosomes.

The species epithet - 'reddish' - references the colour of the abaxial leaf scales.



R. russatum 'Collingwood Ingram Form'



R. russatum (F 13915)



R. russatum (R 11295)



R. russatum (R 11296)



R. russatum (R 18462)

R. yungningense

R. yungningense

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan, N & NW Yunnan, China.
Growing in rhododendron scrub, on alpine slopes and meadows,
on cliffs and amongst rocks, at elevations of 3,200-4,300m.

Identification:
Shrub, compact, rounded and upright, 0.3 to 1.3m high;
branchlets short, thick and erect.
Leaves elliptic through broadly elliptic to oblong or oblong-lanceolate,
0.6 to 2cm long by 0.2 to 1cm wide,
apex mucronate, but sometimes obscurely so;
upper surface pale green or greyish-green, matt,
the scales nearly contiguous to overlapping;
lower surface scales monomorphic, similarly sized,
of a uniformly fawn, brown, dark brown or rusty-brown hue with darker centres,
overlapping, contiguous or nearly so.
Petiole 1-5mm long.
Inflorescence terminal, 1-4-flowered;
the bud scales quickly deciduous.
Pedicel 1-3mm long.
Calyx pink, purple or crimson-purple,
the lobes triangular, ovate or rounded, variable and irregular, and 0.5-3mm long,
their outer surface variably lepidote or not,
their margins usually both lepidote and long ciliate.
Corolla 0.9 to 1.7cm long,
deep purple or purplish-blue through rose-lavender, or (rarely) white,
the outer surface elepidote, occasionally puberulous.
Stamens 8-12, exserted, slightly shorter or equal in length to the corolla.
Ovary occasionally puberulous at the apex.
Style short or long, the base sometimes puberulous.

Seed Collections:

F 10035	1912/1914	R 25370	1932
F 16282	1917/1919	CNW 732	1994
F 20460	1921/1922	CNW 756	1994
F 20463	1921/1922	CNW 1148	1994
F 21282	1921/1922	JN 996	1999
F 25526	1924/1925		

R. yungningense was found on hillsides to the east of the village of Yungning (spelt Yongning, today) in the southwest of Sichuan Province during June of 1921. George Forrest was the plant hunter responsible for the discovery, John Hutchinson the botanist who penned the description for the 1930 tome *The Species of Rhododendron,* completing an unpublished preliminary outline written by Isaac Bayley Balfour.

Except that fifty years later, two earlier Forrest collections - under the field numbers F 10035 and F 16282 - were found not to be, respectively, *R. scintillans* or *R. tapetiforme,* but *R. yungningense*. These redeterminations were made during an extensive review of Edinburgh Botanic's Lapponicum Series herbarium plates in the early 1970s by two New Zealand botanists, William and Melva Philipson, who had been tasked with fully revising the old formulations into a new subsection.

As a consequence of this work, the species discovery date moves back in time to May 1913, with the collection location spiralling southward onto the Lichiang Mountain Range in Yunnan, the actual site being the summit of the Lankong-Hoching Pass. George Forrest made multiple collections across these hills at this time, with one of those gatherings, under the field number F 10014, the original type specimen of *R. scintillans*.

As evidenced from the identification bullet points opposite, *R. yungningense* is one of the most difficult of the *Lapponica* rhododendrons to correctly single out because its characteristics are shared wholesale with many of its near-relatives. It also lacks a distinct morphological 'hook' to key off, resulting in multiple entries in any taxon splitting template. Abaxial scale colour is given some uniqueness by each individual modified hair having a somewhat darker centre, while the five short calyx lobes are variable in length and irregularly shaped, but the plant's habit, leaf silhouette and colour, the alignment of those leaf scales, how many corollas are present in the flower truss and the elepidote nature of their outer surface, plus stamen number and filament length, will all need to be compared to provide a cast iron verification.

R. glomerulatum, described by John Hutchinson in *The Gardeners' Chronicle,* Volume 91, 1932, had been raised from Forrest 21297, but was reduced to synonymy under *R. yungningense* by both H. H. Davidian (in *The Rhododendron Species,* Volume 1, 1982), as well as by the Philipsons (*A Revision of Rhododendron Section Lapponicum, Notes,* Volume 34, Number 1, 1975). Two other Forrest collections - F 29259 and F 29260 - were also first determined to be this species, thus all three became *R. yungningense.* However, a listing of chromosome counts published in *The Rhododendron Year Book 1950* showed that *R. glomerulatum* was a diploid where 2*n* = 26, while *R. yungningense* was a tetraploid where *2n* = 52. Consequently, the synonymy can no longer be maintained and *R. glomerulatum* is herein returned to specific status.

Seed of *R. yungningense* was first secured and introduced by Forrest from southwestern Sichuan in 1922, but given that history has now been rewritten, the 1975 redeterminations set that date around a decade earlier. The contents of several additional batches of capsules, collected in Yunnan by the Scotsman, arrived up until 1925, with a Joseph Rock contribution of 1932 vintage concluding the short-lived export drive. At least, until Alan Clark, Jens Nielsen and Murray Wilson rediscovered the species in 1994, with just one more collection being made post their three lots, by Jens in 1999.

Cultivated plants are rounded domes that grow to around 1m high and wide, are well-filled with foliage and fully hardy. They are free-flowering from a young age and although not currently amongst the ten 'must have' members of the subsection, they should be, for their blooms are divine and the leaves miniature knockouts all year round.

R. yungningense

R. yungningense

R. glomerulatum

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan, N & NW Yunnan, China.
Growing in rhododendron scrub, on alpine slopes and meadows,
on cliffs and amongst rocks, at elevations of 3,200-4,300m.

Identification:
Shrub, compact, rounded and upright, 0.3 to 1m high;
branchlets short, thick and erect.
Leaves ovate through ovate-elliptic,
0.6 to 2cm long by 0.2 to 1.3cm wide,
apex mucronate, but sometimes obscurely so;
upper surface pale green or greyish-green, matt,
the scales nearly contiguous to overlapping;
lower surface scales monomorphic, similarly sized,
of a uniformly fawn, brown, dark brown or rusty-brown hue with darker centres,
overlapping, contiguous or nearly so.
Petiole 1-5mm long.
Inflorescence terminal, 4-6-flowered;
the bud scales persistent.
Pedicel 1-3mm long.
Calyx pink, purple or crimson-purple,
the lobes triangular, ovate or rounded, variable and irregular, and 0.5-3mm long,
their outer surface variably lepidote or not,
their margins usually both lepidote and long ciliate.
Corolla 0.9 to 1.7cm long,
pale purplish-mauve,
the outer surface elepidote, occasionally puberulous.
Stamens 8-12, exserted, slightly shorter or equal in length to the corolla.
Ovary occasionally puberulous at the apex.
Style short or long, the base sometimes puberulous.

Seed Collections:

F 21297	1922
F 29259	1930/1931
F 29260	1930/1931

George Forrest discovered *R. glomerulatum* during 1922 on mountains to the east of Yungning in southwest Sichuan, but the find was determined to be *R. tapetiforme* by the botanists. However, plants grown under this field number by Lord Headfort at Kells, in County Meath, Ireland, were brought to the attention of John Hutchinson at Kew, who decided a new-to-science species was to hand and described them in Volume 91 of *The Gardeners' Chronicle,* this published during 1932. Forrest had made two further gatherings of *R. glomerulatum* during his 1930-1931 expedition, returning seed under the field numbers F 29259 and F 29260, but all three collections were subsequently re-identified as *R. yungningense* by William and Melva Philipson during their preparatory work for the paper *A Revision of Rhododendron Section Lapponica,* which was published in Volume 34 of *Notes from the Royal Botanic Garden, Edinburgh*, during 1975.

H. H. Davidian too could find no difference between the two species, confirming the synonymy imposed by the Philipsons in Volume 1 of his *The Rhododendron Species,* published in 1982.

Yet one species is a diploid, the other a tetraploid, so the synonymy can no longer be maintained despite an apparent mirror-image appearance.

Genetic speculation would suggest that *R. yungningense,* with its 52 chromosomes, is the consequence of somatic genome doubling in a *R. glomerulatum* zygote. Equally, the two are not the identical twins experts proclaim them to be, for minor variations between them can be nitpicked from the early botanic descriptions.

An examination of John Hutchinson's original 1932 text reveals that the inflorescence of *R. glomerulatum* is 4-6-flowered and that it has persistent bud scales, while in 1930's *The Species of Rhododendron,* he writes that *R. yungningense* has only a 1-2-flowered inflorescence, with quickly deciduous bud scales.

H. H. Davidian reports the synonymic combination as 1-6-flowered, with the bud scales deciduous or persistent, while William and Melva Philipson detail a 3-6-flowered inflorescence, but make no mention of the bud scales.

Peter and Kenneth Cox, in their 1997 *Encyclopedia of Rhododendron Species,* assign the merged inflorescence 1 to 4 corollas.

The morphology adopted herein follows John Hutchinson's lead with 4 through 6 corollas and persistent flower bud scales for *R. glomerulatum,* and deciduous scales for *R. yungningense.* However, an examination of cultivated plants of the latter, each with a label detailing its provenance, revealed the corolla count to be between 1 and 4.



R. glomerulatum (F 29259)



R. glomerulatum (F 29260)



R. glomerulatum (F 29260)

R. nivale* ssp. *bulu

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
S & SE Tibet.
Growing in open mixed woodland, in thickets or scrub on hillsides,
at elevations of 2,900-3,900m.

Identification:
Shrub, upright and straggly, 0.3 to 1.6m high.
Leaves elliptic through elliptic-oblong to oblong,
0.8 to 2.3cm long by 0.3 to 0.8cm wide,
apex obtuse or rounded, and obscurely mucronate;
upper surface dark green and matt,
the scales nearly contiguous to overlapping;
lower surface scales dimorphic, intermixed,
the majority pale, of a tan, straw or brown hue, and of a similar size,
nearly contiguous through overlapping,
a minority dark brown and larger, closely or widely scattered.
Petiole 1-4mm long.
Inflorescence terminal, rarely terminal and axillary in the uppermost 2 or 3 leaves,
1-5-flowered.
Pedicel 1-2mm long, rarely densely puberulous.
Calyx pink or reddish,
the lobes triangular or irregularly rounded and 1-4mm long,
their outer surface moderately through densely lepidote,
their margins lepidote and often sparsely ciliate.
Corolla 0.9 to 1.6cm long,
magenta, pinkish-purple, deep purple or violet, or (rarely) white,
the outer surface sparsely lepidote, with pale scales along the middle of the lobes,
and occasionally pubescent.
Stamens 8-10, exserted, equal in length or slightly longer than the corolla.
Style longer than the stamens,
the base usually sparsely lepidote and sometimes pubescent.

Seed Collections:

L&S 2622	1936	LS&T 6213	1938	AC 3697	1997
LS&T 4277	1938	LS&E 13316	1946/1947	AC 3701	1997
LS&T 4440	1938	LS&E 13520	1946/1947	AC 3703	1997
LS&T 4496	1938	CV 9503	1995	AC 4408	2000
LS&T 4996	1938	CC 7501	1996	AC 4736	2000
LS&T 5664	1938			AC 4739	2000

R. bulu was a Frank Kingdon-Ward find made during May 1924 while he was exploring the Tsangpo Gorge in southeastern Tibet, the population of plants discovered at Chake, below Nang Dzong. Seed was unavailable to Ward so early in the season, which meant that the first introduction into UK cultivation was likely the Frank Ludlow and George Sherriff collection made in 1936. Additional batches followed from their 1938 expedition with George Taylor, and the 1946-47 trip with Henry Elliott. However, there is no record of a successful germination from any of those nine lots, so credit must therefore go to Ken Cox and Scott Vergara, who relocated the species in 1995.

John Hutchinson described *R. bulu* in *The Rhododendron Society Notes 1929-31,* which was published in 1932, but recent field study has shown that the taxon is merely a low-elevation form of *R. nivale,* with the populations morphing as altitudes increase. The subspecies ranking adopted herein therefore, reflects that geographic endemicity.

Identification relies on the presence of a mass of pale scales on the leaf underside, these interspersed with a scattering of larger, dark brown scales, plus the cluster of pale scales on the outer surface of the corolla, these located along the middle of the lobes. However, plants included within the descriptions for the other two *R. nivale* subspecies can also share such characteristics, though as they hail from higher up the same hillsides, are lower growing and come with even smaller leaves. *R. websterianum* too is very similar, but lacks a lepidote flush on the corolla, as well as the larger dark brown scales on the lower leaf surface. Moreover, it has slightly longer pedicels and the new growth is coincident with the flowering.

With an erect and tangled habit, *R. nivale* ssp. *bulu* is one of the taller growing members of Subsection *Lapponica*. In the wild, the species is established at altitudes far lower than its relatives, often choosing drier sites, which may indicate that gardens in the south of England will provide the best spots for UK cultivation as higher temperatures in the summer and less rain (usually), more closely mirror the plant's native environs. Yet few rhododendron enthusiasts have so far rushed out to secure a specimen, probably because the floral display on even a mature individual, while bountiful, is a trifle underwhelming.

R. pseudoidoneum

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
NW Yunnan, China.
Growing on rocky slopes and the ledges of cliffs,
at elevations of 3,700-4,300m.

Identification:
Shrub, prostrate, matted or cushion-forming to upright and spreading, 0.1 to 1m high;
branchlets often slender and fastigiate.
Leaves lanceolate through elliptic to ovate-oval,
0.3 to 1.4cm long by 0.2 to 0.7cm wide,
apex acute and distinctly mucronate;
upper surface dull greyish-green or green, matt or somewhat shiny,
the scales pale gold and overlapping;
lower surface scales dimorphic, intermixed,
the majority of a uniform pale gold, fawn, creamy-yellow or reddish-brown hue,
of similar size, and overlapping,
a minority uniformly rufous-brown or dark brown,
larger, and closely or widely scattered.
Petiole 1-3mm long.
Inflorescence terminal, 1-3-flowered.
Pedicel 0.5-2mm long.
Calyx pink, reddish-purple or greenish,
the lobes triangular, ovate, oblong or rounded, usually unequal, and 0.5-3mm long,
their outer surface moderately through densely lepidote,
their margins lepidote and ciliate, the hairs often long.
Corolla 0.6 to 1.4cm long,
purplish-blue through rose-purple to rose-pink or lavender-pink,
the outer surface lepidote,
sometimes only along the middle of the lobes, or sometimes in bands,
rarely without scales, but often pubescent.
Stamens 8-11, exserted, the longest equal in length to the corolla.
Ovary sometimes pubescent at the base or at the apex.
Style variable, longer than the stamens and the corolla,
the base often sparsely lepidote and sometimes pubescent.
Capsule sometimes pubescent.

Seed Collections:

McLaren S127a	1932/1939

The identification bullet points for *R. pseudoidoneum* given opposite are a mirror of those set out for *R. telmateium,* specifically, those plants gathered together under Idoneum Group, as outwardly, the two species are indivisible. However, *R. telmateium* is a diploid with twenty-six chromosomes, while *R. pseudoidoneum* is a hexaploid with seventy-eight.

In the 1996 Edinburgh Revision classification, the *R. telmateium* epithet covered an amalgam of five former specific ranked species: *R. diacritum, R. drumonium, R. idoneum, R. pycnocladum,* and *R. telmateium* itself. However, scientific information published in the RHS *Rhododendron Year Book 1950* - the article titled *Chromosome Numbers in Species of Rhododendron,* this written by three members of the science team at Wisley: E. K. Janaki Ammal, D.Sc., I. C. Enoch, B.Sc., and Margery Bridgwater - listed counts for a quartet of specimens that would go on to be clustered together under the *R. telmateium* botanic banner. Two were diploids, one a tetraploid, and one a hexaploid. So respectively, two had twenty-six chromosomes in each of their cells, one had fifty-two, while another possessed seventy-eight.

The tetraploid was a sample of *R. drumonium,* which herein has been restored to its original specific status.

Of the two diploid samples, one was *R. telmateium,* the other *R. idoneum,* which means this part of the synonymic merger can continue unchanged.

But complicating matters, the hexaploid was also a sample of *R. idoneum,* this plant gathered under the field number McLaren S127a. So as with *R. drumonium,* it too can no longer remain buried under the *R. telmateium* epithet, but equally, nor can it be described as *R. idoneum*.

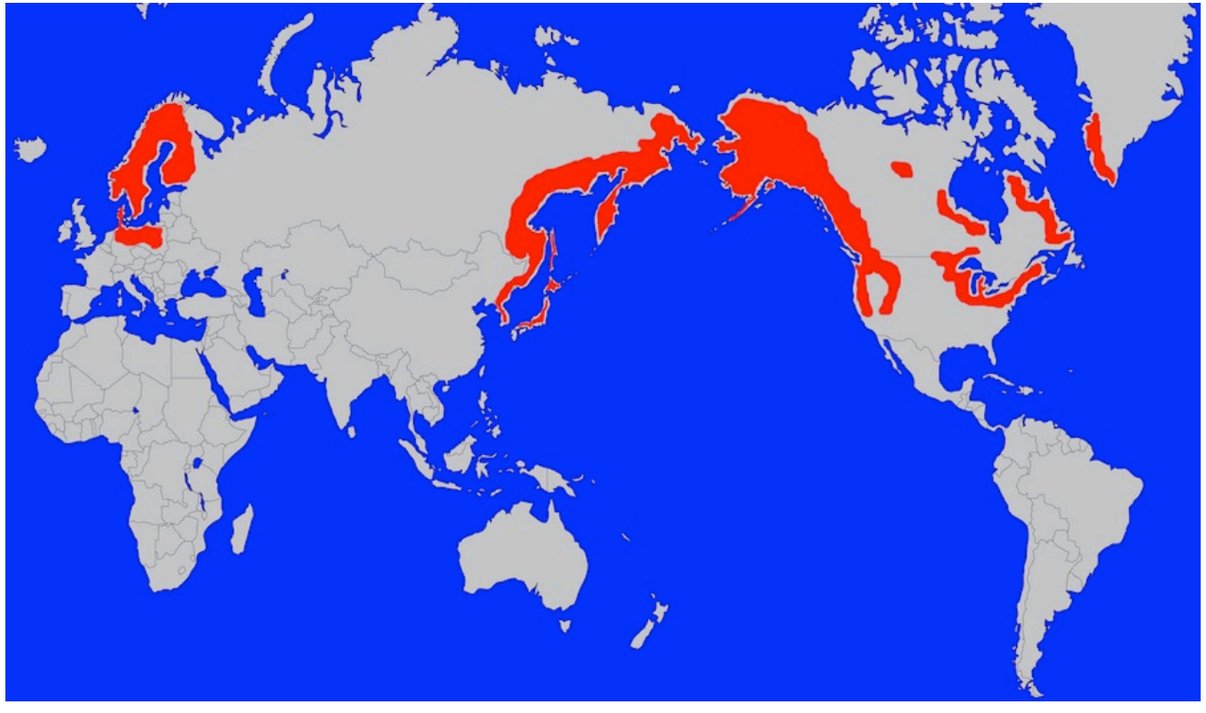
To arrive at the state where 2*n* = 78, the diploid form of *R. idoneum* would have gone through an ‘abrupt speciation’ event - as described by geneticists Thomas Ranney and Jeff Jones in their paper *Understanding Polyploidy: Insights into the Evolution and Breeding of Azaleas* (*The Azalean,* Winter 2008) - where its chromosome count doubled to 52. This tetraploid then most likely bred with its diploid parent - 26 + 13 = 39, assuming normal cell division produced haploid gametes - to potentially birth a sterile triploid. But at this point in the process, another genetic mishap must have occurred, a somatic doubling event, which produced a viable zygote with 78 chromosomes - 39 + 39 = 78. And the following day - if viewed on a geological timeframe - one of Henry McLaren’s George Forrest-trained collectors came along and bagged some of the capsules. But clearly, they were not from a bush of *R. idoneum,* however closely their outward appearance might visually have suggested this to be the case.

Herein, to maintain the link with the hexaploid’s putative parent species, while also highlighting the fact that genetically this plant is a new-to-science and unique entity, the epithet formulated for its christening is *R. pseudoidoneum.* This covers all those plants germinated under the McLaren S127a collection, as well as the wild population from which that seed was gathered.

Section *Lepipherum* Subsection *Leda:*



R. diversipilosum



Taxa:

R. columbianum
R. diversipilosum
R. groenlandicum
R. hypoleucum
R. neoglandulosum
R. subarcticum
R. subulatum
R. tolmachevii
R. tomentosum

Taxonomic Revision:

The inclusion of Genus *Ledum* as a subsection within
Genus *Rhododendron* Subgenus *Rhododendron* Section *Rhododendron*
- as it was then defined by James Cullen and David Chamberlain in their 1978 paper
A Preliminary Synopsis of the Genus Rhododendron
(*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36) -
was first proposed by Kathleen Kron and Walter Judd in their 1990-published paper
Phylogenetic Relationships within the Rhodoreae [Ericaceae]
with Specific Comments on the Placement of Ledum
(*Systematic Botany,* Volume 15, Part 1),
their research later confirmed independently by other scientists and geneticists.

The leaf anatomy of the taxa transferred into that new subsection,
named *Ledum* initially and then updated to *Leda,*
mirrored that of the Subsection *Edgeworthia* rhododendrons
at both a cellular and morphological level, with the densely indumented
abaxial leaf surface hairs completely hiding the rimless, golden-coloured scales.
This is a trait shared only by the species of these two subsections.

Moreover, within their vegetative buds, the leaves of the *Leda* species are held revolute,
as are those of *R. pendulum,* unrolling as they emerge.
All the other lepidote rhododendrons exhibit a convolute ptyxis,
packing their nascent foliage blades flat and overlapping.

Visually, the flowers of the nine *Leda* species are closest to those of *R. micranthum,*
but this resemblance has come about through convergent evolution,
not a closely interwoven relationship.

This fact is demonstrated by the presence of more advanced
broad-rimmed scales and a lack of unicellular indumentum hairs
on the non-papillate abaxial leaf surface of *R. micranthum,*
plus the convolute nature of this taxon's vegetative buds.

The Finnish botanist and Ledum expert, Harri Harmaja,
wrote the formal prose transferring the nine species to Genus *Rhododendron* in his paper
New names and nomenclatural combinations in Rhododendron (Ericaceae),
this also published in 1990, within Volume 27, Part 2, of *Annales Botanici Fennici*.

Subsection Morphology:

Shrubs, prostrate and decumbent, or erect and bushy, rhizomatous, 0.2 to 2m high;
young shoots lepidote or glandular-scaly,
densely tomentose, the hairs generally unicellular and flattened,
but often dimorphic, with unbranched-multicellular, rusty-brown and long-crisped hairs,
these present in the shoot axes of the current and previous year's growth;
bark smooth, brown or grey-brown, often peeling or shredding with age.

Leaves evergreen, alternate and coriaceous, very aromatic,
linear, lanceolate, elliptic, ovate or oblong, rarely acicular,
0.3 to 8.5cm long by 0.1 to 3cm wide,
apex acute, acuminate or obtuse, and sometimes apiculate,
base acute, cuneate or rounded;
upper surface dark green, rugulose, usually matt,
sparsely lepidote, the scales scattered,
glabrous at maturity or with some rusty-brown, long-crisped hairs,
these usually confined to the midrib,
the midrib and veins impressed, the margins entire and usually recurved, often strongly so;
lower surface variably papillate,
usually white-setose, the hairs short,
but often with an overlying brown or rusty-brown tomentum of long-crisped hairs,
rarely densely so and more often present only along the midrib and veins,
lepidote, the scales usually small, golden, rimless, and often glandular.

Leaf anatomy comprises a 2- or 3-layered upper epidermis,
with the cells in all layers of a similar size;
the cuticle is thin to around half as thick as the cells are deep;
water tissue is absent; lysigenous spaces occur in the mesophyll;
the lower epidermis cells are prolonged into papillae.
Sclereid cells are present.

Petiole 1-10mm long, short or long, lepidote or not,
densely tomentose, the hairs usually unicellular,
but also with multicellular, rusty-brown, long-crisped hairs.

Inflorescence a loose terminal umbellate corymb,
with *c.* 6-7 buds forming a domed or ball-shaped compound truss
of more than 100 individual corollas;
bud scales deciduous, usually hairy abaxially and along the margins

Pedicel 5-30mm long, rarely to 40mm,
extending and drooping at fruiting, slender,
lepidote, the scales eglandular or long-stalked glandular, sometimes intermixed,
sometimes tomentose,
the hairs unbranched-multicellular, rusty-brown and long-crisped.

Calyx obsolete or small, 5-lobed,
these broadly rounded, oblong or ovate and 1-1.5mm long,
their outer surface usually yellowish-brown unicellular-hairy and sometimes glandular,
their margins often stipitate-glandular and rusty-brown multicellular-hairy.

Corolla 0.2 to 0.8cm long, rotate,
white or creamy-white, rarely yellowish-white or white flushed pale rose,
5-lobed, these distinct, ligulate and spreading, slightly connate at the base.

Stamens 7-12, rarely 5-6, exserted, radially arranged and equal;
filaments glabrous, sometimes hairy at the base, more rarely along the lower half.

Ovary pale green, prominent, ovoid, 1-2mm long, 5-locular,
glandular, sometimes densely so, occasionally pubescent, rarely lepidote.

Style straight, glabrous, persistent,
shorter than or (more rarely) equal to the stamens,
rarely sparsely glandular.

Capsule 2.5-8mm long, oblong, sometimes sparsely lepidote,
glabrous, glandular or long-crisped hairy,
dehiscence occurs from the base, not the apex.

Seeds elongated, winged at both ends, the testa closely appressed.


R. groenlandicum


R. tomentosum


R. tomentosum

R. tomentosum

Hardiness:
H5-6.
Flowering Period:
May-July.
Distribution in the wild:
N & C Europe; European Russia & S Siberia.
Growing in peat bogs, alongside streams, in damp pine forests and on high moorland, from sea level to elevations of 2,000m.

Identification:
Shrub, erect and bushy, 0.3 to 1.2m high;
branchlets glandular-scaly and densely lanate-tomentose,
dimorphic, with rusty-brown, long-crisped hairs present in the shoot axes.
Leaves linear through narrowly elliptic-oblong,
1.2 to 5cm long by 0.2 to 1.2cm wide,
the margins strongly revolute;
lower surface variably glaucous, waxy and opaque (beneath the bistrate indumentum),
the upper layer lanate-tomentose, the hairs rusty-brown and long-crisped,
variable, sometimes hiding the scales and the veins, but not the midrib,
the lower layer densely white-setulose, the hairs short, but sometimes lost with age,
the scales rimless and golden, often intermixed with reddish-brown glands.
Petiole 1-3mm long, rusty-brown, long-crisped hairs present.
Corolla white through creamy-white.
Stamens 7-11.

Seed Collections:
No authenticated field number collections have been published in the official genus listings, but between 2003 and 2020, eleven gatherings, made in Finland, Norway and Sweden, by Kristian Theqvist, Bengt Kihlman, Bard Ranheim, Jaakko Saarinen and Hannu Saarilahti, were available via the American Rhododendron Society Seed Exchange.

R. tomentosum was originally described in Volume 1 of *Species Plantarum,* written by Carl Linnaeus and published in 1753, though he knew the plant as Ledum *palustre*.

Kathleen Kron and Walter Judd had published the epithet *R. palustre* in their 1990 paper *Phylogenetic Relationships within the Rhodoreae (Ericaceae) with Specific Comments on the Placement of Ledum* (*Systematic Botany,* Volume 15, Part 1), but this had already been used by Nicolai Stepanowitsch Turczaninow in Volume 7 of *Prodromus Systematis Naturalis Regni Vegetabilis,* the multi-part plant catalogue begun by Augustin Pyramus de Candolle in 1824. So even though the 1839-published Turczaninow moniker was now a synonym of *R. lapponicum,* the nomenclature system rules dictated that it could not be resurrected within Genus *Rhododendron,* so Harri Harmaja, of the Finnish Natural History Museum, coined the current appellation to replace the illegitimate one (*Annales Botanici Fennici,* Volume 27, Part 2, 1990).

Commonly known as the Marsh Labrador Tea, the Northern Labrador Tea, Wild Rosemary or Crystal Tea, and as Skvattram (in Sweden), the plant has long been used in homeopathy to produce treatments for insect and animal bites, or other puncture-type wounds, and in the relief of arthritic or rheumatic conditions. Linnaeus documented it as a remedy for whooping cough and bilious attacks. More savvy Scandinavians, on the other hand - of the Middle Ages and today (if the plethora of online 'Gruit Ale: Brewing with Wild Rosemary' texts are anything to go by) - opted for its intoxicant properties and employed the leaves to strengthen their homebrews. But as with most things alcoholic, there were drawbacks: the essential oils decanted from the leaves stimulated the central nervous system, which meant those imbibing such concoctions initially felt a boost to their libido, or became truculently unmanageable, but then lethargy took over, with the end result on waking, a ginormous hangover. Or for an unlucky few inebriates who really overindulged, a complete and permanent loss of kidney function.

Wander through an extensive stand of wild plants when they are in flower and the aroma - from the leaves, not the blooms - is palpable, so much so that it can even induce headaches. This is because three compounds present in the leaf - ledol, myrcene and palustre - peak in concentration at this time. Cattle, sheep and other large mammals steer well clear, but not the drug companies, whose representatives in recent years have carried out both in vivo and in vitro studies and found that the polyphenolic admixture does indeed have analgesic, antifungal, anti-inflammatory, anti-insecticidal, antimicrobial and antiviral properties. Even more promising is news that the most current scientific research has found antidiabetic, anticancer and antioxidant qualities in those same compounds, which sometime soon, may well result in a sphagnum bog near you being planted-up with a crop of *R. tomentosum*, followed by an annual leaf harvest.

The species is identified from its fellow subsection members by a combination of character traits: the leaves, which are wider than those of *R. diversipilosum, R. subulatum,* and the closely related, but lower-growing *R. subarcticum,* are conversely narrower than those of *R. groenlandicum* and *R. tolmachevii;* the short, white, setose hairs - on the leaf lower surface - are hidden by the longer, rusty-brown hairs, but plentiful none the less, though sometimes lost with age; the abaxial epidermis, which is glaucous, waxy and opaque; and finally, the rusty-brown, long-crisped hairs on the branchlets and petioles, which cleave *R. tomentosum* from *R. columbianum* and *R. neoglandulosum*.

As the northerly distribution implies, long hot summers are not a feature of this rhododendron's natural environment, so specimens of *R. tomentosum* perform better in the top half of the UK, rather than down south, as the late 19th Century escapees now gone native around Bridge of Allan in Stirlingshire, and at Perth in central Scotland, can testify. Indigenous to bogs and marshes, where the roots can penetrate the wet peat down to depths of 40cm or more, a moist to damp open site with a modicum of wind shelter is the preferred suburban garden position.

Two last key facts, essential for those choosing the species as their specialist subject in competitive competitions: *R. tomentosum* is the official flower of the Finnish province of Northern Ostrobothnia; and it is a tetraploid with 52 chromosomes in each of its cells.



R. tomentosum



R. groenlandicum

R. groenlandicum
Hardiness:
H5-6.
Flowering Period:
April-June.
Distribution in the wild:
Alaska & Northern USA; Canada; Greenland.
Growing in bogs, swamps and alongside streams, in spruce forest, on screes and tundra,
from sea level to elevations of 2,000m.

Identification:
Shrub, erect or decumbent, 0.2 to 2m high;
branchlets glandular-scaly and densely lanate-tomentose,
dimorphic, with rusty-brown, long-crisped hairs present in the shoot axes.
Leaves ovate-lanceolate through linear-elliptic,
1.2 to 6cm long by 0.5 to 2.5cm wide,
the margins strongly revolute;
lower surface tomentum thick, lanate and felty,
the hairs rusty-brown and long-crisped,
concealing the scales, veins and midrib,
the epidermis papillose, covered with short white setose hairs,
the scales dense, rimless and golden, intermixed with reddish-brown glands.
Petiole 1-5mm long, rusty-brown, long-crisped hairs often present.
Corolla white through creamy-white.
Stamens 5-8-10.

Seed Collections:
No authenticated field number collections have been published in the official genus listings,
but a single gathering made in Greenland by Hans Eiberg during 2003,
appeared on the following year's American Rhododendron Society Seed Exchange.

R. groenlandicum

Ledum groenlandicum was first described in 1771.

George Christian Edler von Oldenburg Oeder was the botanist responsible, including the species in Volume 4, Part 10, of a vast treatise he had begun in 1761 that would finally be completed by his successors in 1883, this epic saga titled, *Flora Danica*. However, the plant is far more commonly known as the Labrador Tea and has been used for a variety of humdrum, therapeutic and nefarious purposes, in addition to beautifying gardens.

Primarily, the leaves were brewed to make a tisane or herbal tea, a practice widely employed by the indigenous peoples of North America such as the Athabaskans, Ojibwe, Pomo, Tolowa and Yurok, though some, claiming only to delight in the spicy flavour, chewed the raw foliage, presumably never once mentioning the associated narcotic high that was a byproduct of this chumbling. So despite cramps, convulsions, delirium, paralysis, and if such consumption became excessive, death, basic mastication allowed the terpenes that were present in the essential oils to cause mild intoxication, lower a person's blood pressure and slow their pulse rate.

If imbibed in moderation.

Not that any such recommendation is being made herein, of course.

More prosaic uses for the leaves and branches included the spicing of meat through decoction, deterring moths from lodging in stored clothing, invigorating a facial steam bath, or protecting grain stocks from mice. Medicinally, preparations involving the roots have been used in the treatment of ulcers, while the tea has been used to tackle asthma, burns, coughs, colds and fevers, diarrhoea, gout, insect stings, kidney disease, including some urinary aliments, lice infestations, scurvy, sore throats and stomach problems. More fanciful remedies include cures for bad breath, dysentery, hair loss, indigestion and leprosy, plus lung infections like pneumonia. Apparently, taken three or four times a day, in two- or four-fluid-ounce doses, all ills are banished, though folklore also advises that overdoses may result in severe violent headaches, which will probably scupper any recommendation in favour of adoption by the good people of NICE.

As plant growth is fairly slow and the temptation to over-harvest in a suburban garden setting high, individual leaves should be picked rather than whole branches, but again, no actual or implied instruction to immediately venture outdoors with a pair of secateurs and a plastic bag is being made by the author, or the publishers, or indeed, by anyone even remotely associated with either of the aforementioned, despite the fact that during the American War of Independence, *Ledum* replaced *Camellia* as the beverage of choice, and back in medieval times, before the discovery of hops, Scandinavian brewers used leaves collected in Greenland by Norse settlers to ferment 'gruit' ales, a practice that continues to this day, though supply sources may have changed.

In those bygone times, an ability to distinguish one ledum species from another would have been critical, as the closely related Northern Labrador Tea - more properly, *R. subarcticum* (rather than *R. tomentosum,* even though it shares the common name) - is poisonous, the leaves awash with highly toxic alkaloids. In the wild, this species is a dwarf bush, growing no higher than 40cm tall, with much smaller and narrower leaves that are never more than 2cm long or 0.3cm wide, these burnished with few if any of the short, white setose hairs that cloak the abaxial epidermis of *R. groenlandicum*. Not that the botanic terminology would have been much in vogue back then, but one does wonder if, in their last dying moments, those ledum leaf addicts who didn't peer closely enough at the foliage before beginning a munch, realised that it wasn't *R. groenlandicum* Compactum Group plants that they were chewing?

An absence of the long, rusty-brown crisped hairs on the branchlets and petioles indicates *R. columbianum* or *R. neoglandulosum* are to hand, rather than an individual of *R. groenlandicum,* while all the other members of Subsection *Leda* fail to completely hide their abaxial midrib beneath a covering of such hairs, this despite them being more populous along the primary vein than across the rest of the lower leaf surface.

R. groenlandicum was introduced into cultivation in the UK around 1763 and is the *Leda* species most often found in collections. Plants are fully hardy and do best in cooler locales on an open planting site where the soil remains moist, but not wet. They are just as easily grown in the gardens of southern Britain, but here, mid-afternoon shade will prove beneficial. From mid-April onwards, every mature shrub will be covered in a mass of creamy-white compound trusses, each bud offering between 10 and 35 individual flowers to the whole, and all punctuated with the brilliant green dot that is a protuberant ovary. Specimens from Compactum Group are lower growing and smaller in all respects, but come with very hairy shoots.

The species is a diploid with 26 chromosomes present in each of its cells.



R. groenlandicum


R. groenlandicum


R. groenlandicum

R. subarcticum
Hardiness:
H5-6.
Flowering Period:
May-July.
Distribution in the wild:
Circumpolar - the Arctic regions of North America, Greenland, Europe & Russia;
plus N Korea; and Hokkaido, Japan.
Growing in peat bogs, alongside streams, on alpine tundra (often over permafrost),
along raised beach ridges, in damp pine forests and on moorland,
from sea level to elevations of 2,000m.

Identification:
Shrub, prostrate or decumbent, 0.1 to 0.4m high;
branchlets glandular-scaly and densely lanate-tomentose,
dimorphic, with rusty-brown, long-crisped hairs present in the shoot axes.
Leaves linear,
0.3 to 2cm long by 0.1 to 0.3cm wide,
the margins strongly revolute;
lower surface greenish and somewhat shiny (beneath the indumentum),
the tomentum variable, lanate,
sometimes hiding the scales and the veins, but not the midrib,
the hairs rusty-brown and long-crisped,
any short white-setulose hairs inconspicuous if present,
the scales rimless and golden,
intermixed with smaller, often abundant, reddish-brown glands.
Petiole 1-3mm long, rusty-brown, long-crisped hairs often present.
Corolla white through creamy-white.
Stamens 10; filaments pubescent along the lower half.

Seed Collections:
No authenticated field number collections have been published in the official genus listings,
but a single gathering made in Greenland by Hans Eiberg during 2001,
appeared on the following year’s American Rhododendron Society Seed Exchange.

In 1789, Volume 2 of *Hortus Kewensis* included the barest of descriptions for what would ultimately be called *R. subarcticum.*

Just two words in fact: *spithamaeum decumbens*.

These had been penned by William Aiton and the chosen Latin phraseology resulted in the taxon epithet *Ledum palustre* var. *decumbens*.

Conrad Loddiges raised the species to specific status in Volume 2 of the Second Edition of *Nomenclator Botanicus [Steudel],* published in 1840, but the name could not be directly transferred across to Genus *Rhododendron* as George and David Don had laid a prior claim on *R. decumbens* in Volume 3 of their *General History of the Dichlamydeous Plants,* published in 1834. The fact that the plant they described then, is now synonymous under *R. indicum,* is of course, immaterial to the ICNAFP nomenclature rules.

In consequence, Harri Harmaja conceived the current sobriquet in 1990 - *Annales Botanici Fennici,* Volume 27, Part 2 - but almost immediately, this was revised by Gary Wallace, a botanist in the Carlsbad Office of the United States Fish and Wildlife Service, who, writing in Volume 39 of *Madroño,* the Journal of the California Botanical Society, returned *R. subarcticum* to subspecies ranking under *R. tomentosum*.

This combination disregards the extensive field reporting set out in *The flora of Disko Island and the adjacent coast of West Greenland from 66-71 N. latitude: with remarks on phytogeography, ecology, flowering, fructification and hibernation,* which was written by Morten and Erling Porsild, and published in 1920. Moreover, it ignores nomenclature rules that require the 'decumbens' epithet to be used when describing the plant at subspecies, variety or forma ranking in either genus, a point Edinburgh Botanic's experts also missed when adopting the illegitimate name for their revised classification.

In *A Provisional Key to Species of Rhododendron Subsection Ledum,* written by Donald Voss and included within the Spring 2011 edition of the J*ournal, American Rhododendron Society,* Harmaja's specific ranking was correctly re-applied and that is the approach followed herein.

It is also justified on the basis of new chromosomal evidence.

For a time, such data was considered inconclusive, with *R. subarcticum* recorded as being a diploid in some areas and a tetraploid across other parts of its range, respectively, 2*n* = 26, and 2*n* = 52, with *R. tomentosum* consistently shown to be a tetraploid. However, a study published in 1995 by two Swedish scientists, Kalman Lantai and Bengt Kihlman, titled *The chromosome numbers of Ledum palustre ssp. decumbens,* gave only diploid counts for the taxon, and these were further confirmed by tests on additional samples added as a postscript. Their paper also cast doubt on the validity of those earlier tetraploid results. Subspecies status under *R. tomentosum* is therefore no longer valid, as the diploid-tetraploid reproductive barrier rules out such an association.

To further prove the point, *R. subarcticum* has been shown to have its own unique rust parasite, *Chrysomyxa ledi* var. *ledi,* a fungus that is morphologically distinct from those living on the other ledum species.

A detailed listing of all the valid epithets in Subsection *Leda,* contrasting illegitimate entries and the old Genus *Ledum* appellations, titled *Taxonomy of species in Rhododendron subsection Ledum,* has been compiled by Kristian Theqvist of the Finnish Rhododendron Society, and is currently available online at:

https://www.rhodogarden.com/cross/ledum_taxonomy.html.

R. subarcticum has a more northerly, circumpolar distribution than its subsection cohorts, with wild plants, in extensive stands, often found growing on the tundra and over permafrost. Their habit is prostrate or decumbent, rather than erect, and their leaves are small, never more than 2cm long or 0.3cm wide. The leaf underside, below the long, rusty-brown hairs, is greenish and quite shiny, with very few if any white-setulose hairs present, but an abundance of small red-brown glands. In contrast, *R. tomentosum* has an upright and bushy habit, bears leaves that are up to 5cm long by 1.2cm wide, and, when the brown hairs are parted, will be found to have a glaucous, waxy and opaque abaxial surface densely covered with white-setulose hairs, though these may fall off as the leaf ages. Red-brown glands are present, but not in profusion.

A more straightforward identification is possible if both species are in fruit. On each, the pedicels supporting the ripe capsules will be bent over; exactly where, provides the key. If the bend is abrupt and close to the seedpod, then *R. subarcticum* will be to hand; if evenly bowed, the specimen being examined will be *R. tomentosum*.

Traditionally known as the Narrow-Leaf Labrador Tea, or the Dwarf Labrador Tea, *R. subarcticum* is also known as the Hudson Bay Tea, or the Muskeg Tea. Medicinal uses vary from relieving stomach aches, treating eye infections and easing breathing difficulties for those with tuberculosis, to dealing with canker sores and magicking-away toothache, but extra special care is required in the preparation stage, as steeping or boiling the tea for more than a maximum of 10 minutes turns any beneficial chemical compounds into highly poisonous toxins.

John Bush introduced *R. subarcticum* into UK cultivation as early as 1762, but it is very rarely found in collections today, either public or private, despite being highly garden-worthy in or out of flower. The reason for its scarcity is a simple one. Like the Arctic forms of *R. lapponicum* with which it interbreeds, plants will only succeed in cool northern gardens and even then, more often than not, opt for death rather than a life in cultivation. Yet when happily ensconced at such a locale, they make perfect specimens for the rock garden or peat bed.

That natural hybrid, once known as a Ledodendron, will today be found residing under the epithet *R. x vanhoeffeni,* while the Inuit name for *R. subarcticum* itself is 'qijuktaaqpait' - gospel truth! - which, perhaps not unsurprisingly, apparently translates as "large amount of fuel for a fire".

R. neoglandulosum

Hardiness:
H5.
Flowering Period:
May-August.
Distribution in the wild:
Alberta & British Columbia, Canada; NW USA.
Growing in bogs, swamps and alongside streams, in conifer and mixed woodland,
from sea level to elevations of 3,600m.

Identification:
Shrub, erect, 0.5 to 2m high;
branchlets speckled with glands and puberulent,
but without any rusty-brown, long-crisped hairs in the shoot axes.
Leaves broadly elliptic-oval through oblong,
1.5 to 5cm long by 0.5 to 2cm wide,
the margins flat or only slightly revolute;
lower surface light green, glaucous and papillate,
glabrous or somewhat pubescent, the hairs when present short white-setose,
the scales rimless and golden, 1 to 2 times their own diameter apart,
intermixed with sessile, flat and glistening white glands.
Petiole 4-10mm long, without any rusty-brown, long-crisped hairs.
Corolla white through yellowish-white.
Stamens 8-12;
filaments usually densely pubescent at the base or along the lower half.
Ovary densely white-glandular.
Style sparsely glandular.

Seed Collections:
No authenticated field number collections have been published in the official genus listings,
but between 2000 and 2017, five gatherings, made in Washington State and California,
were available via the American Rhododendron Society Seed Exchange.

The Western Labrador Tea or Trapper's Tea was first found by David Douglas around 1826 on his Royal Horticultural Society-sponsored expedition to the Pacific Northwest. Thomas Nuttall described the find as *Ledum glandulosum* in 1842, contributing to Series 2, Volume 8, of *Transactions of the American Philosophical Society Held at Philadelphia for Promoting useful Knowledge*. The transfer to Genus *Rhododendron* was complicated by prior use of the taxon name - *R. camtschaticum* ssp. *glandulosum* being the culprit - which forced Harri Harmaja to adopt the slightly modified epithet of *R. neoglandulosum* (*Annales Botanici Fennici,* Volume 27, Part 2, 1990).

The total absence of rusty-brown, long-crisped hairs on the young shoots, petioles and leaf lower surface are the morphological traits that key *R. neoglandulosum* from all the other Subsection *Leda* species bar one, *R. columbianum*. While the latter may occasionally display a few such hairs on the abaxial epidermis, an easier identification is still possible courtesy of its distinctly recurved leaf margins.

The colloquial names quoted above indicate that the foliage, fresh or dried, like that of *R. groenlandicum,* was and still is used to make an aromatic medicinal tea. Steeping is fine, but boil the leaves for too long, especially in a closed container, and the resulting brew will contain dangerously high levels of the narcotic toxin ledol. Traditionally, the fresh leaves were chewed raw - they are actually flush-full of vitamin C - or used as a condiment to flavour food, replacing bay leaves, while the tea was drunk for relaxation and mild stimulation. Full-strength brews were used as a laxative, to induce sweating, to cause urination, or when applied externally, to treat various skin ailments. All such practices are now frowned on officially due to the harmful effects of long-term use, but sans ingestion, the crushed leaves are still highly effective as an insect repellent and sometimes utilised in aromatherapy.

R. neoglandulosum was introduced into UK gardens in 1894, seed once again being sent to Kew by Professor Charles Sprague Sargent, Director of the Arnold Arboretum. First-flowering took place during May 1897, but W. J. Bean reports the plants died-off one by one over the next few years, for no reason apparent to the gardening staff. The species was soon reintroduced and found to thrive if given a cool, open, yet moist planting site, though specimens have proven not quite as hardy as other members of the subsection. Some forms of *R. neoglandulosum* are also decidedly straggly, but a mature bush in full flower is still a dazzling sight.

The online *Flora of North America* and many other commentators, both in print and on the web, have placed *R. neoglandulosum* as a synonym of *R. columbianum,* while some lump together all the ledum species that are endemic across the northwestern states of America and Canada, under this one taxon banner, without any differentiation. However, although this approach is based on historic field reporting indicating merged populations in southwest Oregon and adjoining California, it is wrong. For while there are indeed such clines on the ground between the two species, as well as with *R. groenlandicum,* these usually occur where past logging activities have disturbed the natural ecosystem.

Moreover, published scientific research using flow cytometry techniques has shown *R. neoglandulosum* to be a tetraploid with 52 chromosomes per cell, while *R. columbianum* and *R. groenlandicum* are both diploids with 26.

Distinct character differences separate *R. neoglandulosum* and *R. groenlandicum,* the most obvious being the abaxial indumentum, while *R. columbianum,* although much closer to *R. neoglandulosum* morphologically, is of course precluded from absorbing its near twin synonymically, or partnering with it as a lower-ranked subspecies or varietal adjunct, because of the reproductive barrier now known to exist between a diploid and a tetraploid rhododendron.

R. columbianum

Hardiness:
H5-6.
Flowering Period:
May-July.
Distribution in the wild:
British Columbia, Canada; Washington, Oregon & California, USA.
Growing in bogs, swamps and alongside streams, but occasionally on well-drained sites,
from sea level to elevations of 3,500m.

Identification:
Shrub, erect, rhizomatous, 0.5 to 2m high;
branchlets papillate, speckled with glandular scales and puberulent,
but without any rusty-brown, long-crisped hairs in the shoot axes.
Leaves ovate through lanceolate,
1 to 8cm long by 1.5 to 3cm wide,
the margins strongly revolute;
lower surface white or pale green, variably papillate, glandular-scaly,
with inconspicuous short whitish-setose hairs
and usually a few rusty-brown, long-crisped hairs.
Petiole less than 10mm long, glandular-scaly,
glabrous or with a few rusty-brown, long-crisped hairs.
Corolla white through creamy-white.
Stamens 8-12, more rarely 5-6.
Ovary puberulent and glandular.

Seed Collections:
No authenticated field number collections have been published in the official genus listings,
but between 2004 and 2020, four gatherings, made in Oregon and California,
were available via the American Rhododendron Society Seed Exchange.

R. columbianum, also known as the Western Labrador Tea, was first described within Genus *Ledum* by Charles Vancouver Piper, writing in Volume 11 of *Contributions from the United States National Herbarium,* published by the Smithsonian Institute in 1906. Harri Harmaja formally transferred the species into Genus *Rhododendron* in 1990 (*New names and nomenclatural combinations in Rhododendron (Ericaceae), Annales Botanici Fennici,* Volume 27, Part 2).

Many botanists and horticulturalists believe *R. columbianum* originated as a natural hybrid between *R. groenlandicum* and *R. neoglandulosum* - these known commonly as the Labrador Tea and the Glandular Labrador Tea, respectively - but this belief is undermined by the chromosome count, as the former is a diploid, the latter a tetraploid. Had *R. columbianum* been logged-in as a triploid with 39 chromosomes, such a parentage would have been confirmed, but the test results from multiple samplings have shown the taxon to be a diploid species where $2n = 26$. All things in Nature are possible of course, and often defy accepted science - as the crosses between lepidote and elepidote rhododendrons have shown - but the chromosome counts confirm *R. columbianum* to be a unique species rather than a hybrid, and that is the position followed herein.

Equally, the *Flora of North America* treatment of *R. neoglandulosum* as a synonym of *R. columbianum* cannot stand, for as indicated overleaf, the former is tetraploid.

Distinctly recurved leaf margins separate *R. columbianum* from *R. neoglandulosum,* whose foliage also boasts either a flat profile or one with only slight curving of the margins. In comparison, *R. columbianum* generally has longer and narrower leaves proportionately, than *R. neoglandulosum,* specimens of which are also devoid of any long brown hairs on their abaxial leaf surface. The absence of those long, rusty-brown and crisped hairs on the branchlets and petioles, keys the species from all the other Subsection *Leda* residents, as does the absence of a dense covering of such across the entire lower leaf surface. *R. hypoleucum* is excepted from that last key, but has a tomentum composed almost entirely of long white hairs.

Hardy throughout most of the UK, though the hardest winters will cause some damage to the foliage and branches, free-flowering specimens of *R. columbianum* prefer a moist-to-damp, but still well-drained planting site, this ideally in a cool, but open position.



R. hypoleucum

R. hypoleucum
Hardiness:
H5-6.
Flowering Period:
June-July.
Distribution in the wild:
Khabarovsk Krai, Primorsky Krai, Sakhalin & NE Russia;
the S Kuriles, Hokkaido, & N Honshu, Japan.
Growing in bogs, swamps and alongside streams, in spruce and broadleaved woodland,
from sea level to elevations of *c.* 1,800m.

Identification:
Shrub, erect, 0.5 to 1.1m high;
branchlets densely tomentose,
dimorphic, with rusty-brown, long-crisped hairs present in the shoot axes.
Leaves oblong-elliptic,
1.7 to 8cm long by 0.5 to 2cm wide,
the margins revolute and ciliate, with long-crisped brown hairs;
lower surface glaucous, somewhat papillate,
densely white-pubescent, the hairs long and somewhat crisped,
the scales rimless and golden, 1 to 3 times their own diameter apart,
sparsely sessile-glandular,
the midrib with rusty-brown, long-crisped hairs.
Petiole 2-7mm long, with rusty-brown, long-crisped hairs present.
Corolla white.
Stamens 9-12.
Ovary densely pubescent and lepidote.

Seed Collections:
No documented introductions have been published to date.

Described by the Russian botanist Vladimir Leontyevich Komarov as *Ledum hypoleucum* in 1916 (*Izvestiya Botanicheskogo Sada Petra Velikago,* Volume 16), the 1990-published Harri Harmaja paper in Volume 27, Part 2, of *Annales Botanici Fennici,* defined *R. hypoleucum* and formally completed its change of genus.

Identification is straightforward, as the rusty-brown, long-crisped hairs that are liberally scattered across the leaf undersides of most Subsection *Leda* species, will here, only be found along the midrib, not on the veins or the epidermis. Both *R. columbianum* and *R. neoglandulosum* share the characteristic of having a predominantly white-pubescent abaxial leaf surface tomentum, but neither duplicate the midrib diagnostic, though the former may display a few long brown hairs on the veins. Should any confusion remain however, a check for long-crisped brown hairs on the petioles and branchlets will eliminate such, as amongst the three, these will only be found on specimens of *R. hypoleucum*.

The endemic distribution arc of the species, running from northern Japan and then up along the coastal plains of the Russian Far East, mirrors that of *R. columbianum* on the other side of the Pacific Ocean, where it is resident in the northwestern states of Canada and the USA. That, and the morphologic similarities between the two rhododendrons, has prompted some Russian botanists to theorise that synonymy or a reduction to subspecies ranking might be more appropriate than specific status, especially as several other taxa in the genus have been found to be common to both regions, *R. camtschaticum* and *R. lapponicum* being cited as examples. However, the recent posting of ploidy data on the ledum species has ended that speculation, for the New World taxon has been shown to be a diploid with 26 chromosomes in each of its cells, while the other is a tetraploid with 52. Nonetheless, evolution-wise, a detailed DNA analysis of the two species should prove interesting.

R. hypoleucum was introduced into the United States around 1893, one of the many plants gathered by Charles Sprague Sargent during his collecting trip to Japan, and seed likely crossed the Atlantic from the Arnold Arboretum to Kew shortly thereafter. Yet the species remains a rare find in British gardens, despite possessing what many consider to be the finest blooms displayed by any ledum species.



R. hypoleucum



R. hypoleucum



R. hypoleucum

R. diversipilosum

R. diversipilosum

Hardiness:
H6.
Flowering Period:
May-July.
Distribution in the wild:
Sakhalin, Russia; N Korea; the S Kuriles, Hokkaido, & N Honshu, Japan.
Growing amongst scrub, from sea level to elevations of 1,800m.

Identification:
Shrub, erect or decumbent, 0.3 to 1.2m high;
branchlets densely tomentose,
dimorphic, with rusty-brown, long-crisped hairs present in the shoot axes.
Leaves narrowly elliptic-oblong,
1.5 to 6cm long by 0.5 to 1.5cm wide,
the margins moderately revolute;
lower surface tomentum white, the hairs very short and crisped,
the midrib and (usually) the veins moderately to densely rusty-brown tomentose,
the hairs long and coarse.
Petiole 2-4mm long, with rusty-brown, long-crisped hairs present.
Corolla white through yellowish-white.
Stamens 10.

Seed Collections:
No documented introductions have been published to date.



R. diversipilosum

R. diversipilosum was first described as *Ledum palustre* var. *diversipilosum* by the Japanese botanist Takenoshin Nakai, writing in Volume 31 of the *Botanic Magazine (Tokyo),* this published in 1917. Harri Harmaja, of the Finnish Museum of Natural History, and the leading botanic expert on the Subsection *Leda* species, completed the transfer to Genus *Rhododendron* in 1990 (*Annales Botanici Fennici,* Volume 27, Part 2) and then upped the taxon's status to specific ranking in a 1999-published text for the same Helsinki publication (Volume 35, Part 4).

The species is most closely related to *R. hypoleucum* and *R. tolmachevii,* but has smaller leaves with slightly more pointed tips, and an abaxial indumentum formed of very short white hairs on the leaf surface, and long coarse brown hairs on the midrib and veins. In common with the majority of the Subsection *Leda* occupants, *R. diversipilosum* is a tetraploid where 2*n* = 52.

Cultivation is straightforward, with plants performing best in cooler northern gardens or sheltered sites along the east coast, and as with the horticulturally-easier Subsection *Lapponica* species, the shrubs will also do well in warmer climes if given adequate drainage and a touch of afternoon shade. A mature plant will form a spreading, flat-topped clump, each stem with a terminal cluster of flower buds that open into a compound, ball-like truss of over 100 small, brilliant white corollas, the combined mass of bloom an eye-magnet, whether seen up-close or from a distance.



R. diversipilosum

R. subulatum
Hardiness:
H5-6.
Flowering Period:
May-July.
Distribution in the wild:
Jilin & NE China; N Korea; Hokkaido & the S Kuriles, Japan;
the N Kuriles, Khabarovsk Krai, Primorsky Krai, Sakhalin & NE Russia.
Growing in peat bogs, alongside streams, in damp pine forests and on high moorland,
from sea level to elevations of *c.* 2,000m.

Identification:
Shrub, 0.2 to 1.2m high;
branchlets densely tomentose,
dimorphic, with rusty-brown, long-crisped hairs present in the shoot axes.
Leaves aciculate through linear,
1 to 5cm long by 0.1 to 0.3cm wide,
the margins strongly revolute;
lower surface densely white-setose,
the hairs short and hidden by a rusty-brown tomentum of long-crisped hairs,
the scales rimless and golden, often intermixed with reddish-brown glands.
Petiole tomentose, with rusty-brown, long-crisped hairs present.
Corolla white faintly tinged rose.
Stamens 10.

Seed Collections:
No documented introductions have been published to date.

Very little information is available on *R. subulatum* beyond the paper transferring the taxon to Genus *Rhododendron* and it is doubtful if the species has ever been introduced into UK cultivation, though imported plants or seed may have been misidentified and be resident under a *R. tomentosum* or *Ledum palustre* label. This is because Takenoshin Nakai first described the species as *Ledum palustre* var. *subulatum* in Volume 31 of the *Botanical Magazine [Tokyo],* published in 1917. Fast-forward sixty-one years to 1978, and Vladimir Voroschilov designated a form of the species that had been found growing in the Russian Far East as *Ledum palustre* ssp. *angustissimum*. This plant was raised to specific status by Andrej Pavlovich Khokhrjakov and Maya T. Mazurenko - as *Ledum subulatum* - which Harri Harmaja then converted into a rhododendron, and later, went on to group the Japanese and Russian plants together under that sole, *R. subulatum* moniker (in Volume 39 of *Annales Botanici Fennici,* this published in 2002).

Two features distinguish the species from all the other *Leda* rhododendrons: the leaves, which are needle-shaped, varying between 1 and 5cm long, yet because of their strongly recurved margins are only 1 to 3mm wide; and the flowers, which are white, but very lightly flushed rose. A group of five plants growing in the Arnold Arboretum, Boston, Massachusetts, under the Accession Number 389-97 - these germinated from a gathering of seed made in the northeastern Chinese province of Jilin - though at one time bearing a *Ledum palustre* label, are in fact *R. subulatum*. Moreover, these have recently been found to be diploids with 26 chromosomes, which challenges the previously documented 'close' relationship with *R. tomentosum,* as this taxon is known to be a *2n* = 52 tetraploid.

R. tolmachevii
Hardiness:
H5.
Flowering Period:
June-July.
Distribution in the wild:
Khabarovsk Krai, Primorsky Krai, Sakhalin, the N Kuriles, & NE Russia;
N Korea; the S Kuriles & Hokkaido, Japan.
Growing in mossy bogs and moist larch woodland (lowland sites),
in pine or spruce forests, and 'heather' thickets by the edges of screes,
from sea level to elevations of 1,600m.

Identification:
Shrub, erect, 0.5 to 1.3m high;
branchlets densely tomentose,
dimorphic, with rusty-brown, long-crisped hairs present in the shoot axes.
Leaves oblong through oblong-lanceolate to lanceolate,
2.5 to 8.5cm long by 0.5 to 2cm wide,
the margins moderately revolute;
lower surface white-pubescent,
the hairs short and setose, marginally extending above the largest glands,
any rusty-brown, long-crisped hairs scattered, but denser along the midrib,
the scales rimless and golden, 1 to 2 times their own diameter apart,
intermixed with reddish-brown glands.
Petiole 3-6mm long, with rusty-brown, long-crisped hairs present.
Corolla white.
Stamens 10-11.
Ovary densely glandular and pubescent.

Seed Collections:
No documented introductions have been published to date.

R. tolmachevii was first described as *Ledum macrophyllum* in 1953 by the Russian botanist and phytogeographer Alexandr Innokentevich Tolmatchew when writing in Volume 15 of the over-laboriously titled *Botanicheskie Materialy Gerbariya Botanicheskogo Instituta Imeni V. L. Komarova Akademii Nauk SSSR.* The transfer to Genus *Rhododendron* in 1990 clearly required a new epithet, with Harri Harmaja choosing to honour the plant's original profiler, who had been one of the world's leading experts on Arctic flora (*Annales Botanici Fennici,* Volume 27, Part 2).

Field reports indicate that *R. tolmachevii* merges with *R. hypoleucum* in the wild wherever their two populations meet, with a number of clinal hybrid forms established on the ground in the Russian Far East. Two features present on the lower leaf surface separate the taxa: the length of the white-setose hairs; and where exactly the rusty-brown, long-crisped hairs may be found.

On the foliage of *R. tolmachevii,* the white hairs are short, only just peeking above the tops of the largest glands, while the rusty-brown hairs will be found along the midrib, to a lesser degree on the veins, and also sparsely scattered across the remainder of the epidermis.

On the *R. hypoleucum* leaf, the covering of white hairs is denser, they are longer in comparison, somewhat crisped, and partially hide the glands, while any rusty-brown hairs will only be present along the midrib.

With regard to the taxon's other close relatives within Subsection *Leda* - namely, *R. diversipilosum, R. subarcticum, R. subulatum* and *R. tomentosum* - foliage size and shape are the key to a correct identification, with the *R. tolmachevii* leaves being up to 8.5cm long by 2cm wide and having an oblong through lanceolate profile.

In cultivation, as with most of the subsection, *R. tolmachevii* succeeds best in cooler, northern climes, preferring an open, but sheltered site in moist to damp soil, for like many of the Subsection *Lapponica* species, it is intolerant of high summer temperatures when these are prolonged over long periods. The species is therefore not one recommended for southern gardens. Moreover, though able to withstand winter lows down to -20°C or colder in its native environs, the blanketing of snow that protects those plants from the worst of the weather in eastern Siberia, is usually absent in the UK, with this reflected in the lower hardiness rating given opposite.



R. tolmachevii

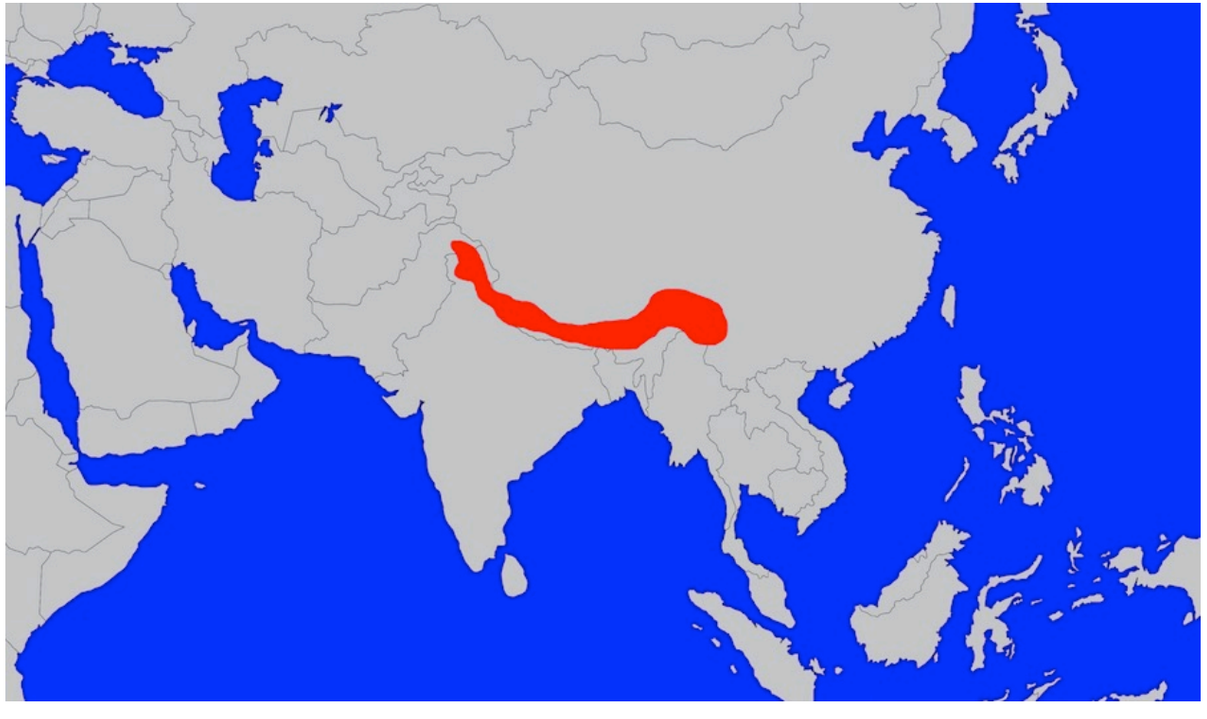


R. tolmachevii

Section *Lepipherum* Subsection *Lepidota:*



R. lowndesii



Taxa:

R. baileyi
R. cowanianum
R. lepidotum
R. lowndesii

Taxonomic Revision:

The placement of Subsection *Lepidota* remains as designated in the 1996 Edinburgh Revision classification, the re-association with *R. baileyi,* the only major change.

Subsection Morphology:

Shrubs, 0.05 to 2.4m high; mounding, creeping or laxly upright; often stoloniferous;
branchlets thin, variably lepidote, sometimes setose, and pubescent to glabrous; bark greyish.

Leaves evergreen, semi-deciduous or deciduous, thick and coriaceous, or thin and chartaceous, sometimes decurrent on the petiole, lanceolate through elliptic to oblong-obovate or obovate, 0.3 to 7cm long by 0.2 to 3.3cm wide, apex rounded or obtuse, and mucronate, base rounded, obtuse or tapered; upper surface dark, bright or pale green, matt or shiny, usually densely lepidote, puberulous or glabrous, sometimes sparsely setose, the margins often ciliate or setose; lower surface pale greyish-green, variably lepidote, the scales unequal, medium to large, overlapping, contiguous or distant, yellow-green, dark or pale brown, rufous or cinnamon, entire, with flat, broad and translucent rims, or crenulate.

Leaf anatomy comprises a single-layered upper epidermis, with cells that may sometimes be divided horizontally; the cuticle is around half as thick as the cells are deep; water tissue is absent; the lower epidermis cells are prolonged into papillae. Sclereid cells are absent.

Petiole 1-15mm long, moderately through densely lepidote, often setose, puberulous or glabrous, sometimes narrowly winged or ridged.

Inflorescence 1-5-12-18-flowered, terminal, rarely with axillary buds in the uppermost one or two leaves, the truss umbellate or shortly racemose.

Rhachis usually minute, 0.5-1mm long, but sometimes elongate, 1-25mm long, lepidote or not, sometimes densely puberulous.

Pedicel 10-43mm long, slender, longer than the corolla,
moderately through densely lepidote, sometimes setose.

Calyx usually well-developed, often reddish-coloured, 5-lobed,
these rounded through oblong-oval to ovate, and 1-8mm long,
their outer surface usually densely lepidote,
their margins often ciliate, sometimes setose.

Corolla 0.8 to 2cm long and to 3cm across, 5-lobed,
rotate or rotate-campanulate,
white, pink, yellow, or red through purple,
with or without darker spotting,
the outer surface moderately through densely lepidote, especially on the tube.

Stamens 8-10, rarely 11,
unequal, radially arranged, exserted from the tube;
filaments pubescent towards the base, or along the lower two-thirds.

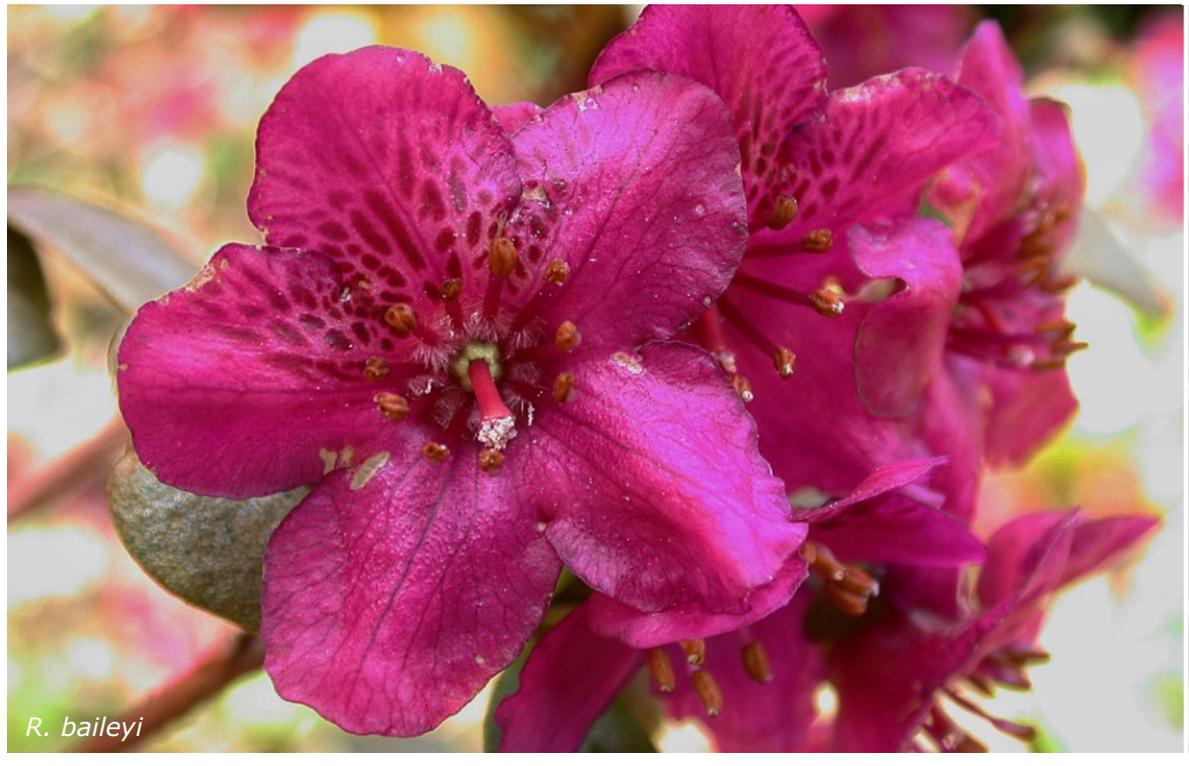
Ovary conoid, 2-4mm long, 5-locular,
densely lepidote, glabrous.

Style short, stout, sharply deflexed at the base, usually glabrous, elepidote,
impressed in a depression at the ovary apex.

Capsule 4-9mm long, conoid, ovoid or oblong-oval,
densely lepidote, glabrous.

Seeds elongate, unwinged, each end usually with a minute appendage.


R. cowanianum


R. baileyi


R. lepidotum



R. lepidotum (LS&H 21292)

R. lepidotum
Hardiness:
H4-5.
Flowering Period:
April-June.
Distribution in the wild:
Nepal; S & SE Tibet; Bhutan; W Sichuan, & NW Yunnan, China; N Pakistan;
Kashmir, Punjab, Sikkim, Assam & Arunachal Pradesh, India; NE Upper Myanmar.
Growing in forests, scrub, on grassy slopes and moorland,
on cliffs, stony slopes, amongst boulders and rocks, and alongside streams,
at elevations of 1,700-4,900m.

Identification:
Shrub, low and compact,
becoming laxly upright and leggy with age, 0.05 to 2m high;
stoloniferous;
branchlets warty, densely lepidote.
Leaves semi-deciduous through evergreen, thick and coriaceous,
lanceolate (rarely) through narrowly elliptic to obovate,
0.4 to 3.8cm long by 0.2 to 1.8cm wide;
upper surface densely lepidote at first, the scales varyingly persistent;
lower surface scales entire, the rims broad and translucent,
yellowish-green or brown,
overlapping to between half or (more rarely) their own diameter apart.
Inflorescence 1-2-flowered,
sometimes with 3 or more rarely 4 corollas.
Rhachis minute, 0.5-1mm long.
Corolla white, yellow, pink, rose-crimson through reddish-purple to purple.

Seed Collections:

F 5864	1910	R 11362	1923/1924	L&S 2447	1936	LS&H 16578	1949	PS&W 1065	1952	SSW 7960	1954	Dingle 8	1984	CC 7553	1996
Cooper 47	1914	R 11430	1923/1924	L&S 2818	1936	LS&H 16604	1949	PS&W 2161	1952	TSS 34	1961/1962	Dingle 9	1984	CC 7558	1996
Cooper 91	1914	KW 5940	1924/1925	Gould 18	1937	LS&H 16681	1949	PS&W 2359	1952	TSS 35	1961/1962	KR 818	1985	CC 7585	1996
Cooper 237	1914	KW 5994	1924/1925	L&S 3111	1937	LS&H 16752	1949	PS&W 300	1952	TSS 46	1961/1962	KR 839	1985	AC 3269	1997
Cooper 295	1914	KW 6069a	1924/1925	L&S 3254	1937	LS&H 16865	1949	PS&W 4548	1952	TSS 51	1961/1962	KR 903a	1985	AC 3345	1997
Cooper 743	1914	KW 7229	1926	L&S 3289	1937	LS&H 17509	1949	SSW 730	1954	TSS 52	1961/1962	KR 904	1985	AC 3376	1997
Cooper 744	1914	F 28342	1930/1931	Yu 15362	1937	LS&H 17552	1949	SSW 769	1954	TSS 53	1961/1962	KR 905	1985	AC 3378	1997
Cooper 1741	1914	KW 9800	1931	LS&T 5182	1938	LS&H 19140	1949	SSW 1020	1954	Bowes-Lyon 142	1962	KR 909	1985	AC 3400	1997
Cooper 1805	1914	R 25278	1932	LS&T 5431	1938	LS&H 19234	1949	SSW 1128	1954	Bowes-Lyon 2072	1964	KEKE 440	1989	KCSH 032	2003
Cooper 2223	1914	R 25334	1932	LS&T 5599	1938	LS&H 20366	1949	SSW 1167	1954	Bowes-Lyon 3462	1966	C&S 1664	1990	AC 5419	2004
Cooper 2523	1914	KW 10841	1933	LS&T 6350	1938	LS&H 20900	1949	SSW 1205	1954	BLM 279	1971	CLD 935	1990	AC 5477	2004
Cooper 2552	1914	L&S 123	1933	LS&T 7291	1938	LS&H 21292	1949	SSW 1327	1954	Batholomew 130	1974	CLD 1057	1990	AC 5494	2004
Cooper 3236	1914	L&S 175	1933	L&S 7369	1939	Polunin 1041	1949	SSW 1530	1954	Beer 620	1975	Heasman 47	1992	AC 5517	2004
Cooper 3469	1914	L&S 176	1933	L&S 7736	1940	Polunin 1252	1949	SSW 1681	1954	Hruby 4	1975	H&M 1801	1993	BE 05-52	2005
Cooper 3479	1914	L&S 634	1934	L&S 9146	1943	Polunin 135	1949	SSW 1712	1954	SCH 2264	1977	H&M 1844	1993	KR 9497	2008
Cooper 4128	1915	L&S 716	1934	LS&E 13985	1946/1947	Polunin 210	1949	SSW 2914	1954	SCH 2281	1977	DSE 94	1995	TDA 325	2013
Cooper 5928	1916	L&S 1855	1936	LS&E 14101	1946/1947	Polunin 409	1949	SSW 3353	1954	McBeath 1110	1981	DSE 95	1995	TDA 345	2013
Farrer 1196	1919	L&S 1870	1936	LS&E 15356	1946/1947	Lowndes 986	1950	SSW 5435	1954	AGS 637	1983	DSE 97	1995	TDA 346	2013
KW 4583	1921	L&S 2225	1936	LS&E 15499	1946/1947	Lowndes 1004	1950	SSW 5698	1954	Hedegaard B113	1983	KR 3453	1995	TDA 347	2013
F 20693	1921/1922	L&S 2244	1936	LS&H 16510	1949	Lowndes 1392	1950	SSW 6190	1954	McBeath 1518	1983	CC 7547	1996		

Although officially described for the first time in Volume 3 of George Don's *General History of the Dichlamydeous Plants,* published in 1834, *R. lepidotum* had first appeared in print within 1829's Issue 748 of Wallich's Catalogue, this more formally *A Numerical List of dried specimens of plants in the East India Company's Museum collected under the superintendence of Dr. Wallich of the Company's botanic garden at Calcutta,* a title that even the Russian botanical periodicals of the Stalinist era found hard to beat. Sir Joseph Hooker would add the species to his tally of Sikkim rhododendrons in 1848 and introduce seed into British gardens two years later.

R. lepidotum has a very wide endemic distribution that basically follows the curve of the Himalaya into southwest China. Beginning in the Hazara and Azad Kashmir regions of northern Pakistan in the west, the species population then sweeps eastward through India's northern states into Nepal, Sikkim, Bhutan and northeast Upper Myanmar, extending north into Tibet, Yunnan and Sichuan on the way, while also dropping south into Arunachal Pradesh and Assam. Such a vast range has of course generated a broad variability in the plant's morphologic characteristics, most notably in leaf shape and flower colour, and there are at least ten forms known to be in cultivation, some of which were previously assigned specific or varietal status and are now maintained under the Group system. One or two have also proved to be natural hybrids, the most well known of these being R. Reuthe's Purple, which was the recipient of an RHS Award of Merit in 1967.

Within its subsection, *R. lepidotum* is probably most closely related to *R. lowndesii,* with the latter's dwarf stature and bristly branchlets, petioles, leaf margins and pedicels usually enough to separate it from most specimens of the former, though Elaeagnoides Group plants, with a similar stature, deciduous foliage and yellow flowers might cause confusion until the distance between the abaxial leaf scales is checked. Should this be greater than their own diameter, then a specimen of *R. lowndesii* will prove to be to hand. *R. cowanianum* too has bristles on the petioles and the leaf margins, and completely deciduous foliage, while *R. baileyi* has leaf scales with notched rims and a far more populous flower truss. Both are also taller growing.

As the seed collections table shows, well over 150 batches of *R. lepidotum* have been introduced into the UK, not counting Hooker's 1850 premier gathering, with the forms now cultivated varying from dwarf compact shrublets to open bushes that are around a metre high and more across, so selection of the best clones with regard to flower colour and habit is essential. Growing the majority of these is straightforward, a sunny position keeping any legginess to a minimum, though some mid-day shade will be needed in the UK's southern locales. Given the altitudinal range over which the species will be found, hardiness too is a little varied, so provenance should again be checked if your purchase is not one of the established forms known to survive a typical British winter without complaint. But when successfully established, flowering will often be profuse, and those plants with yellow or white corollas prove especially distinctive when the blooms open en masse on a compact, mature specimen.



R. lepidotum (LS&H 21292)



R. lepidotum (SCH 2264)



R. lepidotum (Salzen Collection)



R. lepidotum (Hruby 4)

R. lepidotum (Salzen Collection)

R. baileyi

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
S & SE Tibet; Sikkim, India; Bhutan.
Growing in evergreen forests, on dry hillsides and screes, on mossy rocks and boulders, at elevations of 2,400-4,300m.

Identification:
Shrub, low and compact to upright and straggly, 0.5 to 2m tall;
branchlets densely lepidote.
Leaves evergreen, thick and coriaceous,
oblong through obovate to elliptic,
2 to 7cm long by 0.8 to 3.3cm wide;
upper surface persistently lepidote, densely so at first;
lower surface scales crenulate, with notched rims,
cinnamon, reddish-brown or dark brown, overlapping.
Inflorescence 5-12-18-flowered,
sometimes with axillary buds in the upper leaves.
Rhachis elongate, 3-25mm long, usually densely puberulous.
Corolla magenta through purple.

Seed Collections:

Cooper 2224	1914	LS&H 17447	1949
Cooper 4009	1915	LS&H 19049	1949
Cooper 4285	1915	LS&H 19124	1949
KW 6250a	1924/1925	LS&H 20659	1949
L&S 1285	1936	LS&H 21297	1949
L&S 2896	1936	LS&H 21475	1949
L&S 3202	1937	LS&H 21475	1949
LS&T 6656	1938	Bowes-Lyon 3355	1966
LS&E 12490	1946/1947	KR 890	1985
LS&H 16442	1949	KR 901	1985
LS&H 17359	1949	KR 911	1985

Lieutenant-Colonel Frederick Marshman Bailey discovered the rhododendron that now bears his name in 1913, while he was on an unauthorised exploration of the Tsangpo river gorges in southern Tibet, accompanied by Captain Henry Morshead, of the Survey of India. As no herbarium specimens were gathered from the population of plants, the species was described by Sir Isaac Bayley Balfour from cultivated specimens grown from Bailey's seed after these had flowered for the first time in the gardens at Edinburgh during the spring of 1918 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 11, 1919).

Under the old Balfourian classification, *R. baileyi* had been placed in the Lepidotum Series in association with the plants it most closely resembled, namely *R. cowanianum* and *R. lepidotum,* though in a separate subseries. This division was judged necessary due to the nature of the scales on the leaf under-surface, which were crenulate as opposed to entire, their toothed margins requiring a discrete, though associated, taxonomic box.

By luck or fortuitous happenstance, this also reflected the chromosome count, which showed that *R. baileyi* was a 2*n* = 52 tetraploid, whereas *R. lepidotum* was a 2*n* = 26 diploid (counts or weighings for *R. cowanianum* and *R. lowndesii* are, alas, still outstanding, but the latter has been crossed with *R. lepidotum,* as well as with *R. keiskei,* both of which are diploids).

Morphologically, if the scales are excepted, *R. baileyi* is basically a larger version of *R. lepidotum,* bigger in all its parts, with a more populous flower-truss and somewhat more evergreen leaves, these changes a likely evolutionary byproduct of all those extra double-helices. A retained placement within the Edinburgh Revision's Subsection *Lepidota* would therefore, have indicated that clear and close relationship far better than the monotypic sore-thumb categorisation that was ported-across from Hermann Sleumer's 1949 paper *Ein System der Gattung Rhododendron* (*Botanische Jahrbücher für Systematik,* Volume 74), by the 1996 classification's lead authors, James Cullen and David Chamberlain (*A Preliminary Synopsis Of The Genus Rhododendron, Notes,* Volume 36, 1978), especially as a genetic hiccup in a *R. lepidotum* ovary is likely to have brought *R. baileyi* into existence.

A standalone disposition implies separateness, so the choice made herein is to return *R. baileyi* to Subsection *Lepidota,* this move reflecting the view of many rhododendron experts including that of Peter and Kenneth Cox (as outlined in their 1997-published *Encyclopaedia of Rhododendron Species*). When available, DNA sequencing data will almost certainly show that all four *Lepidota* species occupy the same clade, so the re-association with its close allies is also made in expectation of that revelation.

Separating specimens of *R. baileyi* from those of *R. lepidotum* is easy when both are in bloom, a racemose truss with five or more corollas signifying the former, an umbellate truss with just one to four corollas, the latter, and if the flowers are pink or yellow, even the requirement to count is eliminated. At all other times however, keying becomes somewhat more difficult and reliance must be placed on stature and leaf size. Of course, those in possession of a 20X loupe or portable microscope will quickly be able to determine if the rims of the scales have notches or not.

R. baileyi also resembles *R. cowanianum,* but is without bristles on the leaf margins or petioles, has a far denser covering of scales on the leaf undersides, these overlapping rather than scattered, and foliage that is evergreen not deciduous.

In cultivation, the species is fairly fast growing, and though some forms can be sparse and straggly, recent introductions from Bhutan have tended to produce more compact and rounded shrubs. The striking flowers are usually amply abundant and the plants fully hardy, though a slightly more sheltered position for gardens set along the east coast or inland will be required if *R. baileyi* is to reach its full potential in these locales.



R. baileyi



R. baileyi



R. baileyi

R. cowanianum

Hardiness:
H5.
Flowering Period:
May.
Distribution in the wild:
Nepal.
Growing in clearings and open birch woodland, at forest margins,
within gorges, on wooded screes, and along river beds amongst rocks,
at elevations of 3,000-4,000m.

Identification:
Shrub, upright, lax or spreading, becoming sparse with age, 0.3 to 2.4m high;
branchlets sparsely setose or without bristles.
Leaves deciduous, thin and chartaceous,
decurrent on the petiole,
oblong-elliptic through obovate,
2.5 to 6.5cm long by 1.2 to 3cm wide;
upper surface densely lepidote, densely puberulous or glabrous,
the margins ciliate or setose;
lower surface scales entire, broadly-rimmed, yellowish or pale brown,
between one and four times their own diameter apart.
Petiole narrowly winged or with ridges along each side,
often densely pubescent, setose.
Inflorescence 2-5-flowered.
Rhachis 1-4mm long.
Corolla pink, purplish-pink, magenta- or reddish-purple, or deep wine.

Seed Collections:

Polunin 175	1949
Polunin 551	1949
SSW 776	1954
SSW 930	1954
SSW 3047	1954
SSW 5590	1954
SSW 9097	1954
McBeath 2247	1990
Pes 2585	1994

Oleg Polunin was the first plant hunter to find *R. cowanianum,* discovering the species in June 1949 growing along a lateral valley in what today is the Langtang National Park, Nepal. This is an area close to 700 square miles in extent that covers parts of the country's Nuwakot, Rasuwa and Sindhulpalchok Districts, takes in several Himalayan mountain peaks that top the 7,000m-mark and is home to the sacred Gosainkunda Lake, which is located in its southwest quadrant. Established by the now-ousted Nepalese monarchy in 1976, the park begins 20 miles to the north of Kathmandu and stretches to the border with Tibet.

H. H. Davidian described Polunin's find in Volume 21 of *Notes from the Royal Botanic Garden, Edinburgh,* published in 1952, naming the plant for his colleague and fellow Genus *Rhododendron* expert, the Assistant Regius Keeper, John MacQueen Cowan.

Of the four Subsection *Lepidota* species, *R. cowanianum* is the tallest growing, with the largest leaves. These are fully deciduous, thin and papery; extend from their buds in sync with the flowers opening; and colour pleasantly in the autumn before falling. Older plants will therefore have a fairly sparse appearance, which in combination with the trait of separately opening the few corollas that comprise each truss - the first falling before the last has fully expanded - places the species way down the popularity lists of even ardent connoisseurs. Bristles on the petiole and leaf margins swiftly separate *R. cowanianum* from *R. baileyi* and *R. lepidotum* when the plants are not in flower; the Brobdingnagian stature equally quickly cleaving it from the somewhat Lilliputian *R. lowndesii.*

Officially, *R. cowanianum* was successfully introduced into UK cultivation from Nepal in 1954 by Adam Stainton, William Sykes and John Williams, despite the two earlier Polunin gatherings listed opposite. The germinated progeny are sufficiently hardy to cope with our maritime climate, but have proved to be somewhat finicky as to planting position, requiring some shade and good protection from the wind. The recent reintroductions of McBeath and Pes, plus an Edward Needham 1983 collection and a 1998 Jens Nielsen find - each available on the following year's American Rhododendron Society seed exchange - have not significantly mitigated the taxon's rarity in open-to-the-public collections.


R. cowanianum

R. lowndesii

Hardiness:
H4-5.
Flowering Period:
May-June.
Distribution in the wild:
C & W Nepal.
Growing in drier areas on cliff ledges, peaty banks and in rock crevices,
at elevations of 3,000-4,600m.

Identification:
Dwarf shrub, creeping, spreading or rounded, 0.05 to 0.3m high;
stoloniferous;
branchlets lepidote, setose, and both pubescent and pilose.
Leaves deciduous, thin and chartaceous,
decurrent on the petiole,
narrowly elliptic through oblanceolate,
0.9 to 2.8cm long by 0.4 to 1.2cm wide;
upper surface sparsely lepidote or without scales, densely puberulous,
the margins ciliate and setose;
lower surface scales entire, the rims broad and translucent, yellow or yellowish-green,
between two and five times their own diameter apart.
Petiole very short, narrowly winged or with ridges along each side, setose.
Inflorescence 1-2-flowered.
Rhachis minute, 0.5-1mm long.
Pedicel usually setose, rarely without bristles.
Calyx outer surface sparsely lepidote, the lobe margins ciliate and setose.
Corolla pale yellow, sometimes with a reddish flush.

Seed Collections:

Lowndes 1174	1950	SSW 1428	1954	SSW 8239	1954
PS&W 1345	1952	SSW 1473	1954	SSW 8251	1954
PS&W 3486	1952	SSW 1732	1954	McBeath 1506	1983
SSW 1090	1954	SSW 5699	1954	SCH 2963	1988
		SSW 6359	1954		

While on an expedition for the British Museum of Natural History in the Marsyangdi Valley, Nepal, during July 1950, the mountaineer and accomplished botanist Colonel Donald G. Lowndes, of the Royal Garhwal Rifles, encountered flowering plants of the rhododendron that would later be named for him. Duplicates of his herbarium sheets were sent-on to Edinburgh Botanic, where H. H. Davidian described the find in Volume 21 of *Notes from the Royal Botanic Garden, Edinburgh*, this published in 1952.

R. lowndesii most closely mirrors *R. lepidotum,* more specifically, the plants gathered together in Elaeagnoides Group, which also have deciduous foliage, yellow flowers and are dwarf shrubs reaching up no higher than 0.3m. However, hairy rather than glabrous leaves, and bristles on the branchlets, petioles, leaf margins and pedicels, will quickly identify the Colonel's far rarer find. So too will the scales resident on the abaxial leaf surface, these clearly distant from one another on specimens of *R. lowndesii* - by between two and five times their own diameter apart - but overlapping through slightly distant - by between half and their own diameter - on leaves of the now sunk *R. lepidotum* var. *elaeagnoides*.

Despite the Lowndes 1174 field number apparently returning seed, officially, Polunin, Sykes and Williams introduced the species into UK cultivation - by default, however, as the seeds were retrieved from the capsules on one of their herbarium sheets (PS&W 3486, collected in 1952). These were germinated by Edinburgh Botanic's propagating staff and resulted in a first flowering less than four years later at the end of May 1956. PS&W 1345 may also have gifted viable little urchins, as it too appears on the official collectors listings. But such beneficence proved shallow, a sole positive precursor to the long-term difficulties gardeners faced when trying to sustain those specimens in cultivation.

For *R. lowndesii* is truly difficult.

In many locales it simply fails to establish.

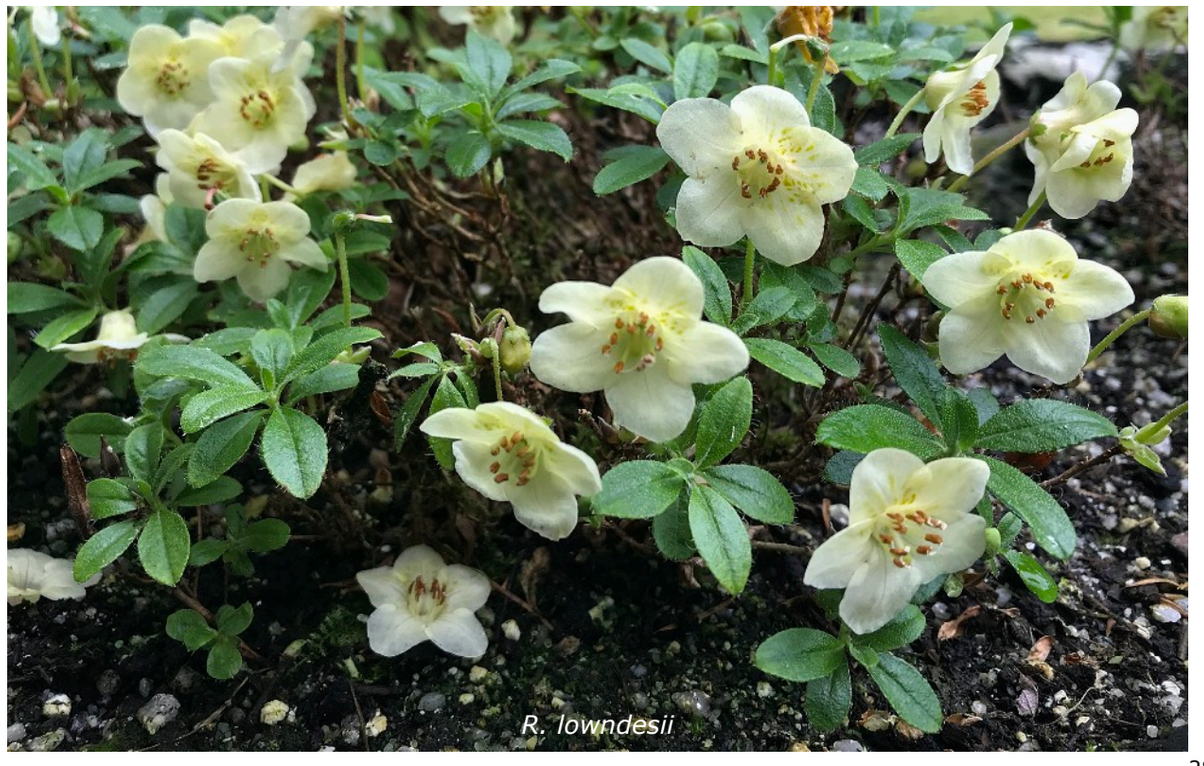
In nearly all others, a cloche will be needed to protect the plant through the vagaries of a typical British winter.

Though not from the cold.

From the excessive rain that can often be a feature of the UK's maritime climate at that time of year.

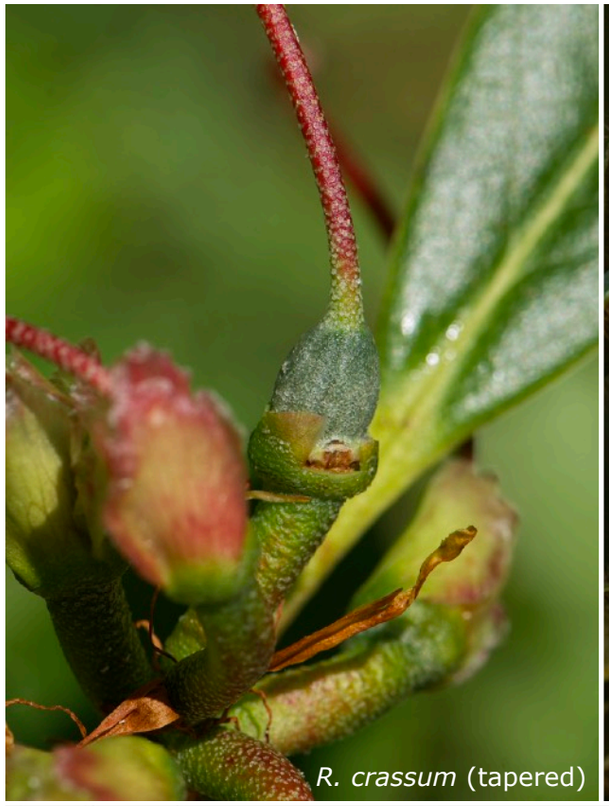
And drainage will need to be beyond exemplary, mirroring the natural run-off the roots experience in the detritus-filled crevice of a rocky outcrop or on the ledge of a cliff.

East coast gardeners in more northerly climes will have the best chance of success, especially if they are adepts with other alpine plants, while the rest of us will have to make do with the equally drop-dead gorgeous, pink-flowered natural hybrid, R. Pipit, this a cross with *R. lepidotum* that Peter Cox at Glendoick spotted in a batch of *R. lowndesii* seed collected by Stainton, Sykes and Williams in Nepal. But note: even this little gem will be a challenge few will fully master longterm.



R. lowndesii

Section *Lepipherum* Subsection *Maddenia:*



R. crassum (tapered)



R. johnstoneanum (truncate)



Taxonomic Revision:

Subsection *Maddenia,* as defined by the Edinburgh Revision botanists, comprised well over thirty individual species that had been introduced into UK cultivation, with an additional twenty or so known in the wild. Historically, an even larger number had been given specific status and treated for many years as bona fide species, before being sunk in the late 1970s.

Scroll forward four decades and copious up-to-date field reporting on the wild populations spread across the eastern Himalaya, southwest China and Southeast Asia is to hand, and it is this information that has provided the evidence for a further cull. However, a second issue also needs to be addressed.

Widely-accepted associations within the subsection had previously been made on the basis of stamen number and calyx size, with various authors categorising these divisions into 'Alliances', 'Aggregates' or 'Groups' in order to split an unwieldy whole into three or four more manageable parts. A perfectly reasonable practice, except the chosen terminology did not comply with the international nomenclature rules, which specify Series or Subseries as the taxonomic strata between Subsection and Species. Moreover, the choice of such keying characteristics - stamen number and calyx size - led to the placement of *R. maddenii,* and in some texts *R. megacalyx,* within unitary boxes that falsely separated them from their close associates.

An alternative morphologic differentiator is chosen herein: the juncture of the style with the ovary. Where one flows relatively smoothly into the other, the plants have been placed into Series *Dalhousiae,* but where the style is impressed, inserted into a shouldered depression at the top of a truncated ovary, they have been assigned to Series *Formosa*.

This characteristic is fundamental. It does not vary within a species population, unlike the size of the calyx lobes, the number of stamens in a corolla, or equally, the number of chambers within the ovary. The style is either truncate or tapered.

And there is a genetic significance to this feature change. It denotes an evolutionary parting of the ways and should be clearly observable once a detailed cladistic analysis of the whole subsection is available.

Currently, only the Goetsch-Eckert-Hall 2005 paper *The Molecular Systematics of Rhododendron (Ericaceae): A Phylogeny Based Upon RPB2 Gene Sequences* (*Systematic Botany,* Volume 30, No. 3), has included plants from Subsection *Maddenia* in its results tables, with the maximum parsimony strict consensus tree and maximum likelihood phylogram placing *R. ciliatum* (style impressed) in a very closely associated, but separate clade, to *R. excellens* and *R. nuttallii* (styles tapered).

The genetic evidence therefore supports such a morphologic division, paltry though it is at the moment.

The choice of name for each Series will, once again, likely fail the precedence test under the internationally agreed nomenclature rules, but the selection of these epithets avoids both unnecessary duplication within the classification, and eliminates any confusion with those past Balfourian monikers.



R. crassum

Section *Lepipherum* Subsection *Maddenia* Series *Dalhousiae:*



R. nuttallii

Taxa:

- *R. ciliicalyx*
  - *R. ciliicalyx* var. *ciliicalyx*
  - *R. ciliicalyx* var. *lyi*
- *R. dalhousiae*
  - *R. dalhousiae* var. *dalhousiae*
  - *R. dalhousiae* var. *rhabdotum*
- *R. horlickianum*
- *R. levinei*
- *R. lindleyi*
  - *R. lindleyi* var. *liliiflorum*
  - *R. lindleyi* var. *lindleyi*
  - *R. lindleyi* var. *taggianum*
- *R. ludwigianum*
- *R. maddenii*
  - *R. maddenii* ssp. *crassum*
  - *R. maddenii* ssp. *maddenii*
- *R. manipurense*
- *R. megacalyx*
- *R. nuttallii*
- *R. pseudomanipurense*
- *R. veitchianum*

Taxonomic Revision:

Several of the species that were detailed in the 1996 Edinburgh Revision have, after documented field observation, been reduced to synonymy, examples being *R. pachypodum* and *R. roseatum* sunk under *R. ciliicalyx*.

In some cases, a previously listed taxon has been split between two species: the type form of *R. parryae* (with an impressed style) sunk under *R. johnstoneanum* (in Series *Formosa*); the RHS Award of Merit form (with a tapered style) made synonymous with *R. ciliicalyx* via *R. roseatum*.

Likewise, a re-examination of herbarium material showed that many of the cultivated forms of *R. ciliicalyx* had been misidentified, requiring those with impressed styles to be transferred to *R. dendricola* in Series *Formosa,* while those with tapering styles were moved to *R. pachypodum* (prior to synonymy being imposed herein). The last point is also pertinent with regard to *R. supranubium*.

Recent introductions of what was initially thought to be *R. excellens* have all, on flowering, displayed 12 stamens and are therefore *R. nuttallii*. *R. fleuryi* too was thought to have been introduced from northern Vietnam, under AC 357, but its status remains unauthenticated. Both species are therefore considered not to be in UK cultivation.

R. carneum, once accorded specific status, has proved to be yet another seedpan rogue. It can only be grown outdoors in the most favoured, frost-free west coast gardens, but its tapering style would have made it a member of Series *Dalhousiae,* had of course its true ranking as a natural hybrid not been revealed.

Series Morphology:

Shrubs or small trees, 1 to 10m high;
epiphytic or terrestrial,
compact to extremely straggly, laxly-spreading to broadly upright;
branchlets lepidote, usually densely so, often variably setose;
bark pale or dark reddish-brown, usually peeling.

Leaves evergreen, coriaceous, often thick,
obovate through oblong-elliptic to elliptic-lanceolate,
3.2 to 26.5cm long by 1.3 to 13.1cm wide,
apex acute, sometimes abruptly so,
acuminate, rounded or obtuse, and apiculate or mucronate,
base cuneate, tapered, rounded or obtuse;
upper surface dark green, often shiny,
sometimes reticulate, often rugose or bullate, lepidote or not,
the midrib grooved, the veins deeply impressed, the margins, glabrous, ciliate or setose;
lower surface whitish- or greyish- or glaucous-green, glabrous,
usually densely lepidote, the scales unequal but of one kind (rarely dimorphic),
small through large-sized, brown or reddish-brown, more rarely golden,
overlapping, contiguous or up to 5 times their own diameter apart,
with crenulate margins,
the midrib prominent, the veins raised, sometimes conspicuously so.

Leaf anatomy comprises a 2-3-4-layered upper epidermis,
with the cells in the top layer smaller than those in the layer or layers below;
the cuticle is between half to as thick as the top layer cells are deep;
water tissue is absent; the lower epidermis cells are prolonged into papillae.
Sclereid cells are present in the leaves of all the species.

Petiole 4-20mm long, more rarely to 30mm, often grooved above,
variably lepidote, often setose, occasionally hairy.

Inflorescence terminal, 1-5-12-flowered, the truss loose;
often fragrant, sometimes strongly so.

Rhachis 1-6mm long, rarely longer, lepidote, rarely without scales,
sometimes pubescent, occasionally setose.

Pedicel 3-10-25mm long, sometimes to 35mm, thick and stout,
lepidote, usually densely so, rarely without scales, sometimes pubescent.

Calyx variable, often oblique,
occasionally rim-like, but usually conspicuous and deeply 5-lobed,
these unequal, rounded, oblong, ovate or triangular, and 1-3-10-20mm long,
more rarely to 30mm,
their outer surface variably lepidote, rarely without some scales, sometimes pubescent,
their margins often ciliate or setose.

Corolla 3.5 to 7 to 13.6cm long, 5-lobed,
openly funnel-campanulate through tubular-campanulate, occasionally oblique,
the lower lobes longer, the tube often compressed and fluted with 5 grooves,
white or creamy-white, often flushed pink or rose,
pink, rose or pale creamy-yellow (rarely),
with or without a golden- or orange-yellow basal blotch,
sometimes with pink bands on the outside of the lobes, rarely with red longitudinal lines,
the outer surface variably lepidote at the base of the tube, sometimes all over,
the lobes margins usually entire (without wavy frills or crinkles),
but occasionally reflexed.

Stamens 10, or 15-22, rarely 11-14, unequal,
shorter than the corolla (occasionally equal to or slightly longer than the corolla);
filaments variably pubescent along the lower half or third, or at the base.

Ovary conoid through oblong, 3-10mm long, rarely to 15mm,
5-7-locular or with 8-12 chambers,
densely lepidote, occasionally pubescent,
tapering into the style.

Style long, straight or curved in the upper part,
usually shorter than the corolla,
lepidote along the lower half or third, or at the base, rarely to the tip,
sometimes pubescent at the base, expanding smoothly into the ovary.

Capsule ovoid, oblong through oblong-oval, or ellipsoid, 5-30-70mm long,
sometimes oblique at the base, straight or slightly curved, ribbed,
densely lepidote,
rarely shorter than and enclosed by the calyx lobes.

Seeds elongate, winged, each end with an appendage.



R. lindleyi

R. dalhousiae* var. *dalhousiae

Hardiness:
H3.
Flowering Period:
April-July.
Distribution in the wild:
E Nepal; SE & S Tibet; Sikkim, India; Bhutan; Bangladesh.
Growing at forest margins on trees, stumps, crevices or rocks,
at elevations of 1,800-2,700m.

Identification:
Shrub, epiphytic, 1 to 3m high, rarely to 6m;
branchlets usually sparsely through moderately short-setose.
Leaves thinly coriaceous, bunched at the ends of the branches,
narrowly elliptic through oblanceolate to obovate,
5.2 to 17cm long by 2.2 to 7.4cm wide,
apex rounded or obtuse;
upper surface slightly bullate, somewhat shiny, lepidote or not,
the margins often crenulate;
lower surface scales small or medium-sized (rarely), brown or reddish-brown,
1 to 3 times their own diameter apart.
Petiole 10-15mm long, without a groove,
sometimes sparsely through moderately short-setose.
Inflorescence 2-5-7-flowered; slightly fragrant.
Rhachis occasionally sparsely setose.
Pedicel 8-23mm long, moderately through densely white-pubescent.
Calyx large, deeply lobed, these 7-18mm long,
their outer surface finely pubescent along the middle of the lobes or glabrous,
sparsely through moderately lepidote at the base or along the middle of the lobes (rarely),
their margins occasionally ciliate.
Corolla 7 to 11.8cm long, funnel-campanulate, sometimes narrowly so,
buds opening greenish-yellow, fading to cream or white (rarely), often yellowish inside,
the outer surface elepidote, the tube sometimes sparsely lepidote.
Stamens 10, shorter than the corolla.
Style equal to, slightly shorter or slightly longer than the corolla,
sparsely lepidote below, rarely to two-thirds its length.
Capsule 30-53mm long.

Seed Collections:

Cooper 3806	1915	SSW 8274	1954	TSS 32	1961/1962	Sinclair 1744	1993
Cooper 3935	1915	Stainton 183	1956	TSS 59	1961/1962	SEH 502	1997
L&S 582	1934	Bowes-Lyon 6026	1970	BLM 300	1971	SHE 521	1997
L&S 1205	1936	BLM 12288	1971	BLM 305	1971	AC 5596	2004
L&S 2891	1936	TSS 4	1961/1962	SCH 2980	1988	KR 8030	2005
LS&T 6694	1938	TSS 24	1961/1962	KR 1017	1985	TDA 159	2012
L&S 15840	1948	TSS 28	1961/1962	Fox 511	± 1986	TDA 162	2012
SSW 5384	1954	TSS 31	1961/1962	Heasman 65	1992	TDA 158	2012

R. dalhousiae* var. *rhabdotum

Hardiness:
H3.
Flowering Period:
Late June-August.
Distribution in the wild:
S Tibet; Bhutan; Arunachal Pradesh, India.
Growing in rain forest, on hillsides, cliffs or rocks,
at elevations of 1,500-2,700m.

Identification:
As var. *dalhousiae* except:
Both terrestrial and epiphytic in the wild.
Leaf upper surface margins sometimes setose along the lower half or at the base;
lower surface scales sometimes medium through large-sized.
Corolla creamy-white through pale yellow,
with five distinctive longitudinal red lines along the outside of the lobes.
Stamens as long as, or longer than the corolla.
Style lepidote along the lower two-thirds or at the base.

Seed Collections:

KW 6415	1924/1925	L&S 2944	1937	Bowes-Lyon 15020	1969
L&S 583	1934	L&S 3136	1937	KR 1270	1987
L&S 1204	1936	LS&H 16510	1949	KR 1286	1987
L&S 2837	1936	LS&H 16523	1949	Bowes-Lyon 1	1987/1989
L&S 2843	1936	LS&H 18877	1949	GR 5029	2003
L&S 2917	1936	LS&H 20489	1949	KCSH 0310	2003
L&S 2940	1937	LS&H 21257	1949	AC 5399	2004
		Bowes-Lyon 3214	1966		


R. rhabdotum

R. dalhousiae was one of the new-to-science rhododendrons Sir Joseph Dalton Hooker discovered in 1848 at the start of his fabled expedition to Sikkim, and it features on the frontispiece of the trip's botanic treatise *The Rhododendrons of Sikkim-Himalaya,* published in 1849. It was also the first plant to be fully described within that text, accompanied by another superb illustration. Hooker believed his find to be the most beautiful rhododendron of the genus and named it in honour of the wife of the Governor-General of India, at that time the Marquess of Dalhousie, James Broun-Ramsay, whose Marchioness was Lady Susan Hay, daughter of the Marquess of Tweeddale. And she must have been a vision.

Seed from Hooker's gathering arrived back in Blighty early in 1850 and first flowering occurred just three years later during March, 1853, the plant resident in the greenhouses of Dysart House, near Kirkcaldy, in Fife, the specimen blooming - according to John Guille Millais in his 1917 book *Rhododendrons and the Various Hybrids* - as a result of being grafted onto a rootstock of *R. ponticum*.

R. rhabdotum comes with a more prosaic epithet that basically translates from the Latin as 'striped', its flowers just as stunning as those of *R. dalhousiae,* if not more so. Roland Cooper discovered this species at Punakka in Bhutan during May 1915, but was unable to secure seed so early in the season. He described his find jointly with Sir Isaac Bayley Balfour in Volume 10 of *Notes from the Royal Botanic Garden, Edinburgh,* which was published in 1917, but drooling gardeners had to wait until 1925 for Frank Kingdon-Ward to gather up viable capsules. These were sourced from a population of plants growing along the border between Bhutan and the Indian state of Assam and made available to the plant hunter's sponsors. One of those, Henry McLaren of Bodnant, the future Lord Aberconway, enticed a specimen to bloom for the first time in cultivation during August 1931 and scooped up an Award of Merit from the RHS for his trouble.

Both plants enjoyed specific status until the Edinburgh Revision changes were published in 1978 - the *Preliminary Synopsis* paper in *Notes,* Volume 36 - and then the full Subgenus *Rhododendron* broadside in 1980 - *Notes,* Volume 39, No. 1 - whereupon the ranking was rightly reduced to the varietal status detailed herein. Some botanists still feel that the character differences used to distinguish one taxon from the other are so minor as to warrant full synonymy, but a deeper dive will reveal this not to be the case. The most obvious dissimilitude is the far later flowering time, with var. *rhabdotum* rarely opening any blooms before early July, while specimens of var. *dalhousiae* can be in bloom from as early as April. In the wild, despite the documented population overlap, this trait maintains a second genetic adaption - that distinctive red stripe running lengthwise down each corolla lobe. There are also more subtle variances, with the stamen filaments of var. *rhabdotum* matching the length of the corollas or being longer, rather than being shorter; its leaf margins often found to be bristly towards the base; and the taxon's style usually lepidote along the lower two-thirds. Additionally, in the forest locales where it is endemic, the roots of var. *rhabdotum* will more often be found on and in the ground, rather than perched up in the branches of the surrounding trees.

Within the Series, both varieties are most closely related to *R. lindleyi,* but are keyed from that species by their pubescent pedicels and the bristles on their young shoots, with the lined corolla lobes of var. *rhabdotum* instantly identifying those plants from virtually all the other rhododendrons in the entire genus. Calyx lobe length can be used to distinguish var. *dalhousiae* from the likes of *R. ciliicalyx* or *R. horlickianum* should the need arise.

In UK cultivation, even for the majority of those favoured plots along the west coast that benefit from the uplift of the North Atlantic Drift, a cool greenhouse or conservatory will be required to overwinter specimens of both *R. dalhousiae* varieties, which even when perfectly grown, will be leggy and straggly at best, and need tie-in support to prevent them toppling over when returned outside, if pot-bound roots in small containers are used to mirror a moss-choked-V between the boughs of a tree. Yet if you are one of the lucky few who can grow the plants in the open air all year round, a 2m high laxly upright shrub bedecked with some of the most spectacular flowers in the genus, will be the long-term result of a fast draining, sunny, but sheltered spot in the woodland. Such a placement will also benefit from a surround of lower-growing, bushier rhododendrons, these established to mask the tangle of leafless branches from ground level upwards, even though these should be displaying a fine reddish-brown or cinnamon-coloured, peeling bark.



R. dalhousiae, illustrated in *Curtis's Botanical Magazine,* Volume 79, t. 4718.



R. rhabdotum



R. rhabdotum



R. rhabdotum



R. rhabdotum

R. lindleyi* var. *lindleyi

Hardiness:
H3.
Flowering Period:
Late April-May.
Distribution in the wild:
E Nepal; SE Tibet; Bhutan; Sikkim, Arunachal Pradesh, W Bengal & Manipur, India;
Upper Myanmar; Bangladesh.
Growing in woodland, usually as an epiphyte on the trees, and on cliffs,
at elevations of 1,800-3,400m.

Identification:
Shrub, often epiphytic, 1 to 4.5m high;
branchlets without bristles.
Leaves oblong-elliptic through oblong-lanceolate, occasionally obovate,
5.5 to 15cm long by 1.5 to 5.5cm wide,
more rarely to 19.6cm long by 6cm wide,
apex obtuse or rounded;
upper surface somewhat shiny or matt, reticulate or bullate,
sparsely lepidote or without scales;
lower surface scales medium through large-sized, brown or reddish-brown,
2 to 4 times their own diameter apart.
Petiole 10-20mm long, rarely to 30mm, without a groove.
Inflorescence 2-7-12-flowered, the buds large and rounded; fragrant.
Pedicel 8-25mm long.
Calyx conspicuous, becoming papery in fruit, pinkish or green,
deeply lobed, these 10-20mm long by up to 10mm wide,
their outer surface distinctly veined, occasionally lepidote at the base,
their margins moderately through densely short-ciliate, the hairs white.
Corolla 5.3 to 11.6cm long, openly funnel- through broadly tubular-campanulate,
white or cream, sometimes flushed pink or rose-purple outside,
with or without an orange-yellow basal blotch,
the outer surface elepidote, or with just a few scales on the tube,
the tube sometimes pubescent.
Stamens 10.
Capsule 40-50mm long.

Seed Collections:

L&S 976	1934	LS&H 16184	1949	C&S 1708	1990
L&S 1266	1936	LS&H 18739	1949	KR 1820	1990
L&S 1269	1936	LS&H 20535	1949	Sinclair 1727	1993
L&S 1702	1936	TSS 56	1961/1962	HECC 10023	2002
L&S 2744	1936	C&H 399	1965	AC 5288	2004
L&S 2980	1937	Bowes-Lyon 3011	1966	AC 5308	2004
LS&T 3665	1938	Bowes-Lyon 6025	1970	KR 8074	2005
LS&T 3667	1938	CHM 2011	1985	KR 8635	2006
LS&T 3692	1938	KR 1093	1987	KR 9235	2008
LS&T 3741	1938	Bowes-Lyon 16	1987/1989	KR 9439	2008
LS&T 6562	1938	EGM 105	1988	TDA 555	2013



R. lindleyi

R. lindleyi* var. *liliiflorum

Hardiness:
H3-4.
Flowering Period:
June-July.
Distribution in the wild:
SE Yunnan, Guizhou, Guangxi & Hunan, China.
Growing terrestrially in woodland, thickets and scrub on rocky slopes, and on open ridges,
at elevations of 600-1,400m.

Identification:
As var. *lindleyi* except:
Shrub or small tree, terrestrial, 3 to 8m high.
Leaf abaxial scales 1 to 3 times their own diameter apart.
Inflorescence 2-3-flowered, the buds elongate.
Calyx lobes 8-10mm long,
their outer surface lepidote all over, but occasionally with scales only at the base,
their margins lepidote or not, without hairs.
Corolla white or white flushed pale pink,
the outer surface densely lepidote on the lobes and tube.
Style sometimes lepidote to the tip.

Seed Collections:

GUIZ 163	1985
PW 116	199?
NN 0958	2009

R. lindleyi* var. *taggianum

Hardiness:
H3.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; Arunachal Pradesh & Assam, India; NW Yunnan, China; Upper Myanmar.
Growing terrestrially at the margins of conifer forest,
in broad-leaved woodland and thickets and on rocky slopes, and epiphytically on trees,
at elevations of 1,800-3,700m.

Identification:
As var. *lindleyi* except:
Shrub or small tree, terrestrial or epiphytic, 1.5 to 4m high.
Leaf abaxial scales 2 to 5 times their own diameter apart.
Inflorescence 1-5-flowered, the buds elongate.
Calyx outer surface sparsely lepidote at the base, more rarely entirely covered in scales,
the lobe margins lepidote at first, these scales quickly deciduous, without hairs.
Corolla pure white with a yellow throat,
the outer surface moderately through densely lepidote at the tube base.

Seed Collections:

F 25864	1924	KW 6310	1924/1925	KW 9402	1931
F 25865	1924	KW 6809	1926	GSE 967602	1996
F 26440	1925	KW 9220	1931	CCHH 8108	1997
F 27638	1925			DGEY 137	2001



R. liliiflorum



R. taggianum



R. lindleyi



R. liliiflorum (GUIZ 163)


R. taggianum


R. lindleyi

R. lindleyi was also discovered by Sir Joseph Dalton Hooker in Sikkim during 1848, but the eminence grise of British botany was clearly working under the influence of a wicked confundus charm as the dried specimens collected were mixed up with those for *R. dalhousiae* and in consequence, no mention of the plant will be found within any of the three volumes of *The Rhododendrons of Sikkim-Himalaya*. It therefore eventually fell to Thomas Moore to write the botanic description, his text included in 1864's *The Gardeners' Chronicle,* with an individual likely grown from seed collected by Thomas Booth in Bhutan, possibly as early as 1849, and domiciled in the greenhouses at the Ascot nursery of John Standish, posing for the précis, though whether this incurred any modelling fees remains shrouded in mystery.

The epithet is of course, an honorific for John Lindley, one of the most significant and influential British botanists of the time, if not of all time.

Hooker's misidentification is a mistake easily repeated today, for when out of flower, *R. lindleyi* differs from *R. dalhousiae* only in a lack of bristles on the young branchlets; having slightly narrower leaves; and sporting rounded flower buds. Once the blooms are to hand however, other keying characteristics become available: the *R. lindleyi* pedicels will be found to be glabrous; the calyx lobes equally so, apart from a fringe of short white hairs along the margins; and the corollas are white, rather than cream, plus they usually come adorned with a golden-yellow basal blotch.

As indicated, the species has been cultivated in Britain since the mid-1850s, perhaps earlier, first under glass and then outdoors, though the hardiness of the many introduced forms varies considerably. West coast gardens can be a home away from home for all of the available clones and good husbandry will produce long-lived specimen plants 2 or 3m high by as much across, these straggly domes, but bedecked with the most magnificent flowers, especially if specimens boasting up to 12 corollas in the truss have been sought out. And the scent is equally delightful.

Yet because of their epiphytic nature, these plants only develop very small root systems that require exemplary drainage. Moreover, their grip in the soil, or hold on a tree stump, is tenuous at best and the weight of the flowers at the tips of those long branches will often cause the whole shrub to topple over, partially pulling the roots out of the ground. Which is no great shakes in areas of high rainfall, where a few shovelfuls of earth from nearby and a covering of mulch will remedy matters, but potentially mortal for the drier coastal gardens of the south or southwest.

Staking is one solution, though not visually pleasing, especially against a wall or pillar. Another is to surround a clump of plants with slightly lower-growing, earlier-flowering species the wobblers can 'lean' against. A third panacea would be to allow the stems to trail over a flat boulder or fallen tree trunk (if such were available); a fourth, dot the clump at the time of planting with a few small-leaved, shade-tolerant berrying plants, and allow one tangled set of branches to support the other.

Regrettably, along the east coast and in mild gardens inland, even plants from the highest reaches of the distribution will be lost to hard winters regardless of how sheltered the site is thought to be unless snow cover is sufficient to encapsulate and shield the shrub from the worst of the cold. In the woodland garden at Glendoick, after the double-whammy winters of 2009-10 and 2010-11, one fine specimen then approaching 2m high, displayed perfect flowers on each of its lower branches, but the older, upright stems, presumably having been denied the protection of a snowdrift blanket, were lifeless.

Recent field study has shown that two specific-ranked species, namely *R. taggianum* and *R. liliiflorum,* would be better considered geographic variants of *R. lindleyi*.

R. taggianum was discovered during April 1920 by Reginald Farrer, who collected herbarium material under the field number Farrer 1520 from a group of plants found at Kum La Bum in northeast Upper Myanmar. George Forrest rediscovered the species in September 1924 on the mountains of the Salween-Kiu Chiang Divide in northwest Yunnan and introduced seed into UK cultivation that same year. The botanic description for *R. taggianum,* written by Kew's then-resident rhododendron expert John Hutchinson, appears in *The Species of Rhododendron,* published in 1930. However, Farrer's premier gathering is overlooked in the listings, which only record the later finds made by Forrest and Frank Kingdon-Ward, and in consequence, credit for the initial discovery was wrongly assigned to Forrest via the choice of type specimen. Outwith such controversy, the epithet rightly honours Harry Tagg, then Edinburgh's resident rhododendron guru, who authored the *Hymenanthes* descriptions for the same publication.

On the ground, the distribution of *R. taggianum* does not extend as far westward as the *R. lindleyi* populations do, but continues on eastwards beyond them into northwest Yunnan and Upper Myanmar. Equally, the specimens encountered are more likely to be terrestrially rooted than epiphytic, with many often developing into small trees. Flower buds are elongate rather than rounded; the calyx lobes display more scales, while their margins lack a fringe of hairs; and the outer surface of the corolla tube is distinctly lepidote. Otherwise, the two are indistinguishable.

In cultivation, *R. taggianum* will only succeed outdoors in sheltered gardens along the west coast, though its preference to grow on the ground has led to the development of a stronger root system, able to support a heavily laden flowering plant without being prised from the soil in a moderate gale. Scent is produced in abundance when one of those plants is in bloom, but with fewer corollas in the truss, specimens are not quite as eye-catching as the best forms of *R. lindleyi*.

The French missionary priest and botanist Julien Cavalérie was the first Western plant hunter to encounter *R. liliiflorum,* coming upon a population of plants growing at Fin-Fa in what was then Kweichow, but is today Guizhou, sometime during June 1902. Specimens were despatched to Paris, but it was not until 1913 that Augustin Hector Léveillé published the taxon's botanic description within Volume 12 of the periodical *Repertorium Specierum Novarum Regni Vegetabilis*. Even more delayed was its introduction into British gardens, this only occurring in 1985 when John Simmons, Hans Fleigner and James Russell journeyed to Guizhou on an expedition for the Royal Botanic Garden, Kew, and secured a batch of seed under the field number GUIZ 163. Previous to that arrival, the species had been thought too tender to survive outdoors in the UK, but the premier gathering, along with a later collection made by Peter Wharton in the mid-1990s under PW 116, both proved the experts wrong, coping admirably with the elements in sheltered gardens along the east coast, as the fine specimens at both Edinburgh Botanic and Glendoick confirm.

These plants were found to differ from *R. lindleyi* in that like *R. taggianum,* they grew terrestrially in the wild, often as small trees, with the available field reporting suggesting that they never opt for a life up in the branches. Morphologically, the calyx margins were without a fringe of hairs, the flower buds had an elongated rather than rounded shape, and the entire outer surface of the corolla - lobes and tube - was densely covered in scales. In addition, the calyx lobes were much smaller, never more than 10mm long, and they usually presented a lepidote outer surface. Specimens of *R. liliiflorum* also flower slightly later in the season and as already noted, display elevated levels of hardiness, with very little damage sustained by established plants over the recent hard winters. This has resulted from their endemic distribution, which stretches across southeastern Yunnan and takes in the provinces of Guizhou, Guangxi and Hunan, all these being to the northeast or east of the main *R. lindleyi* and *R. taggianum* populations.

However, although such character differences allow the three taxa to be keyed from one another, they do not justify their continued specific status ranking.

Synonymy is precluded because the populations are distinct, especially those of *R. liliiflorum,* which though extending into the southeastern corner of Yunnan, currently do not meet up with *R. taggianum,* present in the province's northwest quadrant. This endemicity would clearly be indicative of subspecies status if it were not for the progressive feature change west to east, this most clearly demonstrated by the move away from an epiphytic growth habit, but also seen in the increasing density of the scales found on the outer surface of the corolla lobes and tube.

Varietal status under the first-described taxon accurately reflects the relationship that exists between these three rhododendrons, as observed on the ground in the wild, and it is the ranking that is adopted herein.

A horticultural assemblage of *R. lindleyi* var. *lindleyi* forms with white flowers that are often flushed pink or rose-purple, which have somewhat bullate rather than reticulate leaf blades - the award-winning 'Geordie Sherriff' clone is one of these - have been named as Grothausii Group. Most of the Ludlow and Sherriff collections from southeast Tibet are part of this aggregation, plus those gatherings made with Hicks in Bhutan.

Headfortianum Group comprises plants of *R. lindleyi* var. *taggianum* that hail from southeast Tibet. These are lower growing than the typical species, have narrower leaves, a 1-3-flowered truss and smaller corollas. A number of still-upset aficionados believe that the Kingdon-Ward-discovered *R. headfortianum* should have retained its specific status, while others have argued that *R. taggianum* should have been the taxon that was sunk. Field study and botanic precedence make neither option tenable.



R. liliiflorum (GUIZ 163)



R. lindleyi 'Geordie Sherriff'



R. taggianum

R. maddenii

R. maddenii* ssp. *maddenii

Hardiness:
H3.
Flowering Period:
May-July.
Distribution in the wild:
S Tibet; Bhutan; Sikkim & W Arunachal Pradesh, India.
Growing in forests, scrub and along river valleys, at elevations of 1,900-2,600m.

Identification:
Shrub or small tree, terrestrial (mainly) or epiphytic, compact and bushy to sprawling,
broadly upright, somewhat rounded or straggly, 1 to 6m high;
branchlets moderately through densely lepidote.
Leaves lanceolate through oblong-lanceolate to obovate (usually) or elliptic,
5.3 to 15cm long by 2 to 6cm wide,
apex acute, rounded or obtuse;
upper surface bright or dark green, shiny, lepidote at first;
lower surface scales variably-sized, brown, dark brown or reddish-brown,
overlapping, contiguous or up to 0.5 times their own diameter apart.
Petiole 5-25mm long, densely lepidote.
Inflorescence 1-11-flowered; fragrant.
Pedicel 5-20mm long, moderately through densely lepidote.
Calyx sometimes oblique, the lobes 1-20mm long,
their outer surface lepidote at the base, on the lower half, or all over (rarely).
Corolla 3.5 to 12.5cm long,
tubular-funnel-campanulate, widening with age,
white, often flushed or lined pink, orange, rose or purple, rarely wholly pink,
with or without a yellow basal blotch,
the outer surface lepidote, wholly so, or from the base to the middle of the lobes.
Stamens 15-22;
filaments usually glabrous, sometimes pubescent along the lower half or third.
Ovary 8-12-locular.
Style longer than the corolla,
lepidote, along the lower third or half, or from the base to the tip.
Capsule ovoid, 10-35mm long,
apex abruptly rounded to truncate.

Seed Collections:

Cooper 1282	1914	LS&H 17531a	1949	Heasman 68	1992
Cooper 1292	1914	LS&H 20205	1949	Sinclair 1726	1993
Cooper 3423	1914	C&H 438	1965	Bowes-Lyon 10134	1994
Cooper 3957	1915	Bowes-Lyon 3491	1966	DSE 106	1995
KW 6276	1924/1925	Bowes-Lyon 3493	1966	AC 1344	1996
KW 6276a	1924/1925	Bowes-Lyon 5194	1967	AC 1362	1996
KW 6736	1926	Bowes-Lyon 15005	1969	CCHH 8074	1997
KW 7723	1927/1928	Bowes-Lyon 15006	1969	CCHH 8075	1997
L&S 218	1933	Bowes-Lyon 15150	1969	AC 5301	2004
L&S 569	1934	Bowes-Lyon 6037	1970	AC 5325	2004
L&S 570	1934	Bowes-Lyon 6038	1970	AC 5332	2004
KW 12589	1935	Bowes-Lyon 6092	1970	AC 5341	2004
L&S 1141	1936	KR 1304	1987	AC 5385	2004
L&S 1142	1936	KR 1333	1987	KR 4501	2004
L&S 2833	1936	Bowes-Lyon 2	1987/1989	KR 8357	2005
L&S 2892	1936	Bowes-Lyon 32	1987/1989	KR 8386	2006
L&S 3147	1937	C&S 1615	1990	KR 8422	2006
LS&T 6754	1938	Kinmouth 93	1990	KR 8462	2006
LS&E 12248	1946/1947	KR 1695	1990	KR 9418	2008
LS&E 12548	1946/1947	Kinmouth 153	1991	KR 9725	2010
LS&E 12550	1946/1947	Kinmouth 157	1991	KR 9768a	2010
LS&E 12564	1946/1947	Kinmouth 158	1991	KR 10089	2010
LS&E 12592	1946/1947	Kinmouth 194	1991	BE 12-02	2012
LS&H 16524	1949	Kinmouth 198	1991	BE 12-05	2012
		AC 357	1992		

R. maddenii was a Hooker find of 1849, described in Part Two of *The Rhododendrons of Sikkim-Himalaya,* published in 1851. Sir Joseph found several bushy specimens of the species growing in thickets along the banks of the Lachen and Lachoong rivers at Choongtam and named the plants for Lieutenant-Colonel E. Madden, then a major in the Bengal Civil Service. Seed was gathered, sent back to the UK and introduced into British gardens by the end of 1849, the first of a plethora of collections many of which would wrongly receive specific or varietal botanic descriptions. That list includes:

R. brachysiphon, described by Sir Isaac Bayley Balfour and John Hutchinson in 1919, collected by Roland Cooper in Bhutan during 1915.

R. brevitubum, described by Balfour and Cooper in 1919, found by Cooper in 1915.

R. calophyllum, described by Thomas Nuttall in 1853, collected by Thomas Booth in Bhutan.

R. chapaense, described by Paul Dop in 1930, collected by Eugène Poilane in northern Vietnam.

R. crassum, described by Franchet in 1887, discovered by Jean-Marie Delavay in western Yunnan during 1885.

R. jenkinsii, described by Nuttall in 1853, collected by Booth in Bhutan.

R. macranthum, described and discovered by William Griffith, this text published posthumously in 1848 by John M'Clelland.

R. maddenii var. *longiflora,* described by William Watson in 1894.

R. manipurense, collected in Manipur by Sir George Watt in 1882, first described by Hutchinson in 1908 as *R. maddenii* var. *obtusifolium,* then upgraded to specific ranking and given a new name in 1917.

R. odoriferum, described by Hutchinson from a cultivated specimen in 1927.

R. polyandrum, collected by Cooper in Bhutan during July 1914 and described by Hutchinson in 1919.

But then, beginning in 1978, wholesale synonymy was imposed.

Yet mourn not the loss of so many individual species for most were simply extreme forms of one single taxon, collected as such by the plant hunters, which were then given undue prominence in cultivation by the doyens of the day, although polyploidy - discussed below - is another matter.

The choice to maintain some of these plants and their epithets under the Horticultural Group System implemented by the RHS is valid, but no unified populations of any of them will be found in southern Tibet, Bhutan or the northeast Indian States where *R. maddenii* is endemic. For on the ground, confusion reigns:

Doctor James Cullen set out a botanical description of the mess in his full Subgenus *Rhododendron* revision paper that occupies the entirety of 1980's *Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Number 1, from which the following seven points have been extracted:

1. Although *R. maddenii* [post-synonymy] is variable in a large number of characters, it is impossible to distinguish species within it, as most of the variation is uncorrelated.

2. The density of the scales on the lower leaf surface is another character showing great variability, but not linked in any perceptible way with geography.

3. Corolla size shows continuous variation, even on individual plants.

4. Stamen numbers vary between corollas on individual plants and across the population.

5. The average number of stamens in each corolla increases overall when initially moving west to east through the populations, but then decreases on travelling further east or south.

6. The only characters whose variability appears to have any taxonomic usefulness are leaf breadth and fruit shape, and even these are neither clear-cut nor completely correlated.

7. There seems to be a cline in filament indumentum, from glabrous in the west (Sikkim and Bhutan) to the east (China), where all the specimens examined had pubescent filaments.

Likely expecting an almighty hullabaloo from the rhododendron community for the termination of so many cherished names, a botanic bridge-too-far was sidestepped by splitting the taxon across two subspecies, even though this resulted in a less than perfect identification key based on foliage width, stamen hairs and the degree of bluntness exhibited at the capsule apex (see the ssp. *crassum* entry on page 319). The actual outcry proved muted however, especially when leading horticultural expert Peter Cox agreed that it was 'almost impossible to separate and classify these plants under the former specific names' and that 'taken all over, they vary very much in every way, size, habit, shape and size of flowers, leaves and flower colour and hardiness'. Describing his experience of the species in the wild, Peter went on to write that 'we saw all shapes of plant and leaf mixed together on the ridge we explored in Arunachal Pradesh'. (All three quotes are pulled from the revised edition of *The Larger Rhododendron Species,* published in 1990).

So despite the fact that on this occasion the Arnhem bridgehead would apparently have held and Operation Market Garden been deemed a success, full synonymy was not imposed even though it would have generated far less furore than the decision to make *R. parvifolium* synonymous under *R. lapponicum*. The Cullen Edinburgh Revision position is maintained here because in addition to the fudged feature set, specimen hardiness in cultivation roughly mirrors that west-east cline, increasing as you head further into China. Or in effect, progress from ssp. *maddenii* to ssp. *crassum*.

Five specific species and one variety were designated as being identical to *R. maddenii* ssp. *maddenii* and sunk under it, these being *R. brachysiphon, R. brevitubum, R. calophyllum, R. jenkinsii, R. maddenii* var. *longiflora* and lastly, *R. polyandrum,* with the remainder sunk under *R. maddenii* ssp. *crassum.*

As indicated in points six and seven above, lateral leaf span, filament pubescence and the stubbiness of the fruits differentiate the twin sisters, these precepts being less than 6cm across, glabrous and decidedly non-pointed for ssp. *maddenii*. The 15+ stamens and ±10-chambered ovary key either subspecies from all the other members of the series or indeed, the subsection. However, one of those species sunk under ssp. *maddenii* has a truncate junction where style and ovary meet. It is also a hexaploid with 78 chromosomes, whereas ssp. *maddenii* is a tetraploid where $2n = 52$. Specific status is therefore returned to *R. polyandrum* and herein, the taxon has been moved into Series *Formosa*.

The same increase in rank must also be applied to *R. calophyllum,* for it is a diploid with just 26 chromosomes, except that in this case, there is a degree of doubt concerning the provenance of the specimen tested. H. H. Davidian reports that true *R. calophyllum* has not been introduced into UK cultivation (*The Rhododendron Species,* Volume 1, 1982), as garden-grown plants do not match the Thomas Booth herbarium specimens that Thomas Nuttall described in 1853 (the abaxial leaf surface scales are contiguous when they should be widely spaced and distant from each other). In consequence, *R. calophyllum* is regarded as an un-introduced species herein, and its masqueraders as natural hybrids.

Life outdoors for *R. maddenii* ssp. *maddenii* in the UK is usually restricted to west coast gardens or the mildest sites in southern England, but a plant from the pink-flowered Brachysiphon Group was grown out in the open at Edinburgh Botanic for many years, surviving to become a 2.5m high bushy dome that regularly displayed beautifully-scented, white-flushed-red blooms, though never in great quantity. Like ssp. *crassum,* specimens of ssp. *maddenii* are heat-tolerant in the south, but should reside in dappled shade. They are not fussy when it comes to planting medium providing the pH value is acidic and the soil not too heavy, with poor drainage also tolerated to a degree, though constantly wet roots will lead to trouble.



R. maddenii (LS&E 12248)



R. maddenii (Bowes-Lyon 10134)


R. maddenii


R. maddenii


R. maddenii

R. maddenii

R. nuttallii

Hardiness:
H2-3.
Flowering Period:
April-July.
Distribution in the wild:
SE Tibet; Bhutan; Arunachal Pradesh, India; NW Yunnan, China; N Vietnam.
Growing in thickets and at forest margins, on rocky slopes and cliffs,
at elevations of 1,100-3,700m.

Identification:
Shrub or small tree,
epiphytic (to 4m high, with thick tuberous roots) or terrestrial, 2 to 10m high;
branchlets without bristles.
Leaves elliptic through oblong-elliptic to oblong-obovate,
12 to 26.5cm long by 5 to 13.1cm wide,
apex bluntly acute, rounded or obtuse;
upper surface usually crimson-purple at first, becoming dark green,
rugose through strongly bullate, reticulate,
densely lepidote at first, usually becoming elepidote with age;
lower surface clearly wrinkled, the scales small through large, brown or reddish-brown,
0.5 to 2 times their own diameter apart,
the larger-sized closely or widely scattered,
with ascending, irregular to near cup-shaped rims,
the primary veins thick and distinctly raised,
the secondary and tertiary veins forming a conspicuous reticulum (network).
Petiole 15-29mm long, thick, without a groove.
Inflorescence 2-7-12-flowered; variably fragrant.
Pedicel 14-35mm long, usually moderately through densely pubescent,
lengthening in fruit, pendulous.
Calyx pale green, deeply lobed, these 15-26mm long,
their outer surface densely pubescent or not (rarely),
variably lepidote or not (rarely),
the scales very large and sometimes present only at the base,
the lobe margins eciliate or not (rarely).
Corolla 7.5 to 13.6cm long, funnel- through tubular-campanulate,
oblique, the lower lobes longer,
white, white flushed pink, creamy-white flushed greenish, or white flushed rose,
with a yellow or golden-orange basal blotch,
the outer surface moderately through densely lepidote,
rarely sparsely so or with the scales only present at the base,
the tube occasionally pubescent,
the lobe margins crinkled, rarely entire, and sometimes reflexed.
Stamens 10-12, as long as the corolla tube or shorter.
Ovary 8-15mm long.
Capsule oblique at the base, 18-72mm long,
rarely shorter than the calyx lobes.

Seed Collections:

F 20388	1921/1922	AC 165	1990	CCHH 8104	1997
F 20899	1921/1922	Kinmouth 156	1991	KR 4461	1997
F 21680	1921/1922	Kinmouth 205	1991	KR 6027	1999
F 22751	1921/1922	KR 1880	1991	DGEY 79	2001
KW 5466	1922	AC 358	1992	KR 7454	2001
R 11233	1923/1924	AC 359	1992	HECC 10005	2002
F 25624	1924/1925	AC 360	1992	TARRVS 122	2002
F 25853	1924/1925	AC 364	1992	KR 7916	2003
KW 6333	1924/1925	AC 370	1992	APA 34	2005
KW 7428	1926	AC 371	1992	C&G 5615	2006
R 18399	1929	AC 435	1992	C&G 5616	2006
KW 9274	1931	AC 446	1992	C&G 5630	2006
KW 9446	1931	AC 449	1992	C&G 5631	2006
R 22216	1932	AC 486	1992	C&G 5732	2006
Yu 19423	1937	KR 2108	1992	C&G 5737	2006
Yu 20998	1937	KR 2261	1992	C&G 5740	2006
Yu 21030	1937	Tran 31	1993	CWT 6279	2011
LS&E 12117	1946/1947	KR 3093	1994	CWT 6280	2011
LS&E 13035	1946/1947	CC 7570	1996	CWT 6281	2011
LS&E 13077	1946/1947	KR 4255	1996	CWT 6486	2011
		CCHH 8077	1997		



R. nuttallii (Tran 64)



R. nuttallii (Tran 64)

Thomas Booth was the plant hunter who first encountered *R. nuttallii,* doing so while botanising along the banks of the Papoo Bhotan river at Meré Patao in the Duphla Hills of Assam, sometime between 1849 and 1850. The plants were growing in a woodland of oak and yew trees, terrestrially on swampy ground or epiphytically up in the branches, and on this occasion only herbarium material was secured. But Booth would return to gather seed in 1852, and complete the composition of a species botanic description for Volume 5 of *Hooker's Journal of Botany and Kew Garden Miscellany,* published in 1853, which had been begun by his uncle, Thomas Nuttall.

The species first opened its flowers in the UK during May of 1859, snug inside the Rhododendron House at Kew, with one of those trusses produced by a leggy, 3m high specimen, just seven years from germination, populated by 12 corollas. The illustrators employed to produce the hand-coloured plates for *Curtis' Botanical Magazine* - Volume 85, Tab 5146 - were quickly set to work and the finished image shown to an ailing Nuttall, after whom the species is of course named, a few months before he died.

Flourishing specimens of *R. nuttallii* growing outdoors all year round will only be found in British gardens with a Gulf Stream-enhanced microclimate and mature plants, with heavily wrinkled foliage extending to 26cm long, are more likely to be confused with a large-leaved elepidote species than any other temperate lepidote rhododendron, but can be identified from the similar, but much less bullate, *R. megacalyx,* by the scales and hairs on the pedicel and calyx, and the much longer seed capsules. An overabundance of stamens does the trick for the two *R. maddenii* subspecies, 15 to 25 populating their corollas, rather than 10-12.

Stamen number also put the kibosh on the plethora of seed collections from northern Vietnam purporting to be *R. excellens,* as many of these introductions, having bloomed in cultivation and opened corollas with just 10 through 12 pollen dispensers, effectively waved a flag that made them referable to *R. nuttallii*. The good news is that these plants are much hardier than specimens of the species endemic to China or India, even when gatherings of such have been made at the highest reaches of the wild distribution. Many of the new arrivals also flower much later in the season, rarely opening their blooms before the start of July. However, those Vietnamese introductions with 10 or 11 stamens are now being referred to by some doyens as *R. excellens* var. *decandrum.* On the ground, their populations overlap those of *R. nuttallii,* which of course, they very closely resemble, and intermediates between the two taxa have also been reported. So by extension, those same gurus now consider *R. excellens* itself a natural hybrid between var. *decandrum* and *R. maddenii* ssp. *crassum*. DNA analysis will speak volumes, but one spoke in the wheel not yet taken into account is the fact that use of the var. *decandrum* epithet is illegal within Genus *Rhododendron,* given that Tomitarõ Makino originally coined it for a variety of *R. dilatatum* back in 1893.

Two species and a variety have been placed in synonymy under *R. nuttallii:*

R. sinonuttallii, collected in September 1919 by George Forrest on the Salween-Kiu Chiang Divide in southeast Tibet, and described by the plant hunter and Sir Isaac Bayley Balfour in Volume 13 of *Notes from the Royal Botanic Garden, Edinburgh,* published in 1920, is identical, though fractionally hardier. For this reason it was maintained at Group status, but with the consolidation of the Vietnamese collections from Lao Cai province, such a requirement has been superseded.

Remarkably, H. H. Davidian - writing in *The Rhododendron Species,* Volume 1, 1982 - and James Cullen and David Chamberlain - in Part 1 of their *Preliminary Synopsis* paper (*Notes,* Volume 36, 1978) - independently concurred on such synonymy.

R. goreri lacks the very heavily wrinkled foliage of *R. nuttallii,* displays no hairs on the pedicel or calyx, and has smaller flowers. It was described and named by Davidian in 1980 (*Quarterly Bulletin of the American Rhododendron Society,* Volume 34, Part 4), from specimens collected in the Tsangpo Gorge, southeast Tibet, by Ludlow, Sherriff and Elliott in 1947, which had previously been classified as bog-standard *R. sinonuttallii*. The epithet honours the social anthropologist, writer and gardener Geoffrey Gorer, who cultivated many award-winning rhododendrons at Sunte House, his home in Haywards Heath, Sussex.

David Chamberlain and his fellow authors maintained Davidian's specific status when compiling *The Genus Rhododendron: Its Classification & Synonymy* in 1996, with the good doctor mirroring that approach for the species descriptions in the 1998 RHS *Rhododendron Handbook,* although he indicated that the plant might be a natural hybrid. Subsequent field study has shown this not to be the case. However, the feature variations displayed fall completely within the parameters of the *R. nuttallii* taxon - as exhibited across its wide natural distribution - which makes that specific ranking superfluous. Synonymy is therefore adopted herein.

R. nuttallii var. *stellatum* differed only in having a spreading calyx and smaller flowers with a 'sweeter' scent. It had been collected by Frank Kingdon-Ward in the Tsangpo Gorge during December 1924 and was described by John Hutchinson in 1937 (*The Gardeners' Chronicle,* Volume 101). However, even an Award of Merit bestowed by the RHS in 1936 did not prevent it being sunk by Doctor Cullen.



R. nuttallii (Tran 27)

R. nuttallii (AC 486)

R. nuttallii (AC 486)

R. nuttallii (AC 486)

R. veitchianum

Hardiness:
H2-3.
Flowering Period:
May-June.
Distribution in the wild:
Myanmar; Thailand; Laos; Vietnam.
Growing in evergreen woodland, in open scrub on disturbed ground,
and on and amongst rocks, at elevations of 900-2,400m.

Identification:
Shrub or small tree, epiphytic or terrestrial, 1 to 3.7m high;
branchlets sparsely setose at first, but quickly deciduous.
Leaves obovate through elliptic-obovate to elliptic-lanceolate,
5 to 10cm long by 2 to 4.6cm wide,
apex abruptly acuminate or abruptly acute;
upper surface margins ciliate at first, but quickly deciduous;
lower surface scales medium through large-sized, golden-brown or brown,
between 1 and 3 times their own diameter apart.
Petiole 5-15mm long.
Inflorescence 1-5-flowered; variably fragrant.
Pedicel 3-8mm long.
Calyx disc-like, oblique, the lobes 1-2mm long,
their outer surface lepidote,
their margins ciliate or setose, rarely without hairs.
Corolla 5 to 7cm long, funnel-campanulate, sometimes openly so or split along one side,
white, sometimes tinged pink or green outside,
with or without a yellow or yellowish-green basal blotch,
the outer surface sparsely through moderately lepidote all over,
or only on the upper part,
or more rarely only at the base of the tube,
sparsely through moderately pubescent at the base of the tube,
the lobe margins crinkled.
Stamens 10-11, rarely 12-14.
Style sometimes longer than the corolla.
Capsule oblique at the base, 15-30mm long.

Seed Collections:

KC 9001	1990
Valder I29	1994/1995
Valder I30	1994/1995
Valder I38	1994/1995
Valder I42	1994/1995
C&G 5645	2006
C&G 5648	2006

The epithet chosen by William Jackson Hooker when he described *R. veitchianum* in 1857 - *Curtis's Botanical Magazine,* Volume 83 - honours two members of the green-fingered Veitch dynasty, both of whom were named James: the father, who then ran the horticultural emporium's nursery in Exeter (1792-1863); and his son, who managed the company's nursery on the King's Road, Chelsea (1815-1869). Thomas Lobb was the collector in their employ who discovered and sent back seed of the new species in the early 1850s, finding a population of plants growing at Moulmein along Myanmar's Tenasserim coast (now respectively, Mawlamyine and Tanintharyi). The species flowered for the first time in UK cultivation during early May 1857 and was immediately exhibited at a Horticultural Society meeting in London, where Hooker, along with William Curtis's team of illustrators got their first sight of the new introduction.

R. veitchianum is easily identified from most of the other Series *Dalhousiae* species by the shape of the foliage, the leaf narrowing to become a point barely a centimetre or so back from the tip. Additionally, the abaxial surface of the leaves is glaucous, with the scales distant from each other by between one and three times their own diameter, and the lobe margins of the corolla are distinctly wavy. That last characteristic may perhaps be the only significant and easily seen difference between *R. veitchianum* and *R. ciliicalyx*. However, when the flowers are unavailable for inspection, the two can be separated by examining their abaxial leaf surface: if the scales are clearly distant from one another across the whole of the lamina, *R. veitchianum* will be to hand; if touching, or up to 1.5 times their own diameter apart, then it will be *R. ciliicalyx*.

Whether these differences will continue to be deemed sufficient to maintain the specific status of both species is debatable, especially as their natural distributions south of the Chinese border are mirrored across Upper Myanmar, Laos, Thailand and the northern provinces of Vietnam. Field study is currently silent on the matter, as are the geneticists.



R. veitchianum (KC 9001)

R. cubittii was found at Maru-kahtung (Sindum) in the Bhamo District of Kachin State in northern Myanmar during March 1909 by the American naturalist George Eaton Stannard Cubitt, even though his field notes identify the find as *R. veitchianum*. John Hutchinson, author of the 1919 botanic description (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 12), believed the type specimen to be intermediate with *R. formosum,* noting that although the elongate leaves matched neither species, the bristly branchlets, petioles and leaf margins followed *R. formosum,* while the flowers mirrored *R. veitchianum*. Cubitt's gathering was therefore named as a new species, the epithet honouring its collector, but unfortunately, as the entry in the 1998 RHS *Rhododendron Handbook* makes clear - under *R. veitchianum* - the plants that germinated from Cubitt's seed did not match the type specimen. Moreover, no one else has found the 'species' in the wild, despite the region later being criss-crossed by the likes of Reginald Farrer, George Forrest and Frank Kingdon-Ward, to mention but three.

So when going over the herbarium plates for the Edinburgh Revision, James Cullen decided the type specimen of *R. cubittii* could safely be made synonymous with *R. veitchianum,* for - as David Chamberlain reports in the 1998 *Handbook* - the dried material was clearly referable to that taxon. However, this determination does not extend to the now widely cultivated and award-winning plants grown from Cubitt's one-off seed collection. In response, the horticulturalists hastily created *R. veitchianum* Cubittii Group, but as these plants are not forms of *R. veitchianum,* this makes little sense. What does, is treatment as a natural hybrid, and this is the option adopted herein, with those seedlings redesignated *R. x cubittianum.* This i*s* because technically, under the nomenclature rules, the *R. cubittii* epithet specifically refers to the seed parent plant on George Cubitt's herbarium sheets. By extension, the 'Ashcombe' clone, which is actually the progeny of a selfed cross of *R. x cubittianum,* must now be regarded as a straightforward lepidote hybrid.

R. veitchianum might not have the largest flowers sported by a member of Series *Dalhousiae,* but it does have the most eye-catching, which is my excuse for including three photos snapped in the Queen Elizabeth II Temperate House at the Savill Garden (opposite and below). Yet outwith an overhead canopy of glass, those frilled white lobes will only be found opening outdoors in a handful of UK gardens, as most collections so far introduced are frost tender or only borderline hardy. Specimen plants have been tucked away in a few particularly balmy niches in some of the Cornish valley gardens abutting the sea, or established in a similarly clement locale on one of the Gulf Stream-moderated islands off the west coast of Scotland, but everywhere else - as here - the species will be confined to a cool greenhouse or conservatory, where the flowers can open as early as February, or as late as July. Drainage must still be perfect, indoors or out, to mirror that epiphytic life up in the trees, though if homebound in a less lavish venue, the roots can be restricted in a small pot. Several forms of *R. veitchianum* have been introduced over the years, these varying from upright to laxly straggly, none grow higher than 2m in cultivation, and when in bloom, all perfume the air with a fragrance very much like verbena.



R. veitchianum (KC 9001)



R. veitchianum (KC 9001)



R. manipurense (Yu 21031)

R. manipurense

Hardiness:
H3-4.
Flowering Period:
May-July.
Distribution in the wild:
SE Tibet; NW Yunnan, China; Assam, Manipur & Nagaland, India; Upper Myanmar.
Growing in open forest, in cane and mixed thickets, amongst scrub,
and on rocky slopes and cliff ledges, at elevations of 1,600-3,700m.

Identification:
Shrub or small tree, terrestrial (mainly) or epiphytic,
compact and bushy to sprawling, broadly upright, spreading or straggly, 1 to 6m high;
branchlets moderately through densely lepidote.
Leaves elliptic through oblong-elliptic to oblong-oval,
9 to 18.6cm long by 3.6 to 8.2cm wide,
apex acute, rounded or obtuse;
upper surface dark green, shiny, lepidote at first;
lower surface scales variably-sized, brown, dark brown or reddish-brown,
contiguous or up to 0.5 times their own diameter apart.
Petiole 10-28mm long, densely lepidote.
Inflorescence 3-9-flowered; fragrant.
Pedicel 5-13mm long, densely lepidote.
Calyx lobes 6-15mm long,
their outer surface sometimes sparsely lepidote at the base.
Corolla 7 to 10cm long, tubular-funnel-shaped, widening with age,
white or white tinged red,
with or without a yellow basal blotch,
the outer surface densely lepidote.
Stamens 17-20, rarely 14;
filaments moderately pubescent along the lower third or half.
Ovary 12-locular.
Style slightly shorter than the corolla,
lepidote, along the lower two-thirds, or from the base to near the tip.
Capsule ellipsoid, 16-40mm long, apex rounded.

Seed Collections:

KW 7136	1926	LS&T 6573	1938	KW 19657	1950
KW 8545	1927/1928	KW 400	1938/1939	KR 7719	2002
KW 9273	1931	KW 17217	1948	AC 5533	2004
KW 10928	1933	KW 17700	1948	TDA 767	2014
KW 11532	1935	KW 17818	1948	TDA 768	2014
Yu 21031	1937	KW 19404	1950	TDA 769	2014

George Watt graduated from the University of Glasgow as both a Bachelor and a Doctor of Medicine in 1873. On the recommendation of Sir Joseph Hooker, he accepted an appointment to the Bengal Education Department as a Professor of Botany at the Hooghly and Patna Colleges of the University of Calcutta, remaining in that role until 1884. But concurrent with his teaching, he was also regularly seconded to various roles assisting the Indian Government, one of which found him, between 1881 and 1882, as the Scientific and Medical Officer for the Demarcation Survey of the India-Burma border, although he only took on the duty after gaining permission to conduct botanical studies during the course of the expedition.

On March 9th, 1882, he was botanising at Japvo, in the Naga Hills, and under his notes for field number 6461, he writes:

> 'An extremely common plant, forming a dense jungle with much branched and kneed stems. Leaf elliptic, bright, shining above, dotted below, and becoming deep rufous with age. Flower buds large, ovate, embraced by ovate-acute deep red scales, the outer 2-3 of which become green and reflexed. Fruits 12 carpelled, leaving a central axis with style 3 inches long. Calyx at bottom, free, long.'

He found it again on April 12th, adding:

> 'A common rhododendron on the smaller peaks. Collected a large supply of seed. Fruit when burst open spreads rotate with long persistent style arching away for 3 inches. Evidently a late flowering species. Flower buds small, will expand three or four months hence. Leaves large, ovate-oblong, bright shining green above with rufous spots below, quite glabrous. Young twigs stout, dark red, glabrous, leaf horizontal.'

And made three further collections of herbarium material later in the month. But Watt also wanted to collect samples when the plants were in bloom, so:

> 'In consequence of an appeal from me, my friend Dr W. Coury, Surgeon to the 42nd N. I., then stationed at Kohima, paid a visit to Japvo to collect some plants for me. Of these perhaps the most successful was the re-gathering of my No. 6461 in full flower. Near to but I think quite distinct from *R. maddenii.* I have referred this point to Kew.'

The specimens were collected on July 22nd, 1882, and logged-in under the field number 7333, but the herbarium staff back in London failed to pick up George Watt's advice that something new had been discovered. Kew's in-house garden staff germinated the seed regardless, grew the plants on under glass, and later transferred one to a border in the Himalayan House. By 1908 it was a bushy shrub around 3m high and the foliage caught the eye of Kew's resident rhododendron expert John Hutchinson, who described Watt's find as *R. maddenii* var. *obtusifolium* in Volume 134 of *Curtis's Botanical Magazine* (tab 8212).

Watt, who was knighted for services to Indian botany and science in 1903, donated his personal herbarium collection of close to 20,000 specimens to the Royal Botanic Garden, Edinburgh, and working his way through those sheets, Isaac Bayley Balfour was intrigued by the six gatherings detailed above. He contacted Sir George - by that time retired and a resident of Lockerbie in the Scottish Borders - who was able to provide additional information from an unpublished manuscript detailing the finds made on the expedition through the borderlands of Manipur, Nagaland and Assam. A new epithet was coined and the Hutchinson variety rebranded as the specific species *R. manipurense* in the 1917 Balfour-Watt co-authored botanic description that appeared in Volume 10 of *Notes from the Royal Botanic Garden, Edinburgh.*

That ranking endured across the publication of another twenty-six full editions of *Notes,* but succumbed when the first part of *A Preliminary Synopsis of the Genus Rhododendron* arrived in 1978's Volume 36, its sunk status confirmed in the full revision of Subgenus *Rhododendron,* penned by James Cullen, which entirely filled 1980's Volume 39, Number 1. Residing under *R. maddenii* ssp. *crassum,* which gathered together those forms of *R. maddenii* with usually pubescent stamens filaments and seed capsules that had a rounded apex, the new grouping took absolutely no account of any published chromosome counts, despite these showing multiple values for the taxa that had been consolidated under that single epithet. Scientific evidence, reported in the two decades after the final Edinburgh Revision summation document hit the presses in 1996, which by now, you can probably quote verbatim, shows that a reproductive barrier exists between the various types of polyploid. A tetraploid with 52 chromosomes can successfully breed with another tetraploid, but not with a diploid or a hexaploid - entities with 26 and 78 chromosomes respectively - especially when the prospective seed and pollen parent have the exact same genetic information encoded on their DNA strands. Without new information entering the genome when sperm and egg fuse, multiple copies of the same chromosome basically get in the way of each other and the result is either a non-viable zygote, or on the odd occasion when a pukka seed does mature and germinate, a plant that is sterile.



R. manipurense



R. manipurense (Yu 21031)



R. manipurense (Yu 21031)

The *R. maddenii* ssp. *crassum* synonymy detailed in the various Edinburgh Revision publications encompasses tetraploids, hexaploids and even dodecaploids - individuals with 156 chromosomes in each of their cells - and as has been documented multiple times already within this text, the science means that it can no longer be maintained.

R. maddenii ssp. *crassum* is accepted herein because it is a tetraploid just like *R. maddenii* ssp. *maddenii,* so the two can successfully breed with each other, but Sir George Watt's *R. manipurense* must be separated from the pack and returned to specific status because it is a hexaploid.

Several other ssp. *crassum* collections have also been recorded as hexaploids - the Yu 21031 gathering, for instance - so these are herein transferred across to *R. manipurense.*

More importantly, two introductions of *R. manipurense* made under the field numbers KW 8400 and KW 9584, on examination, were revealed to be dodecaploids. These must be treated as a new-to-science species and are herein designated, *R. pseudomanipurense*.

Historically, the criteria used to key *R. crassum* from *R. manipurense* relied on the breadth of the leaves and the number of locules in the ovary, respectively 6cm compared with 8cm, and 8 through 11, rather than 12. However, including the known ssp. *crassum* hexaploids within the *R. manipurense* taxon, could well have blurred these distinctions, even though they are maintained in the identification bullet points set out on page 310.

Frank Kingdon-Ward was the plant hunter primarily responsible for the bulk of the *R. manipurense* seed collections that have been introduced into UK cultivation, beginning with KW 7136 in 1926, and concluding 10 lots later in 1950 with KW 19657. The Te Tsun Yu contribution mentioned above was made in 1937, while Ludlow, Sherriff and Taylor secured capsules in 1938. Post the Millennium, Keith Rushforth, Alan Clark and Timothy Atkinson have all reintroduced the species - in 2002, 2004 and 2014, respectively - and it may also have arrived unknowingly, masquerading amidst the forty or so gatherings of ssp. *crassum* that have been returned since 1981.

Mature specimens of *R. manipurense* established in British gardens are usually bushy shrubs to 3m high, with a similar or wider spread. Their hardiness matches that given for *R. maddenii* ssp. *crassum,* so some of the introduced forms will succeed in east coast gardens if given sufficient frost protection, with such specimens rarely loosing their late-opening flower buds. Shade from too much direct sun is also appreciated, but the balance struck is crucial: too much and the habit becomes leggy and straggly and flower bud set tails off; too little and the foliage will burn on a hot and cloudless day in the summer.

Rhodophiles fortunate enough to have a plant in its prime, covered in large white trumpets, each pumping out a sugary-sweet fragrance that lingers long in the still, evening air, will confirm that *R. manipurense* is both a visual and olfactory delight.

R. manipurense (Yu 21031)

R. ciliicalyx

R. ciliicalyx* var. *ciliicalyx

Hardiness:
H3.
Flowering Period:
March-June.
Distribution in the wild:
Upper Myanmar; Yunnan, Guizhou & Guangdong, China; N Vietnam.
Growing in mixed woodland, at forest margins, in scrub and thickets,
on rocky mountain slopes and cliffs, at elevations of 1,000-4,000m.

Identification:
Shrub or small tree, sometimes epiphytic, 1 to 7.5m high;
branchlets often setose at first, becoming glabrous.
Leaves obovate through oblong-elliptic to elliptic-lanceolate,
4.5 to 14cm long by 1.5 to 6cm wide,
apex acute, often abruptly so, acuminate or rounded (rarely);
upper surface somewhat shiny, sparsely lepidote at first,
the margins often sparsely ciliate or setose;
lower surface scales medium to large, brown or brownish-red,
contiguous to 1.5 times their own diameter apart, occasionally more widely spaced.
Petiole 5-16mm long, often moderately setose.
Inflorescence 1-5-flowered; sometimes fragrant.
Rhachis 1-4mm long, pubescent.
Pedicel 5-13mm long.
Calyx undulate and oblique, the lobes 1-7mm long,
their outer surface variably lepidote, their margins moderately long-setose.
Corolla 3 to 10cm long, openly funnel-campanulate through narrowly funnel-campanulate,
white, white tinged pink or rose, pink, or rose,
often with a yellow to brownish basal blotch,
the outer surface variably lepidote, occasionally without scales,
the tube pubescent at the base.
Stamens 10, rarely 11-13.
Style equal to, slightly shorter or slightly longer than the corolla,
lepidote along the lower half or third, sometimes pubescent towards the base.
Capsule 7-25mm long.

Seed Collections:

F 7516	1912/1914	F 26110	1924/1925	AC 1993	1996
F 9919	1912/1914	F 26145	1924/1925	KR 4033	1996
F 11547	1912/1914	F 29559	1930/1931	BASE 9726	2000
F 15667	1917/1919	F 29599	1930/1931	KR 7557	2002
F 16032	1917/1919	McLaren V 169	1932/1939	KR 7577	2002
F 17539	1917/1919	KW 20981	1953	KR 7721	2002
F 17559	1917/1919	SBEC 15	1981	JN 11046	2011
KW 3776	1921	SBEC 115	1981	JN 11076	2011
F 25643	1924/1925	SBEC K141	1981	JN 12193	2012

R. ciliicalyx* var. *lyi

Hardiness:
H2-3.
Flowering Period:
April-June.
Distribution in the wild:
Guizhou, China; Laos; Thailand; Vietnam.
Growing in dense woodland and on dry limestone plateau,
at elevations of 1,200-2,800m.

Identification:
As var. *ciliicalyx* except:
Shrub, 1 to 2.4m high;
branchlets with more persistent bristles.
Leaves oblanceolate through oblong-lanceolate to lanceolate,
3.2 to 9.5cm long by 1.3 to 3.5cm wide,
sometimes decurrent on the petiole;
upper surface margins setose;
lower surface scales near contiguous to their own diameter apart.
Petiole sometimes with narrow wings at the margins, rarely without bristles.
Inflorescence 2-6-flowered.
Rhachis 2-6mm long, glabrous.
Pedicel 5-20mm long.
Calyx 1-2mm long.
Corolla 4.5 to 6cm long, funnel-campanulate,
white,
with or without a yellowish or greenish basal blotch.
Style longer than the corolla,
lepidote along the lower two-thirds or half.

Seed Collections:

Smitnand 6	1974
KR 1922	1991
KR 1929	1991
KR 2215	1992
KR 2225	1992
KR 2334	1992
KR 2359	1992
KR 2961	1994
KR 2962	1994
KR 2987	1994
Valder I19	1994/1995
Valder I20	1994/1995

Jean-Marie Delavay was the first Western plant hunter to encounter *R. ciliicalyx* when he came across a population of plants on Mount Peechaho, close to Mo-so-yn in China's Yunnan Province during 1884. Adrien Franchet described the herbarium material the priest sent back to Paris, his text appearing in Volume 33 of the *Bulletin de la Société Botanique de France,* published in 1886, while the Jardin des Plantes successfully germinated the seed that accompanied the dried specimens. One of those plants was sent to Kew Gardens in 1892, where it flowered in the Temperate House during May 1900 and was illustrated in Volume 127 of *Curtis's Botanical Magazine* (Tab 7782), this published in 1901.

Franchet's Latin prose restricts its description of the ovary to 'parce lepidotum', but as can clearly be seen on the Tab 7782 hand-coloured plate, the calyx-ovary-style cutaway depicts a tapering junction between the ovary and the style.

This detail is crucial as following several re-introductions of seed, along with various other once-specific taxa being made synonymous with *R. ciliicalyx,* confusion regarding the constitution of this juncture became evident. A quick perusal of the four most recently published, significant botanical accounts, evidence this, with David Chamberlain denoting impressed, H. H. Davidian concurring with truncated, while Peter and Kenneth Cox, and James Cullen, correctly opt for tapered (these descriptions respectively to be found in: *The Rhododendron Handbook 1998; The Rhododendron Species,* Volume 1, 1982; 1997's *The Encyclopedia of Rhododendron Species;* and, *Hardy Rhododendron Species: A Guide To Identification,* 2005). It should also be noted that many of the species forms established in cultivation have now been reassessed by the botanists and transferred to either *R. dendricola* (style impressed) or to *R. pachypodum* (style tapering), leaving very few true specimens of *R. ciliicalyx* in our gardens.

However, recent field study in China has reported that both *R. ciliicalyx* and *R. pachypodum* grow on the same mountains; that their populations overlap; and although at the extremes of their range, the two can be separated by a lack of bristles on the branchlets, no scales on the outer surface of the corolla, or by the length of their calyx lobes, these features vary widely and such morphology is duplicated across both of the distributions. Peter and Kenneth Cox believe the two should be merged. They further point out that *R. roseatum* only differs from the two in having slightly wider leaves, although it does have a more westerly distribution. Their advice, set out across the various species entries in their aforementioned *Encyclopaedia,* is pertinent and it is the position adopted herein, with both *R. pachypodum* and *R. roseatum* sunk under the earlier-described taxon, *R. ciliicalyx*. The identification bullet points reflect this merger.

R. pachypodum was discovered by George Forrest in August 1913 while he was exploring the western flank of the Tali Range (Cangshan) in the west of Yunnan. The species was described by Isaac Bayley Balfour and William Wright Smith in Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh,* which was published in 1916.

R. roseatum was also a Forrest find of 1913 vintage, but made earlier in the year during May, and on the mountains of the Shweli-Salween Divide. It was described by John Hutchinson in *Notes,* Volume 12, which went to the printers in 1919.

Additionally, another ten rhododendrons have previously been made synonymous under either *R. ciliicalyx, R. pachypodum* or *R. roseatum*. These were: *R. atentsiense, R. lasiopodum, R. missionarum, R. parryae* (part), *R. pilicalyx, R. pseudociliicalyx, R. pseudociliipes* (part), *R. scottianum, R. supranubium* (part), and *R. yungchangense*.

R. ciliicalyx is similar in many respects to *R. ludwigianum,* a more southerly-distributed relative endemic to Thailand, but it lacks a covering of pubescent hairs on the pedicel, while from the equally mirror-imaged *R. dendricola,* it is distinguished by a tapering rather than impressed style.

It was the Chinese botanist R. C. Fang, writing in Volume 57, Part 1, of *Flora Reipublicae Popularis Sinicae,* published in 1999, who formally and correctly reduced the ranking of *R. lyi* to a variety of *R. ciliicalyx.* Julien Cavalérie had discovered the species growing at Gan Chouen in Guizhou (then Kweichow) during April 1912 and named it for his expedition headman, J. Ly. Using the dried material and field notes Cavalérie despatched back to Paris, Augustin Hector Léveillé was able to pen the botanic description that appeared in Volume 13 of *Repertorium Specierum Novarum Regni Vegetabilis* in 1914. No seed was gathered that early in the season, though another collector, associated with France's premier seed supply company Vilmorin - the Bees Seeds of the Third Republic, if you will - soon rectified that and its company chairman, Maurice Lévêque de Vilmorin, was able to add *R. lyi* to the list of rare plants grown under glass at the family estate at Verrières-le-Buisson. From where the species was introduced into the UK.

R. lyi differs from *R. ciliicalyx* in having more persistent setae on the branchlets and leaf margins; narrower leaves with bases that occasionally extend part way down the petiole margins as wings; a calyx with much shorter lobes, 1-3mm long rather than 1-7mm; and a smaller corolla, to 6cm long rather than 10cm. Reversing the trend, the rhachis and pedicel are slightly longer. But none of these variances, even in combination, merited the retention of specific status, as R. C. Fang made clear. Nor was there a niche geographic distribution upon which subspecies ranking might have been hung.

As with most of the other Subsection *Maddenia* species, cultivation of either variety of *R. ciliicalyx* outdoors in the UK is only possible in well-sheltered gardens along the west coast, with greenhouse protection being a requirement elsewhere. Specimens tend to be laxly upright, forming straggly bushes to around 2m high, and are free-flowering with age. In the wild, the bulk of the population grow terrestrially rather than epiphytically, so while drainage provision need not be quite as swift as for those with their roots up in the trees, it will still need to be on the better side of exemplary.

Vietnamese forms of *R. ciliicalyx* var. *lyi* have a more upright, less straggly habit and are proving hardier than their Chinese counterparts.

The language-of-the-dead specific species epithet refers to the bristly hairs sprouting from the calyx margins.

As with *R. veitchianum,* the *R. ciliicalyx* photos were taken in the Queen Elizabeth II Temperate House at the Savill Garden, Windsor, while those of *R. lyi* feature a plant that grows outdoors in the woodland at Muncaster Castle Gardens, bears an affinity label, but alas, no collector's field number.



R. ciliicalyx



R. lyi 'affinity'



R. lyi 'affinity'



R. lyi 'affinity'

R. maddenii* ssp. *crassum

Hardiness:
H3-4.
Flowering Period:
May-July.
Distribution in the wild:
SE Tibet; Manipur, India; Upper Myanmar; NW Yunnan, China; Thailand; N Vietnam.
Growing in dry woodland and conifer forest, in scrub and mixed thickets,
on cliffs and rocky slopes, amongst and on rocks and boulders,
at elevations of 1,500-3,650m.

Identification:
Shrub or small tree, terrestrial (mainly) or epiphytic,
compact and bushy to sprawling, broadly upright, spreading or straggly, 1 to 6m high;
branchlets moderately through densely lepidote.
Leaves lanceolate through oblong-lanceolate to obovate or elliptic (usually),
6 to 18.6cm long by 2.3 to 6.2cm wide,
apex acute, rounded or obtuse;
upper surface dark green, shiny, lepidote at first;
lower surface scales variably-sized, brown, dark brown or reddish-brown,
overlapping, contiguous or up to 0.5 times their own diameter apart.
Petiole 5-26mm long, densely lepidote.
Inflorescence 1-11-flowered; fragrant.
Pedicel 5-15mm long, densely lepidote.
Calyx lobes 1-20mm long,
their outer surface sometimes sparsely lepidote at the base.
Corolla 3.5 to 12.5cm long, tubular-funnel-campanulate, widening with age,
white, often flushed or lined pink, orange, rose or purple, rarely wholly pink,
with or without a yellow basal blotch,
the outer surface lepidote, wholly so, or from the base to the middle of the lobes.
Stamens 15-27;
filaments usually moderately pubescent along the lower third or half,
but sometimes glabrous.
Ovary 8-11-locular.
Style longer than the corolla,
lepidote along the lower third, half or two-thirds, or from the base to the tip.
Capsule ellipsoid, 10-40mm long, apex rounded.

Seed Collections:

F 4139	1906	F 25854	1924/1925	LS&T 6676	1938	KR 3026	1994
F 9431	1912/1914	F 25857	1924/1925	LS&T 7012	1938	KR 3057	1994
F 15887	1917/1919	F 26068	1924/1925	R 133	1948/1949	KR 3116	1994
F 17572	1917/1919	F 26109	1924/1925	KW 20702	1953	JN 1058	1999
F 18173	1917/1919	F 26120	1924/1925	KW 21005	1953	DGEY 027	2001
F 18210	1917/1919	F 26923	1924/1925	SBEC 295	1981	GR 5003	2003
Farrer 1044	1919	F 27110	1924/1925	SBEC 640	1981	GR 5028	2003
KW 3248	1919	F 27593	1924/1925	SBEC 694	1981	NAPE 0019	2003
F 20118	1921/1922	F 27615	1924/1925	SBEC 1072	1981	NAPE 0025	2003
F 20917	1921/1922	F 27724	1924/1925	Kinmouth 155	1991	AC 5561	2004
F 21582	1921/1922	F 27776	1924/1925	KR 1894	1991	KR 8093	2005
F 21936	1921/1922	KW 7553	1926	KR 2165	1992	KR 8094	2005
KW 5448	1922	R 18404	1929	KR 2203	1992	C&G 5617	2006
R 6370	1923/1924	R 18434	1929	KR 2205a	1992	ZH-G 067	2006
R 11166	1923/1924	F 28311	1930/1931	KR 2229	1992	CWT 6362	2011
R 11276	1923/1924	F 28312	1930/1931	KR 2246	1992	CWT 6424	2011
F 24496	1924/1925	F 28319	1930/1931	SSNY 374	1992	JN 11044	2011
F 24730	1924/1925	McLaren D333	1932/1939	AC 708	1993	JN 11082	2011
F 24747	1924/1925	McLaren S 122	1932/1939	Tran 34	1993	BE 12-26	2012
F 25586	1924/1925	L&S 2332	1936	CNW 852	1994	KR 10435	2012
F 25629	1924/1925	L&S 2338	1936	CNW 895	1994	KR 10552	2012
F 25767	1924/1925	Yu 16694	1937	KR 2978	1994	TDA 595	2014

The decision to maintain two separate subspecies of *R. maddenii* stems from the machinations of the 1978 and 1980 published papers that updated the classification of Subgenus *Rhododendron* and enforced mass synonymy on a tangle of lookalikes that over one-hundred different seed introductions and countless-more herbarium plates had metastasised into a dozen species, nearly all of which were given specific ranking by a host of rhodo-savvy botanists pre the arrival on the scene of Doctor James Cullen and Doctor David Chamberlain. Geography was the paramount reason the newly tasked pair evidenced for their dual continuance choice - ssp. *maddenii,* and ssp. *crassum* - the west-east division somewhat more decisive than the three morphologic criteria used for keying the two apart might otherwise imply, especially given the natural variation on the ground.

R. maddenii ssp. *maddenii* occurs in a swathe extending from the north-east Indian states of Sikkim and Arunachal Pradesh, through Bhutan, into southern Tibet, while *R. maddenii* ssp. *crassum* takes over on the ground in Manipur and southeast Tibet, runs into northwest Yunnan, and in the south stretches across Upper Myanmar and Thailand into the northern provinces of Vietnam. Populations in the west basically tend to have slightly shorter obovate leaves, which are less than 6cm wide; stamen filaments that more often lack hairs than boast them; and mature seed capsules with decidedly unpointed apexes, indeed the tops could have been sliced off by a pair of secateurs were the shrivelled remains of the style not still in place. The eastern multitudes on the other hand, have capsules with rounded tops that taper rather than flatten-out abruptly; stamen filaments that are usually quite densely pubescent along the lower half of each tube, but not always; and leaves that are mostly elliptic, marginally longer, but distinctly wider, each with a lateral span of between 5.5 and 8cm.

However, the best approach is to treat the above specification listing as a generality, rather than a rule of law, especially as the amount of variance within any part of the wild populace is considerable and intermediates exist that have been introduced into cultivation (LS&E 12248, to list but one).

Also, published accounts vary.

On the shape of the mature seed capsules, for instance.

The Rhododendron Handbook 1998 (species entries authored by David Chamberlain), along with those in *Hardy Rhododendron Species: A Guide To Identification* (James Cullen's 2005 publication), reverse the blunt-rounded characteristic set out above, this validated by personal observation. Peter and Kenneth Cox unknowingly pre-endorsed my acuity in their 1997 *Encyclopedia of Rhododendron Species,* as does the *Flora of China* website, plus the photographs below. And the origin of the mistake? Volume 39, Number 1, of *Notes from the Royal Botanic Garden, Edinburgh;* specifically, the key on page 33.



R. crassum



R. maddenii

R. crassum was discovered by the missionary priest and amateur botanist Jean-Marie Delavay sometime around 1885, on the mountains close to modern-day Dali in western Yunnan. Herbarium material was returned to Paris where the species was described by Adrien Franchet, his text appearing in Volume 34 of the *Bulletin de la Société Botanique de France,* published in 1887.

Three species that were previously assigned specific status - *R. chapaense, R. manipurense* and *R. odoriferum* - were consigned to synonymy under *R. maddenii* ssp. *crassum* by the aforementioned Edinburgh Revision botanists - in *A Preliminary Synopsis of the Genus Rhododendron, Notes,* Volume 36, 1978 - with the latter two then doggedly maintained under the RHS horticultural group arrangement by rhodophiles from Land's End to John o'Groats. However, if botanic events had played out correctly, it would have been the *R. crassum* epithet that was sunk, for Sir George Watt had actually discovered *R. manipurense* in 1882 and returned specimens and seed to Kew that very same year. Yet due to an oversight on the part of the overworked herbarium staff, which would echo their partial mishandling of Augustine Henry's dried material, it took twenty-six years before the collection was recognised as being somewhat different and for a description to appear in print as *R. maddenii* var. *obtusifolium*. A further decade would pass before specific status and a decent name were conferred, but by then it was too late.

Thankfully, that ranking can now be restored and the epithet rescued from obscurity: for *R. manipurense* is a hexaploid with 78 chromosomes, while *R. maddenii* ssp. *crassum,* like its sister, *R. maddenii* ssp. *maddenii,* is a tetraploid with 52. However, the situation is much more complicated than those headline figures reveal, as multiple chromosome counts for both species were listed in *The Rhododendron Year Book 1950*. The article reporting such, *Chromosome Numbers in Species of Rhododendron,* was written by members of the science team at RHS Wisley - namely, E. K. Janaki Ammal, D.Sc., I. C. Enoch, B.Sc., and Margery Bridgwater - so the published results can be used with confidence. They showed that *R. crassum* was both a tetraploid and a hexaploid, and that *R. manipurense* was not only a hexaploid, but a dodecaploid as well, specimens of this latter class of polyploid having 156 chromosomes in each of their cells.

Reproductive barriers exist on a vertical plane between the various polyploid types. A hexaploid cannot breed successfully with a tetraploid, for instance, if normal cell division occurs at meiosis. Nor a dodecaploid with either a hexaploid or a tetraploid, if it arises from the same parent species. But a hexaploid x hexaploid cross is without problem, producing viable zygotes and fertile seedlings. As is a tetraploid x tetraploid pairing, or a match between dodecaploids. The science therefore dictates that synonymy cannot be imposed on a group of plants, despite their near identical, outward, morphological appearance, if their chromosome counts are not the same.

The solution adopted is to resolve the *R. crassum* synonymy issues as follows:

R. maddenii ssp. *crassum* is accepted as a tetraploid where $2n = 52$.

R. manipurense is logged-in as a hexaploid where $2n = 78$, and returned to specific status. And those collections of *R. crassum* also revealed to be hexaploids - plants from seed gathered under Yu 21031, for instance - are transferred to *R. manipurense*.

The two specimens of *R. manipurense* that were recorded as dodecaploids - plants from seed gathered under the field numbers KW 8400 and KW 9584 - are treated as a new species herein, and named *R. pseudomanipurense*. This epithet maintains the linkage with their putative parent species, but also indicates that genetically, they are a new entity.

For purely morphological reasons, the status of *R. odoriferum* must also change as it has a style that is impressed at the junction with the ovary. Described in 1927 from a cultivated plant and only known from one gathering made in the Upper Nyamsang Valley, southern Tibet, by Colonel Frederick Marshman Bailey, specific status is herein returned and the species moved across into Series *Formosa*. Regrettably, no chromosome count has so far been published for *R. odoriferum,* so its relationship with *R. polyandrum* can only be surmised.

Three morphologic characteristics now remain 'constant' across the entire combined populations of *R. maddenii* ssp. *crassum* and *R. maddenii* ssp. *maddenii:* the large number of stamens populating each corolla, a count totalling between 15 and 27; the number of chambers (cells, cavities or locules) in each ovary - 8 to 12; and the tapered junction between the ovary and the style. In combination, these features can be used to identify either subspecies from any member of Series *Formosa,* as well as from all those residing in Series *Dalhousiae* apart from *R. manipurense* and *R. pseudomanipurense*. Historically, the traditional morphology suggested the latter two were distinguished from ssp. *crassum* by the broader leaves - to 8.2cm wide - and by the 12-celled ovary - instead of one with 8 through 11 locules - but such distinctions may not fully reflect the situation post the transfer of the hexaploid forms of ssp. *crassum* to *R. manipurense*.

It was George Forrest who introduced *R. maddenii* ssp. *crassum* into UK cultivation during 1906, this one of the only rhododendron species to emerge from the inept clutches of A. K. Bulley and the propagating team he employed at Bees Seeds Ltd - see Volume 1, page 126, for a full rundown on that mischanter - though a more likely scenario is the inadvertent acquisition of seed from one of the dried herbarium specimen sheets that were returned to Edinburgh Botanic. The species opened its first flower buds in the UK at Lamellen, the Cornish garden of Edward Magor, in 1914.

Experience has shown that in cultivation, the hardiness of *R. crassum* varies. More confusingly, it does not appear related to the altitude at which the collection was made. This is evidenced by some forms gathered from low elevations prospering outdoors all year round in a number of Scottish east coast gardens, while others, secured from higher reaches of the endemic range, require overwinter protection under glass. In general however, plants of ssp. *crassum* are hardier than those of ssp. *maddenii,* which is often given as a horticultural reason for maintaining the specific taxon's subspecies division.

Hardiness issues apart, a reluctance to opt for life up in the trees makes growing *R. maddenii* ssp. *crassum* in a British garden straightforward, the drainage requirements being far less exacting than for some of its fellow series or subsection residents. Bloom time is generally later in the season, with many clones not opening their flower buds until late June or early July, and a few opting for early August. But the display is rarely full out or eye-catching, as most specimens follow the practice of never opening more than a few buds at any one time, so the flowering period is prolonged rather than spectacular. Heat-tolerance is a virtue and the subspecies will thrive in southern gardens, though not in full sun, providing watering cans are available to sidestep any hosepipe ban or an equipment failure on the part of the utility company. As would be expected from the wide natural range and the large number of introductions, variation is the name of the game, with medium-sized bushy shrubs rubbing shoulders with leggy monsters, and either type sporting short or long leaves, or opening small or large corollas. Those flowers are invariably white or creamy-white, with some pink flushing, and their scent is simply divine, a mature plant on a calm evening flooding the garden with a deliciously sweet balm.



R. crassum (AC 708)



R. crassum (F 15887)



R. crassum (KR 3057)



R. crassum (LS&T 6676)



R. crassum

R. crassum

R. ludwigianum

Hardiness:
H2-3.
Flowering Period:
March-May.
Distribution in the wild:
N Thailand.
Growing on open ridges amongst limestone rocks,
at elevations of 1,600-2,200m.

Identification:
Shrub, 1 to 1.5m high;
branchlets without bristles; bark purplish-pink.
Leaves thick and rigid, obovate through elliptic,
3 to 12cm long by 1.5 to 6cm wide,
apex rounded or obtuse;
upper surface turning crimson-purple with age, lepidote or not,
the margins ciliate at first, the hairs short;
lower surface turning crimson-purple with age, the scales large and brownish,
0.5 to 1.5 times their own diameter apart.
Petiole 4-18mm long, turning crimson-purple with age.
Inflorescence 2-4-flowered.
Pedicel 3-10mm long, pubescent.
Calyx minute, oblique, rim-like or lobed, these 1-3mm long,
their outer surface moderately through densely lepidote,
their margins long-ciliate.
Corolla 5.2 to 9.3cm long, funnel-campanulate,
white, sometimes flushed rose,
or with pale pink bands along the middle of the tube and the lobes,
often with a yellow basal blotch,
the inner surface pubescent,
the outer surface densely pubescent at the base of the tube,
or all over the lobes and the tube,
and sparsely through moderately lepidote on the lobes or all over,
the lobe margins crinkled.
Stamens 10.
Style equal to or longer than the corolla, pubescent below.
Capsule oblique at the base, *c.* 16mm long.

Seed Collections:

Smitinand 7819	1962

R. ludwigianum was found by Carl Curt Hosseus, the first Western botanist permitted to explore northern Thailand. The species is named for the plant hunter's father and was discovered at Doi Chiengdao (Doi Djang Dao) in mid February 1905. Seed and herbarium material were gathered, a proportion of which arrived in the UK later that same year through the institutional links Kew Gardens had already established with the Munich Botanical Garden in Bavaria. The Hosseus-penned botanic description can be found within Volume 28 of *Beihefte zum Botanischen Centralblatt,* which was published in 1911, while his more wide-ranging account of the expedition *Through King Chulalongkorn's Kingdom (1904-1906): the First Botanical Exploration of Northern Thailand* appeared in print the following year (an English translation has been available since 2001).

Because it is not reliably frost-hardy, even when grown from seed collected at the upper reaches of the endemic distribution, outdoor cultivation of *R. ludwigianum* is only possible for those gardening in the mildest of North Atlantic Drift-moderated locales along the UK's west coast, or on one of Scotland's offshore islands, where temperatures rarely fall below zero. Logan Botanic, midway down the southern peninsula of the Rhins of Galloway, with the sea close to hand on three sides, is likely the closest approximation of an island to be found on the UK mainland, and with a microclimate heavily influenced by the northern arm of the Gulf Stream, Edinburgh's outstation can boast long-established specimens of *R. ludwigianum* from Tem Smitinand's 1962 collection amongst its array of tropical flora, tree ferns and palms, despite a few hard winters getting through the localised temperature uplift in the sixty years since planting. Yet these still remain low straggly plants, with few branches, courtesy of their near-epiphytic nature. Fine specimens of the species will also be found growing further up the Scottish west coast at Arduaine Gardens, located roughly halfway between Lochgilphead and Oban.

Despite having no scent and a far from populous truss, the flowers are outstanding and clearly the reason why this species will often be found in botanic institute collections grown under glass (as in Edinburgh's Temperate Palm House).

The thick and rigid foliage is also notably distinctive, especially as the leaves darken to a dull crimson-purple at the end of the growing season. Wart-like scars along the branchlets indicate where these have been discarded. The small calyx, with a fringe of long hairs on the rim or lobe margins, is another identifying characteristic, as is the densely lepidote abaxial leaf surface, where some scales are quite close together but never touching, others more distant. The morphologic diagnostic is completed by hairy pedicels, pubescence on the inner and outer surfaces of the corolla, and scales on the crinkly-margined lobes.



R. ludwigianum (Smitinand 7819)



R. ludwigianum (Smitinand 7819)



R. ludwigianum (Smitinand 7819)

R. megacalyx

Hardiness:
H3-4.
Flowering Period:
April-June.
Distribution in the wild:
E & SE Tibet; Arunachal Pradesh, India; NW Yunnan, China; NE Upper Myanmar.
Growing on steep cliffs and banks, in thickets, scrub and cane breaks,
in and at the margins of evergreen broad-leaved woodland and *Tsuga* forests,
at elevations of 1,800-4,000m.

Identification:
Shrub or small tree, rarely epiphytic, 1 to 7.6m high;
branchlets without bristles.
Leaves elliptic through elliptic-obovate to oblong,
9.8 to 19cm long by 3 to 7.6cm wide,
apex rounded or broadly obtuse;
upper surface bright, dark or olive-green, more or less bullate, matt,
densely lepidote at first;
lower surface scales small to large, dimorphic,
rimless and sunk in pits (smaller-sized), or with rims and less deeply sunk (larger-sized),
golden or reddish-brown, near contiguous to their own diameter apart,
the veins conspicuously raised.
Petiole 10-30mm long, shallowly grooved above, dark purple or green.
Inflorescence 2-6-flowered; strongly fragrant.
Rhachis 4-8mm long, without scales.
Pedicel 18-32mm long, dark purple, purple or green, glaucous-pruinose or not,
without scales,
lengthening in fruit, spreading or reflexed.
Calyx cupular, dark purple, green or pinkish-green,
enlarging and becoming papery in fruit,
deeply lobed to between half and their full length,
these 17 to 30mm long by 12 to 18mm wide,
their outer surface glaucous-pruinose or not, without scales.
Corolla 6.5 to 11cm long,
funnel-campanulate through tubular-campanulate, oblique, the lower lobes larger,
white or cream, occasionally flushed pinkish-purple,
usually yellowish or greenish at the base,
the outer surface lepidote, sometimes only on the tube.
Stamens 10, shorter than the corolla tube.
Capsule 18-25mm long,
usually shorter than and enclosed by the calyx lobes.

Seed Collections:

F 15774	1917	F 25999	1924/1925	KW 9261	1931
Farrer 918	1919	F 26091	1924/1925	R 22440	1932
F 20094	1921/1922	F 27101	1924/1925	Yu 19568	1937
F 20897	1921/1922	F 28621	1924/1925	LS&E 13603	1946/1947
F 21696	1921/1922	KW 6286	1924/1925	KW 19432	1950
F 22822	1921/1922	KW 6781	1926	KW 20836	1953
R 11222	1923/1924	KW 7139	1926	CCHH 8076	1997
F 24688	1924/1925	KW 8205	1927/1928	BASE 9532	2000
F 24729	1924/1925	F 29809	1930/1931	DGEY 026	2001



R. megacalyx

Frank Kingdon-Ward was the first Western plant hunter to encounter *R. megacalyx,* discovering a population of plants in the Nwai Valley of northeastern Upper Myanmar during June 1914. He described the species with Sir Isaac Bayley Balfour in 1916, the pair writing in Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh*.

Distinguishing *R. megacalyx* from the other members of Series *Dalhousiae* is without problem, the enormous calyx an immediate giveaway: deeply lobed; each coloured petal between 17 and 30mm long and 12 to 18mm wide when the flowers first open; without any scales or hairs on the exterior whatsoever, though there may be a powdery-white waxy dusting, which morphologically is assessed as being glaucous-pruinose for the botanically-minded. Those lobes then proceed to get even longer after the corollas drop, extending and becoming papery, completely enclosing the small, stubby seed capsules.

The pedicels also lengthen as the fruits mature and within the series, are noteworthy for their total lack of scales.

The leaves are another standout, dark green convex spearheads, pointed, but ultimately rounded at the apex, with veins deeply impressed above, conspicuously raised below. They have two kinds of scales covering the lower surface, the smaller-sized being rimless and sunk in pits, the larger ones far less deeply sunk, their domed-cap clearly defined from the circumference.

The leaf stalks too are often coloured purple and have a shallow groove running lengthwise along their top.

And finally, the corollas are lopsided - obliquely mouthed is a more erudite term - with the lower lobes larger than the three above.

Only unlabelled specimens of *R. nuttallii* are likely to cause a brief identity crisis, but the larger and far more bullate foliage, lepidote and hairy pedicel and calyx, and the 7cm-long mature seed capsules (very rarely completely enclosed by the calyx lobes) will quickly dispel any lingering doubts.

George Forrest was the collector who received credit for introducing *R. megacalyx* into UK cultivation, his gathering of seed from western Yunnan arriving in 1917. Eleven additional lots from the Scotsman followed over the years, with all the major collectors of the day - Farrer, Kingdon-Ward, Ludlow and Sherriff, Rock and Yu - adding their own gatherings to the gene pool available to British gardeners. Yet strangely, only three finds have been logged in more recent times.

R. megacalyx is a bushier plant in cultivation than any of the three *R. lindleyi* varieties or *R. nuttallii,* often forming a broadly upright dome to around 2.5m high, but more narrowly based. Again, outdoor cultivation is exclusively for those living along the western or southern coasts of Britain, with the species successful grown in the woodland at Exbury, Hampshire, but not much further east thanks to the oft-felt bite of Continental cold fronts. However, unlike most of the Subsection *Maddenia* species, the taxon can develop into a fine specimen if grown under glass, although mature plants and modestly-sized conservatories are probably not a good fit. Some forms have branches that are more laxly floppy when the blooms open than others, but none should have their roots wrested from the ground by the weight of the flowers. The strong scent wafting from the flowers has a distinctly nutmeg-like aroma.

The Latin epithet speaks for itself, with no translation needed, even for those who managed to avoid such lessons in school.



R. megacalyx

R. levinei

Hardiness:
H2-4.
Flowering Period:
March-May.
Distribution in the wild:
Guizhou, Hunan, Guangxi, Guangdong & Fujian, China.
Growing in woodland, at forest margins, in thickets, on hillsides and in rock crevices,
at elevations at 950-1,500m.

Identification:
Shrub or small tree, 1 to 4m high;
branchlets often setose.
Leaves thick, oblong-obovate through elliptic-obovate,
4 to 10cm long by 2 to 5cm wide,
apex rounded, sometimes emarginate;
upper surface sparsely lepidote, densely pubescent at first, the hairs long,
the margins setose along the lower half or at the base;
lower surface brownish, pubescent,
the scales golden, 1 to 2 times their own diameter apart.
Petiole 5-15mm long, without a groove, densely villous.
Inflorescence 1-4-flowered; fragrant.
Pedicel 10-20mm long, hairy at first.
Calyx deeply lobed, these 7-10mm long,
outer surface sparsely lepidote, hairy.
Corolla 4.5 to 5cm long, funnel-campanulate,
white or creamy-white,
the outer surface lepidote.
Stamens 10, the longest half as long as the corolla.
Ovary pubescent.
Capsule 18-20mm long.

Seed Collections:

TH 2805	2002

R. levinei was discovered growing in a deep, forested ravine, on the upper slopes of Lohfau Shan in Guangdong (then Kwangtung) by Elmer Drew Merrill and Carl Oscar Levine during August 1917. The single specimen they encountered, found in fruit with its branches sticking out over a small stream, was described by Merrill in Volume 13 of the *Philippine Journal of Science (Section C, Botany)* published in 1918, with the epithet an obvious honorific for his expedition colleague, who, when not out plant hunting, was a dairy expert based at the Canton Christian College. As Professor Levine, he would garner worldwide acclaim for a string of literary bucolic classics that included *A Study of Milk Produced in Kwangtung* (1918), *Notes on Farm Animals and Animal Industries in China* (1919), and the bestselling *Butchering and Curing Meats in China* (1921), these titles still avidly devoured today - apparently.

Although a collection of seed masquerading as *R. levinei* was introduced into British gardens in 1981 - their display of corollas between 8 and 9cm in length giving the game away at first flowering - the true species was not authentically introduced until 2002, when Tom Hudson of Tregahan Garden, Cornwall, brought back seed from a population of plants established at Maoershan in Guangxi. Those seedlings exhibited the densely hairy petiole and leaves that are amongst the taxon's morphologic calling cards, and then opened small creamy-white flowers that were no more than 5cm in length, each enclosing stamens half as long as the corolla. They also proved remarkably hardy in gardens more distant from the influence of the North Atlantic Drift, with Peter Cox reporting the successful cultivation of *R. levinei* in the woodland at Glendoick (*Rhododendrons, Camellias & Magnolias 2016*).

As indicated above, the hairy leaves and petioles are distinctive, swiftly identifying the species from its Series *Dalhousiae* cohorts. Those hairs are usually fairly long and best described as being hispid - stiff, but not quite bristles - which on the adaxial surface are mostly lost with age, while those on the abaxial lamina, as well as along the leaf margins and on the petiole, are more or less persistent. They will also be found on the pedicel, calyx and ovary, though again, how long they linger on each, varies.

R. horlickianum
Hardiness:
H2-3.
Flowering Period:
April.
Distribution in the wild:
N Myanmar.
Growing in thickets, on cliffs and amongst rocks terrestrially, or epiphytically on trees,
at elevations of 1,200-2,100m.

Identification:
Shrub, terrestrial or epiphytic, 1 to 3m high;
branchlets setose at first.
Leaves elliptic-lanceolate through obovate-lanceolate,
5 to 11.5cm long by 1.8 to 4.5cm wide,
apex long-acuminate;
upper surface shiny, elepidote, the margins often ciliate;
lower surface scales large, brown or dark brown,
1 to 3 times their own diameter apart.
Petiole 4-16mm long, setose at first.
Inflorescence 2-4-flowered; somewhat fragrant, or not.
Pedicel 5-8mm long.
Calyx oblique, disc-like, 1mm long,
the outer surface and margins moderately through densely lepidote,
the margins usually sparsely setose, the hairs fine, filiform-acicular.
Corolla 6 to 7cm long, funnel-campanulate, often openly so,
white or creamy-white, flushed pink or rose,
with a yellow-orange basal blotch and pink bands on the outside of the lobes,
the outer surface sparsely through moderately lepidote,
and moderately through densely pubescent, especially so on the tube.
Stamens 10-11.
Style equal to or slightly shorter than the corolla.
Capsule oblique at the base, 12-25mm long.

Seed Collections:

KW 6769	1926
KW 9170	1931
KW 9361	1931
KW 9403	1931
BE 12-19	2012
BE 12-38	2012


R. horlickianum (KW 9403)

It was Frank Kingdon-Ward who discovered *R. horlickianum* in northern Myanmar, a group of plants growing close to his base camp at Seinghku Wang, spotted in May 1926, though the collection - under field number KW 6769 - was not recognised as a new-to-science species for almost fifty years. This occurred during the re-examination of all the herbarium plates covering the Subsection *Maddenia* rhododendrons that was carried out by James Cullen in the mid-1970s in preparation for his Edinburgh Revision texts, with the gathering added to three other seed collections Ward had made along the valley of the Adung river in Myanmar's Kachin State during 1931. These had originally been identified as *R. formosanum* (KW 9170), and *R. formosum* (KW 9361 and KW 9403), but H. H. Davidian corrected those determinations in the 1972 edition of *Rhododendrons,* the RCMG yearbook published by the RHS. He chose to name this botanic phoenix unexpectedly risen from the ashes, for Sir James Horlick, the renowned hybridiser and creator of Achamore Gardens on the Isle of Gigha, who had died on New Year's Eve 1971.

R. horlickianum most closely resembles *R. formosum* var. *inaequale,* a member of Series *Formosa,* though the style juncture will of course immediately differentiate the two. As will the distinctive, long-acuminate tip at the leaf apex, the moderately through densely pubescent outer surface of the corolla, flowers that are never strongly fragrant, and rather less decisively, a calyx that is a minute rim with lobes no more than 1mm long. In the wild, the endemic plant populations of the two species are disjunct and distant from one another, with *R. horlickianum* found only in northern Myanmar, while var. *inaequale* resides in the north-eastern Indian states of Arunachal Pradesh, Manipur and Meghalaya.

Within Series *Dalhousiae,* the pubescent flowers are uniquely distinctive, for although some hairs will be found on the outer surface of the tube of several other series members, only *R. horlickianum* sports a covering of such on the corolla lobes. Out of flower, the long-acuminate leaf apex will often be sufficient of itself to provide an accurate identification.

Mirroring the majority of Subsection *Maddenia* species, *R. horlickianum* will only succeed outdoors in UK cultivation where the influence of the Gulf Stream moderates the climate along the fringe of the west coast and a planting site within a woodland sanctuary provides near frost-free conditions. Mature 2m-high specimens will therefore prove hard to find, despite the beautiful pink or rose tones flushing the flowers.



R. horlickianum (KW 9403)



R. horlickianum (KW 9403)

R. pseudomanipurense

Hardiness:
H3-4.
Flowering Period:
May-July.
Distribution in the wild:
Assam, India; Upper Myanmar.
Growing in open forest, in cane and mixed thickets, amongst scrub,
and on rocky slopes and cliff ledges, at elevations of 2,400-3,700m.

Identification:
Shrub or small tree, terrestrial (mainly) or epiphytic,
compact and bushy to sprawling, broadly upright, spreading or straggly, 1 to 6m high;
branchlets moderately through densely lepidote.
Leaves elliptic through oblong-elliptic to oblong-oval,
9 to 18.6cm long by 3.6 to 8.2cm wide,
apex acute, rounded or obtuse;
upper surface dark green, shiny, lepidote at first;
lower surface scales variably-sized, brown, dark brown or reddish-brown,
contiguous or up to 0.5 times their own diameter apart.
Petiole 10-28mm long, densely lepidote.
Inflorescence 3-9-flowered; fragrant.
Pedicel 5-13mm long, densely lepidote.
Calyx lobes 6-15mm long,
the outer surface sometimes sparsely lepidote at the base.
Corolla 7 to 10cm long, tubular-funnel-shaped, widening with age,
white or white tinged red,
with or without a yellow basal blotch,
the outer surface densely lepidote.
Stamens 17-20, rarely 14;
filaments moderately pubescent along the lower third or half.
Ovary 12-locular.
Style slightly shorter than the corolla,
lepidote, along the lower two-thirds, or from the base to the tip.
Capsule ellipsoid, 16-40mm long, apex rounded.

Seed Collections:

KW 8400	1927/1928
KW 9584	1931

Visually, the morphologic characteristics of *R. pseudomanipurense* will mirror those of *R. manipurense,* but at a cellular level, while not as different as chalk and cheese, genetically, the latter is a hexaploid with six sets of thirteen chromosomes, the former, a dodecaploid with twelve sets of thirteen, their respective counts amounting to 78 and 156.

R. pseudomanipurense is therefore almost certainly the result of what scientists term an ‘abrupt speciation event’. Subjected to some kind of stress, the cell division process that occurs after normal haploid gametes fuse in the ovary to become a zygote, went haywire. Inside a *R. manipurense* ovary, the sperm and egg in question would have had one complete set of chromosomes each, which for a hexaploid totals 39, as the intricacies of meiosis can take place without incurring errors - 78 chromosomes divide up into two sets of 39, with no leftover strays. At fusion, the haploid gametes pair-up to again give the newly created individual its full compliment of DNA, which for a hexaploid is expressed as $2n = 78$.

Unless some kind of stress is induced.

Cue an excessively hot day, for instance. Or an unexpectedly cold night. Yet another synodic rotation period of unseasonal drought. Or even a random hit by an ionised cosmic particle, 240 of which pass through every square metre at ground level on the Earth every second.

24/7.

Although like the 65 billion neutrinos that also pass through each and every square centimetre of our skin at a matching flux rate, very few hit anything.

Except occasionally…

So after replicating the chromosomes, instead of dividing properly to produce two identical hexaploid cells that maintained the $2n = 78$ equation, the egg-sperm combination jumped a step and failed to divide, giving $2n = 156$. Which scientifically, is described as the somatic doubling of a zygote genome. Normal cell division then maintained the dodecaploid chromosome count through each successive stage in the process, with a viable seed, the end result. One moreover, that in time, after germinating, was able to self-pollinate and so continue its lineage.

Frank Kingdon-Ward encountered just such a group of plants during his 1927-28 expedition to the Mishmi Hills and Assam, the seed gathered under KW 8400. Three years later, in 1931, he chanced upon the species again, this time growing in Upper Myanmar, close to the border with Tibet, and reintroduced the rhododendron under the collection number KW 9584. Of course his field notes simply record *R. manipurense,* as a microscope powerful enough to allow the individual chromosomes in a dividing root cell to be counted, would have been absent from the expedition’s inventory.

But not from the laboratory at Wisley when, close to twenty years later, the first hint that something new had been discovered, was observed.

Regrettably, it then took the scientists and geneticists several more decades to finally confirm that that was indeed the case; that polyploids were new species; evolved, not over decades or centuries, but effectively, in an instant.

Section *Lepipherum* Subsection *Maddenia* Series *Formosa:*



R. ciliatum

Taxa:

R. burmanicum
R. ciliatum
R. dendricola
    R. dendricola ssp. *dendricola*
    R. dendricola ssp. *scopulorum*
R. fletcherianum
R. formosum
    R. formosum var. *formosum*
    R. formosum var. *inaequale*
R. johnstoneanum
R. leptocladon
R. odoriferum
R. polyandrum
R. rufosquamosum
R. valentinianum
    R. valentinianum var. *changii*
    R. valentinianum var. *valentinianum*
R. valentinioides

Taxonomic Revision:

As with Series *Dalhousiae,* new information from on the ground field inspections of the species populations not available to the Edinburgh Revision botanists is reflected in the status reductions and synonymy applied to the taxa of Series *Formosa*.
Each change is detailed appropriately, however:

R. coxianum from Arunachal Pradesh may be a true species,
but it has only been collected once and cultivated plants
do not match with the herbarium material (gathered at the same time as the seed).
The taxon is therefore most likely a natural hybrid
- its offspring most certainly are -
with one parent probably *R. formosum* var. *inaequale,*
the other *R. lindleyi* or *R. nuttallii,*
which would tally with the thicker, leathery leaves and ventricose corollas.
Those plants grown from the 1965, C&H 396 collection, are rare in UK cultivation,
have proved to be hardy outdoors only at the mildest sites along the west coast,
and are decidedly difficult to grow.

R. pseudociliipes was introduced into cultivation at the Millennium,
but these plants too have succumbed to the recent cold winters,
even in some favoured gardens.

R. kiangsiense has also been collected and introduced,
with juvenile plants available to purchase at one or two specialist nurseries,
but as such specimens are still in the process of being assessed,
they are not featured in the text.

Series Morphology:

Shrubs or small trees, 0.3 to 4.6m high;
epiphytic or terrestrial, low and compact, rounded, spreading or open,
mounding through broadly upright, sometimes straggly;
branchlets variably lepidote, often densely so, the scales brown or reddish-brown,
variably setose, but often without bristles;
bark rough, grey, brown or reddish-brown,
often peeling, revealing a smooth underbark, reddish- or cinnamon-brown.

Leaves evergreen, coriaceous, often thick, rarely rigid,
oblanceolate, elliptic through oblong-elliptic to ovate or oval,
2 to 13cm long by 0.5 to 5.7cm wide,
apex acute, acuminate, rounded or obtuse, and mucronate,
base tapered (rarely), broadly cuneate, rounded or obtuse,
occasionally decurrent on the petiole;
upper surface bright or dark green, often shiny,
variably lepidote or not, usually glabrous,
the midrib grooved, sometimes hairy or setose,
the veins impressed, often deeply so,
the margins flat or recurved, often setose, rarely crenulate;
lower surface pale green or pale glaucous-green, usually densely lepidote,
the scales unequal, variably-sized but of one type, brown, dark brown or reddish-brown,
overlapping, contiguous or variably distant,
between 0.5 and 6 times their own diameter apart, with crenulate margins,
the midrib prominent, sometimes setose, the veins raised.

Leaf anatomy comprises a 2-3-4-layered upper epidermis,
with the cells in the top layer smaller than those in the layer or layers below;
the cuticle is between half to as thick as the top layer cells are deep;
water tissue is absent; the lower epidermis cells are prolonged into papillae.
Sclereid cells are present in the leaves of all the species.

Petiole 3-18mm long, rarely less, usually grooved above,
occasionally narrowly winged or ridged along the margins,
usually densely lepidote, setose or not.

Inflorescence terminal, 1-6-flowered, rarely more, the truss loose; often fragrant.

Rhachis 1-4mm long, lepidote or not, pubescent or not, rarely setose.

Pedicel 3-23mm long, thick (stout), usually densely lepidote,
sometimes setose, occasionally pubescent or pilose.

Calyx sometimes oblique, rim-like, marginally or distinctly 5-lobed,
these ovate, triangular, oval or oblong and 0.5-12mm long,
their outer surface variably lepidote, sometimes hairy,
their margins lepidote or not, ciliate, setose or without hairs.

Corolla 2 to 6.5cm long, more rarely to 10cm long, 5-lobed,
openly funnel-campanulate through tubular-campanulate
to narrowly tubular-funnel-shaped,
white, often flushed pink, bright or pale yellow or deep yellow (rarely),
with or without a golden- or orange-yellow basal blotch,
sometimes with pink bands on the outside of the lobes,
the outer surface variably lepidote at the base of the tube,
sometimes all over, more rarely just on the lobes,
pubescent on the tube or all over, or without hairs,
the lobes margins usually entire (without wavy frills or crinkles),
the inner surface of the tube sometimes pubescent.

Stamens 10, rarely 11, 15 or 20-25, unequal, shorter than the corolla;
filaments densely pubescent at the base, or along the lower half or third.

Ovary conoid or oblong, 2-8mm long, the apex truncate, 5-6-12-locular,
densely lepidote, occasionally setose along the upper half.

Style inserted in a shouldered depression at the ovary apex,
straight or curved in the upper part,
rarely shorter than the corolla,
usually lepidote at the base, sometimes along the lower half or third,
or more rarely from the base to the tip,
occasionally hairy at the base.

Capsule conoid or ovoid, often oblique at the base, 6-15-35mm long, straight, ribbed,
densely lepidote, occasionally setose towards the apex,
sometimes enclosed by the calyx lobes.

Seeds elongate, winged, each end with an appendage.


R. inaequale

R. formosum

R. formosum* var. *formosum

Hardiness:
H3-4.
Flowering Period:
April-June.
Distribution in the wild:
Arunachal Pradesh & Meghalaya, India.
Growing in open woodland, on hillsides and cliffs, on rocks, and along river banks,
at elevations of 600-2,300m.

Identification:
Shrub, compact, straggly or open, lax to broadly upright, 1 to 3m high;
branchlets moderately through densely setose at first.
Leaves linear-obovate through linear-elliptic,
2 to 8cm long by 0.5 to 1.6cm wide,
the base long-tapering, decurrent on the petiole, but sometimes only slightly so;
upper surface lepidote or not,
the margins setose at first, the bristles long and white, mostly lost with age;
lower surface scales between 0.5 and 2 times their own diameter apart.
Petiole 3-10mm long, with narrow wings or ridges along the margins,
sparsely through moderately setose or without bristles (rarely).
Inflorescence 1-4-flowered; fragrant or not, though never strongly so.
Calyx oblique, disc-like or marginally lobed, these 0.5-2mm long,
their outer surface lepidote,
their margins sparsely long-hairy or not.
Corolla 4 to 6.5cm long, funnel-campanulate, often widely so,
usually white flushed pink, sometimes white with or without
reddish-pink markings on the outside of the tube and the lobes,
with or without a yellow basal blotch,
the outer surface lepidote all over, but variably so,
the tube pubescent at the base or not, more rarely all over,
and occasionally pubescent on the lobes and the tube,
the lobe margins sometimes slightly crinkled.
Style lepidote along the lower third, half or three-quarters (rarely).

Seed Collections:

KW 7701	1927/1928
KW 12585	1935
KW 18753	1949
C&H 302	1965
C&H 320	1965
Chamberlain 109	1975

R. formosum* var. *inaequale

Hardiness:
H3.
Flowering Period:
April-June.
Distribution in the wild:
Arunachal Pradesh, Manipur, Meghalaya & Nagaland, India.
Growing in open woodland and at forest margins,
on grassy hillsides, on cliffs, and in gorges at shady-moist sites,
at elevations of 1,200-2,300m.

Identification:
As var. *formosum* except:
Leaves lanceolate-elliptic through oblong-obovate,
2.5 to 12cm long by 1.5 to 5cm wide,
not decurrent on the petiole;
lower surface scales between 2 and 3 times their own diameter apart.
Petiole 8-15mm long, without wings or ridges.
Inflorescence 1-6-flowered; usually strongly fragrant.
Corolla white, with a yellow basal blotch.

Seed Collections:

KW 7717	1927/1928
KW 16029	1946
C&H 301	1965


R. formosum

R. formosum was first described by Nathaniel Wallich in 1831, the text and a coloured illustration appearing in Volume 3, Part 3, of his *Plantae Asiaticae Rariores,* which for those of us who sidestepped an education in classical Latin, comes with a snappy, alternative title: *Descriptions and figures of a select number of unpublished East Indian Plants.* Wallich's specimens were growing in the Calcutta Botanic Garden, gathered from the hills around Sylhet (then in Indian Bengal, but now part of Bangladesh), during 1815, by a Mr M. R. Smith, who was the local colonial magistrate and a long time collector for the garden (though the actual discovery location is now suspected to be on the nearby Khasia Hills of Assam).

A jump along the timeline to 1837 reveals that a certain Mr J. Gibson, a collector employed by William Cavendish, the 6th Duke of Devonshire, discovered *R. gibsonii* on the Khasia Hills, while at the same time and in roughly the same area (actually on the summit of Kollong Rock), William Griffith stumbled upon *R. inaequale*. Speed-on another thirteen years to July 24th, 1850, and Joseph Dalton Hooker will be found 600m up the slopes of Bor-Panee in the company of Thomas Thomson (later to be appointed Superintendent of the Calcutta Botanic Garden), the pair prospecting amongst the rocks. Their botanic prize for that day's efforts, was *R. iteophyllum*.

But now it gets complicated:

Because although *R. gibsonii* was made synonymous with *R. formosum* - by John Hutchinson in 1919 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 12; with the original botanic description by Joseph Paxton to be found in Volume 8 of his *Magazine of Botany,* published in 1841) - the former was actually the first introduction of the latter into British gardens, with the young plants Gibson successfully brought back following another collecting trip in 1845 flowering under glass in 1849. Charles Baron Clarke added to the murk when in 1882 he described *R. iteophyllum* as *R. formosum* var. *salicifolium* (in Volume 3 of *Hooker's Flora of British India*), except his choice of epithet had already been used within Genus *Rhododendron* by the Italian botanist Odoardo Beccari in 1878 to christen a tropical Malesian plant, *R. salicifolium*. John Hutchinson spotted the error and corrected it in the same volume of *Notes* detailed above, raising Hooker's discovery to specific status as *R. iteaphyllum,* the 'a' semi-officially becoming an 'o' by the time *The Species of Rhododendron* appeared on the nation's book shelves in 1930. Griffith's find followed a similar naming trajectory, with Clarke opting for *R. formosum* var. *inaequalis* in 1882, and Hutchinson *R. inaequale* in 1919, the revised specific ranking surviving until James Cullen and David Chamberlain reversed the status change in 1978 (*Notes,* Volume 36). Rhodophiles everywhere were horrified to discover that the two botanists had also reduced their cherished *R. iteaphyllum* - note: with an 'a' again - to a synonym of *R. formosum* var. *formosum,* both changes formally adopted in the full reworking of Subgenus *Rhododendron* that occupied the first part of *Notes,* Volume 39, this published in 1980. Iteophyllum Group struggles on to this very day, of course, even though it has no botanic standing, while administratively, the Khasia Hills of Assam, have now become the Khasi Hills of Meghalaya.

Field study has shown that on the ground out in the wilds there is a full and complete gradation between the extreme linear and the linear-elliptic foliage forms of *R. formosum* var. *formosum*, with any number of intermediates present on the same hillsides. Doctor Cullen's choice to impose synonymy was therefore correct, although maintaining the cultivated, willow-like-leaved plants of *R. iteophyllum* under the RHS group system is equally valid. The longer and much wider leaved *R. formosum* var. *inaequale* is also found dotting the Khasi Hills, but has a distribution that extends out of Meghalaya into Manipur, Nagaland and Arunachal Pradesh, a biogeography that requires the continuance of the taxon's varietal status ranking.

Other morphological differences between it and var. *formosum* are the non-winged petioles, the more widely separated abaxial scales, an inflorescence populated by up to six corollas, and a lack of any pink flushing or banding on the flowers themselves, though that last point needs to be taken with a pinch of salt.

The bristles on the petiole, in concert with the rim-like calyx, and the white or white flushed pink flowers, will distinguish either form of the species from any other Series *Formosa* resident with ten stamens, while the impressed style keys both plants from those lookalikes in Series *Dalhousiae* such as *R. horlickianum* or *R. veitchianum*.

In cultivation, either variety will succeed on a well-drained site in sheltered gardens along the west coast, but require greenhouse protection elsewhere. One or two forms of var. *formosum* from the highest reaches of the distribution may prosper for a few years along the east coast if grown in a favourable microclimate against a wall, but only if they are spared the delights of a really cold winter or a savagely unpredictable spring.

Frank Kingdon-Ward was the first plant hunter to introduce seed of var. *inaequale* into British gardens, securing the capsules during November 1927, from a population of plants established on the Naga Hills near Mount Javpo, these 3,800m-high mountains running along the border between Nagaland and Myanmar.



R. formosum

R. formosum (Chamberlain 109)

R. formosum

R. formosum ‘Iteophyllum’



R. inaequale (C&H 302)



R. inaequale (C&H 302)



R. inaequale

R. inaequale


R. ciliatum (EN 571)

R. ciliatum

Hardiness:
H4-5.
Flowering Period:
March-May.
Distribution in the wild:
E Nepal; S Tibet; Sikkim, India; Bhutan.
Growing in conifer and rhododendron forest, in thickets,
on rocky cliffs and open hillsides, and in swamps and boggy ground by water,
at elevations of 2,400-4,000m.

Identification:
Shrub, compact to straggly, rounded to broadly upright, 0.3 to 2m high;
branchlets moderately through densely hispid, the hairs soon lost,
but their bases persistent.
Leaves elliptic through oblong-elliptic to oblong-lanceolate,
3 to 9cm long by 1.6 to 3.7cm wide;
upper surface lepidote, sparsely through moderately hispid,
the midrib sparsely through moderately hispid, more densely so towards the base,
the margins sometimes slightly recurved, variably hispid;
lower surface scales between 2 and 3 times their own diameter apart,
the midrib sparsely through moderately hispid.
Petiole 3-10mm long, moderately through densely hispid.
Inflorescence 2-5-flowered.
Pedicel moderately through densely hispid.
Calyx conspicuous, pale green or red veined,
deeply lobed, these unequal and 4-10mm long,
their outer surface sparsely lepidote, sometimes only on the lower half or at the base,
sparsely hispid or not,
their margins hispid.
Corolla 2.6 to 5cm long, funnel-campanulate through campanulate,
white, white flushed pink or red, or pale pink,
the outer surface glabrous and elepidote.

Seed Collections:

L&S 1356	1936	Bowes-Lyon 6076	1970	P&L 13	1986
L&S 2739	1936	BLM 26	1971	Heasman 20	1992
L&S 2757	1936	BLM 314	1971	Sinclair 1721	1993
LS&T 3654	1938	BLM 324	1971	TDA 442	2013
LS&T 6568	1938	Hedegaard B108	1983	TDA 443	2013
L&S 15835	1948	Dingle 21	1984	TDA 444	2013
LS&E 12537	1946/1947	Dingle 23	1984	TDA 445	2013
LS&H 16019	1949	EN 571	1984	TDA 446	2013
LS&H 17498	1949	EN 592	1984	TDA 819	2016
LS&H 18683	1949	DF 86134	1986	TDA 821	2016
Bowes-Lyon 3194	1966			TDA 823	2016

R. ciliatum was another of Sir Joseph Hooker's 1849 finds, described in part three of *The Rhododendrons of Sikkim-Himalaya,* published in 1851, though the anaemic-mauve corolla colour of the illustration - Tab 24 - is certainly not representative of the species in UK cultivation. Volume 78 of *Curtis's Botanical Magazine,* published in 1852, features a far more accurate portrait by Walter Hood Fitch, with the accompanying text recording that:

> 'Scarcely two years since the seeds of this Rhododendron were received from Dr Hooker, and already (March 7, 1852) six plants of it have produced flowers while only seven inches high, and many others are showing blossoms. Their flowering has given us peculiar pleasure, as the first of the Sikkim-Himalayan Rhododendrons which have done so; and on another account. From more than one quarter hints have been thrown out that the author of the work above cited has used some freedom in going beyond nature in the size and colouring of the flowers. Such gratuitous statements, from very incompetent judges, are contradicted by the first species that has blossomed; for assuredly our cultivated *R. ciliatum* far excels in size of the corolla, and delicacy of tint, Dr Hooker's original figure'.

A steady stream of authenticated re-introductions has followed over the years, beginning with Ludlow and Sherriff in 1936, continuing through Beer, Lancaster and Morris in 1971, and ending - for the moment - with Tim Atkinson in 2016.

The hairs on the branchlets, leaves, petioles, pedicels and calyx lobes of *R. ciliatum* are usually described by most botanists as being setose or bristly, but they are not. While clearly not soft - ciliate, floccose, pilose, pubescent or villous - they are not as stiff as full-blown bristles, which rules out tagging them as 'hirsute'. Chinese botanists have opted for the term 'hispid', which categorises the hairs as rigid, but not actually bristles, and this terminology is followed herein.

The presence of those hispid hairs, especially on the leaf upper surface, serves to distinguish an out-of-flower specimen of *R. ciliatum* from its three nearest relatives, namely *R. burmanicum, R. fletcherianum* and *R. valentinianum.* Moreover, only the bases of those hairs remain persistent on the stems of *R. ciliatum*. In spring, when the blooms open, the yellow-toned corollas exhibited by the latter trio are distinctive enough on their own to eliminate a possible mis-identification, with recourse to the presence of scales on the outer surfaces of their corollas usually proving unnecessary. However, confusion with a hybrid widely grown in British gardens will likely cause the most trouble.

R. Cilpinense is an award-winning *ciliatum* x *moupinense* cross that was made by Henry McLaren at Bodnant in 1923. Habit, leaf shape and flowering time are near identical to the seed parent - on the left of the equation - with the corollas a lovely blush pink. Mature plants will be found in virtually every private or public plot, park, estate, botanical or horticultural institution that can grow rhododendrons, as the specimens flower so heavily each year that the blooms completely hide the foliage. Strong sunlight bleaches the colour from those flowers faster than it does from either of the two gene donors and the buds themselves are more susceptible to frost damage once they begin to swell, but those are the only comparative disadvantages. Which means that differentiation between *R. ciliatum* and its offspring rests on the bairn's shinier, less hairy leaves, and the presence of only 2 or 3 corollas in the flower truss, rather than 2 to 5.

Although far less widely planted than R. Cilpinense, *R. ciliatum* is the hardiest species within Subsection *Maddenia,* and it can be successfully grown outdoors in most sheltered, lowland British gardens, though some clones are distinctly hardier than others. Flower quality and form also vary, so prospective purchasers should select accordingly. Rounded domes around 1m high and twice that across are the norm, with specimens most at home along the west coast. Here, the blooms have the best chance of escaping any night-time radiation frosts across the long flowering season, which often begins in early March. Dappled shade will usually retain the deeper pigmentation tones in the corollas until they drop - towards the end of May in some years - without inducing too much scragginess into an otherwise compact habit. And this ease with their adopted locale is most clearly shown when mature specimens begin to self-seed.

But a word of warning from Mr J. G. Millais to any equestrian smitten with the shrub, for he reports 'seeing a horse nearly dead from eating four leaves of *R. ciliatum*' in Volume 2 of his *Rhododendrons and the Various Hybrids* (published in 1924).

The Latin epithet translates as 'fringed'.



R. ciliatum



R. ciliatum (BLM 324)



R. ciliatum (Dingle 21)



R. ciliatum (Sinclair 1721)



R. ciliatum (Sinclair 1721)



R. ciliatum

R. johnstoneanum

Hardiness:
H3-4.
Flowering Period:
April-May.
Distribution in the wild:
Manipur & Mizoram, India.
Growing at forest margins, in open scrub,
on grassy mountain summits and on cliffs in deep shade,
at elevations of 1,800-3,100m.

Identification:
Shrub, terrestrial or epiphytic (rarely),
bushy or straggly, laxly upright and spreading, 1.2 to 4.6m high;
branchlets setose.
Leaves elliptic through obovate-elliptic to oblong-elliptic,
5 to 10cm long by 2 to 4.6cm wide;
upper surface somewhat rugulose, lepidote or not,
the margins variably setose or without bristles;
lower surface scales overlapping, contiguous or to 0.5 times their own diameter apart.
Petiole 5-13mm long, moderately through densely setose.
Inflorescence 2-5-flowered; sometimes fragrant.
Calyx oblique, disc-like or marginally lobed, these 1mm long,
their outer surface moderately through densely lepidote,
their margins long-ciliate or setose, or without hairs or bristles.
Corolla 4.6 to 6cm long, funnel-campanulate through funnel-shaped,
yellow, pale yellow or greenish-yellow, and white or creamy-white, flushed or banded pink,
with or without a yellow basal blotch, and with or without red spots,
the outer surface lepidote all over,
the tube pubescent at the base.
Style lepidote along the lower half or two-thirds.

Seed Collections:

KW 7732	1927
KW 17215	1948
KW 18985	1949
KW 20305a	1950
KW 22200	1956
AC 5532	2004

Sir George Watt, a qualified doctor and Professor of Botany at Calcutta University, signed-on as medical officer with the Burma-Manipur Boundary Commission in 1882 after securing a dispensation to go plant hunting in the remote regions being mapped whenever he was off-duty. One of the many fruits of this tangentially Government-funded botanic expedition was *R. johnstoneanum*.

The find was initially described as a variety of *R. formosum* by Dietrich Brandis, a German national employed in the British Imperial Forestry Service (*Indian Trees,* 1906), but John Hutchinson, working from Watt's field notes and herbarium specimens, later raised the species to specific status in 1919 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 12), almost certainly in concert with the dried material Frank Kingdon-Ward had gathered on the Naga Hills the year previously. The epithet is, of course, an honorific, securing Mrs Johnstone, wife of the Political Agent in Manipur at the time of the original discovery, a permanent place in botanic history.

In the wild, the species morphology varies considerably, despite the taxon being endemic to just two northeast Indian states - Mizoram and Manipur - these butted-up against the border with Myanmar, across which, the populations have yet to cross. Those fluctuating features include the persistent presence of bristles on the branchlets, petioles and leaf margins (in situ on the latter more often than not), plus the rounded shape of the slightly wrinkled leaves, though usually not by enough to complicate an identification even when the plants are out of flower. The dense covering of brown scales to be found on the abaxial lamina of *R. johnstoneanum,* the individual emergences overlapping and touching, or set no more than half their own diameter apart, provide a further key, as on the foliage of most other members of the series, they will be distinctly distant from one another. *R. burmanicum* is the only exception to this rule, though a lack of stem bristles should already have eliminated it from contention.

Apparently, no-one was able to keep plants germinated from Watt's 1882 Manipur seed collection alive for more than a few years, which is fairly remarkable given how widely the species is cultivated today and how little trouble the shrubs usually are to successfully grow outdoors (at least in the UK's more clement locales). That popularity began in 1927 when the first of five Kingdon-Ward re-introductions arrived and demonstrated that the species was not restricted to mild Cornish gardens or those on the west coast, but could thrive in the south, as well as in well-sheltered woodland locales along the east coast, although not long-term anywhere further north than the Yorkshire county border, give or take. At Edinburgh Botanic, for instance, *R. johnstoneanum* is grown under glass, and trial-by-fire has shown that it is not reliably hardy outdoors at Glendoick, succumbing to the hardest winters and suffering branch dieback in most others (*The Encyclopedia of Rhododendron Species,* Peter and Kenneth Cox, 1997). Those selected forms with double or semi-double blooms - such as 'Demi-john' or 'Double Diamond' - or the 1934 Award of Merit-winning plant from Nymans, are even less tolerant of the cold and apt to loose flower buds from even a mild touch of frost.

Rhodophiles should also note that specimens germinated from Kingdon-Ward's final gathering in 1956 - made on the Mindat Ridge in Chin State, central Myanmar, under the field number KW 22200 - are intermediate between *R. johnstoneanum* and *R. burmanicum,* but match the latter for hardiness. As the former is currently not a Myanmarese resident and the latter is endemic to a single 3,000m-high peak - Nat Ma Taung (previously, Mount Victoria) - one can only marvel at the fortitude of the pollinator involved.

Alan Clark is the only other Western plant collector to have encountered the species in the wild, introducing seed from a population found on Mount Japfu in Nagaland, during the autumn of 2004.

R. johnstoneanum (KW 7732)



R. johnstoneanum ‘Double Diamond’



R. johnstoneanum (KW 7732) ‘Rubeotinctum’





R. johnstoneanum

R. rufosquamosum

Hardiness:
H2-3.
Flowering Period:
May-June.
Distribution in the wild:
S Yunnan, China.
Growing on hillsides and cliff edges, and in the kharst limestone,
at elevations of 1,400-2,200m.

Identification:
Shrub, to 1m high; branchlets without bristles.
Leaves oblanceolate,
7 to 12cm long by 1.8 to 4cm wide,
base tapered;
upper surface sparsely lepidote or not;
lower surface scales overlapping, contiguous or up to 0.5 times their own diameter apart.
Petiole 8-13mm long, without bristles.
Inflorescence 2-3-flowered.
Calyx oblique, rim-like or marginally lobed, these 1mm long,
their outer surface densely lepidote,
their margins setose.
Corolla 5.5 to 6.6cm long, tubular-funnel-shaped,
pinkish in bud, opening white,
the outer surface sparsely lepidote all over,
the tube pubescent at the base.
Style lepidote along the lower three-quarters of its length.

Seed Collections:

KR 4270	1996
KR 4303	1996

R. rufosquamosum was discovered by Augustine Henry growing near the Papienho River (Babian or Black River), in the Szemao Hills of southwestern Yunnan, close to the border with Laos. The specimens, under the field number 11983, were collected sometime between February 1898 and October 1899, these dates spanning the time the Irishman was based at Simao and officially carrying out the duties of Acting Chief Commissioner of Customs. As usual, they were then sent on to the Royal Botanic Garden, Kew.

Where they spent the next twenty years gathering dust.

Until John Hutchinson brushed them off and described the new species in 1919 for an 84-page article titled *The Maddeni Series of Rhododendron,* which was published in Volume 12 of *Notes from the Royal Botanic Garden, Edinburgh* (the second 'i' being appended to 'maddenii' between then and 1924, when a full listing of the Series and Subseries of Genus *Rhododendron,* plus their known contents at that time, was published within Volume 2, Number 5, of *The Rhododendron Society Notes*).

Joseph Rock was the next Westerner to encounter the species, the reacquaintance taking place during April 1922 along the watershed of the Black River, between Mohei and Maokai (beyond Chugai), and at a slightly higher altitude than Henry's find, but again, only dried material was collected.

For a time, the taxon was sunk under *R. pachypodum,* a synonymy that *Flora of China* online still maintains today, but in the first part of their *Preliminary Synopsis* paper for the Edinburgh Revision (*Notes,* Volume 36, 1978), James Cullen and David Chamberlain reinstated the plant's specific status, placing it within the *R. johnstoneanum* aggregate alongside other impressed-style *Maddenia* species, for the junction can clearly be seen on the original Henry herbarium plates even if the modern-day association occurred through chance or happenstance.

Topping-out around the 1m-mark in the wild, *R. rufosquamosum* is probably best described as a lower-growing version of *R. dendricola,* especially as it has no bristles on the branchlets, petioles and leaves, and comes with an oblique, rim-like calyx. The two also share the characteristic of having corollas that are scaly all over the outer surface and hairy at the base of the tube. However, a check on the foliage will quickly split the pair apart, for the leaves of *R. rufosquamosum* are oblanceolate-shaped and the scales on the abaxial surface are set much closer together - overlapping, touching or no more than half their own diameter apart - while the *R. dendricol*a blades, although similarly sized, have an oblong-elliptic through elliptic-lanceolate profile, with scales that are not only distant from one another, but which never touch or overlap, always remaining half to four times their own diameter apart.

Two collections by Keith Rushforth, made in November 1996 in the Honghe Hani and Yi Autonomous Prefecture of southern Yunnan, which geography-wise lie just to the east of where Henry and Rock gathered their specimens, have provisionally been determined to be *R. rufosquamosum* affinity, so they may turn out to be the first introductions of the species into British gardens when a full botanic appraisal of the mature specimens is carried out.

However, a number of juveniles in cultivation - flowering-size plants, but still quite young - fell victim to the recent arctic winters, although a couple of specimens at Logan Botanic still survive, which clearly means growing the species outdoors in the UK long-term, is probably a no-no, apart from on one of the frost-free Scottish islands.

Herbarium specimens of the second of Keith's finds - KR 4303 - have been tagged as *R. pachypodum* on the sheet at Edinburgh Botanic (E00073564), this taxon having been made synonymous under *R. ciliicalyx* herein (on page 316).



R. burmanicum (KW 21921)

R. burmanicum

Hardiness:
H3.
Flowering Period:
March-April.
Distribution in the wild:
Nat Ma Taung (Mount Victoria), WC Burma.
Growing along forest margins, at elevations of 2,700-3,000m.

Identification:
Shrub, compact through broadly upright, sometimes straggly, 1 to 2m high;
branchlets densely setose at first, quickly deciduous.
Vegetative bud scales broad and conspicuous.
Leaves oblanceolate through obovate to oblong-obovate,
4 to 8cm long by 1.6 to 4cm wide,
sometimes slightly decurrent along the petiole;
upper surface moderately through densely lepidote, the scales persistent,
the margins sometimes slightly recurved, setose at first;
lower surface scales slightly overlapping,
contiguous, or up to 1.5 times their own diameter apart,
the midrib sometimes sparsely bristly at the base.
Petiole 5-15mm long, the margins narrowly winged or ridged,
sparsely through moderately setose, rarely without bristles.
Inflorescence 4-6-10-flowered; often fragrant.
Calyx rim-like or marginally lobed, these 0.5-3mm long, rarely to 6mm,
their outer surface moderately through densely lepidote,
their margins sparsely through moderately setose.
Corolla 2.8 to 5cm long, funnel- through tubular-campanulate,
yellow through creamy-yellow to greenish-yellow or greenish-white,
the outer surface moderately through densely lepidote all over,
the tube often pubescent at the base.
Style lepidote along the lower half or third,
occasionally only at the base, or more rarely from the base to the tip.

Seed Collections:

Cooper 5975	1916
KW 21921	1956

R. burmanicum (KW 21921)

The natural endemic distribution of *R. burmanicum* is restricted to one Myanmarese mountain: Nat Ma Taung, formerly, Mount Victoria. Ascending to 3,053m, it is the roof of Chin State, a region in the west of central Myanmar, which lies up against the border with Bangladesh.

Of course, when the renowned botanical artist Lady Charlotte Wheeler-Cuffe visited the area in 1911, Burma was part of the British Empire and the peak bore the name of the UK's then longest serving monarch. Resident in the country for almost twenty-four years, Lady Charlotte frequently accompanied her husband, Sir Otway Wheeler-Cuffe - a civil engineer employed in the colonial administration - on his assignments to far-flung regions of the colony, and in-between sketching the landscape and completing a set of exquisite paintings of the country's orchids and other flowers, she collected seed and seedlings of the plants she found for a new botanic garden being developed at Maymyo (Pyin Oo Lwin). Two of her finds on that 1911 trip were rhododendrons, one of which was named *R. cuffeanum* in her honour, but has never been rediscovered, so is now considered a natural hybrid (as the material cultivated today does not match with the type herbarium specimens or botanic description), while the other, was *R. burmanicum*.

Some of the young plants gathered on that excursion were later presented to the Glasnevin Botanic Garden, in Dublin, Ireland - in August 1913 - and it was these specimens that John Hutchinson used to describe the new species in 1914's *Bulletin of Miscellaneous Information,* published by the Royal Botanic Garden, Kew.

Roland Cooper - who took over as director at Maymyo when Lady Charlotte returned to the family home at Leyrath, on the outskirts of Kilkenny, during 1921 - was also the first professional plant hunter to encounter *R. burmanicum,* having gathered specimens and seed some years earlier in 1916. Professor R. Unwin, of the University College, Rangoon, secured herbarium material in April 1926, while Frank Kingdon-Ward sourced seed and dried material in 1956.

In cultivation, *R. burmanicum* is most likely to be confused with two other low-growing and yellow-flowering Series *Formosa* species, namely *R. fletcherianum* and *R. valentinianum,* while a third, *R. valentinioides,* is swiftly ruled out by its distinctly rugose foliage. Both remaining lookalikes have persistent bristles on their stems and leaf margins, which, while duplicated on the young growth of *R. burmanicum,* are then swiftly lost. The reverse is true for the adaxial leaf surface scales, with a dense covering remaining on the mature foliage of *R. burmanicum,* but which is soon reduced to a sparse dusting on the leaves of the doppelgängers. Height is also a factor: mature specimens of *R. burmanicum* hit the 2m mark, both in cultivation and in the wild; those of both *R. fletcherianum* and *R. valentinianum* barely top 1m in height.

A hybrid form - more compact; with smaller leaves that bear far fewer scales; adorned with flowers of a much deeper yellow hue - will more often be found in UK gardens rather than the true species, probably because *R. burmanicum* is far less hardy, though both plants will only survive outdoors in a sheltered woodland site along the west coast and require greenhouse protection elsewhere. The cross, thought most likely to be a pairing with *R. valentinianum,* can often be found labelled *R. burmanicum* 'Cox' form.

In the Second Edition of his *Rhododendrons and the Various Hybrids,* J. G. Millais reports that *R. burmanicum* flowered for the first time outdoors in the UK during May 1923, the locale being Lanarth in Cornwall, this the garden of Mr P. D. Williams.



R. burmanicum

R. odoriferum

Hardiness:
H3.
Flowering Period:
April-May.
Distribution in the wild:
S Tibet.
Growing at elevations of 2,400m.

Identification:
Shrub, broadly upright, to 1.6m high;
branchlets purplish, lepidote.
Leaves oblanceolate through oblong-lanceolate to elliptic,
10cm long by 6cm wide,
apex acute or obtuse;
upper surface dark green, shiny, lepidote at first;
lower surface scales unequal, large, brown,
contiguous or nearly so.
Petiole to 10mm long, densely lepidote.
Inflorescence 6-7-flowered; fragrant.
Pedicel 10-15mm long, lepidote,
with a thin, linear brownish bracteole at the base,
this sometimes joined to the calyx.
Calyx lobes 0.5-1mm long, their outer surface lepidote.
Corolla to 7cm long, narrow tubular-funnel-shaped,
white, flushed rose outside,
the tube tinged green inside,
the outer surface densely lepidote.
Stamens 15; filaments glabrous.
Ovary 10-11-locular.
Style impressed, equal to or shorter than the corolla,
lepidote, but not at the apex.
Capsule unknown.

Seed Collections:

Bailey 2	1913

R. odoriferum was discovered in 1913 by F. M. Bailey. Type that name into a search engine and the result will likely turn-up the botanist Frederick Manson Bailey (1827-1915), who, at eight-six years of age, was not likely to have been out plant hunting in southern Tibet. But add in a few clarifying tags - such as 'intelligence officer', 'linguist', 'explorer' or '*Meconopsis Baileyi*' - and Captain Frederick Marshman Bailey (1882-1967) will instantly appear. Clicking on a couple of those links will reveal that here is a gentleman for whom the description 'James Bond meets Indiana Jones' is succinctly perfect.

He was a member of the Royal Geographical Society who would later be awarded their Gold Explorer's Medal (in 1916); a trophy hunter (his notes on Tibetan big-game can be found in back issues of the *Journal of the Bombay Natural History Society*); a lepidopterist; and a photographer. Oh, and an active duty officer in the Indian Army's Political Department, which is polite British-speak for 'spy'.

Bailey had already made one trip through southern China and Tibet trying to reach the mythical waterfall on the Yarlong Tsangpo River that had been described by the Sikkimese native Kinthup thirty years before, but he had failed to reach the falls. So in 1913, a second expedition was mounted. This time he was accompanied by Captain Henry Morshead of the Survey of India, and their explorations were unsanctioned, at least, as far as the Tibetan authorities were concerned, with the pair being arrested at Lagung, to the east of Namcha Barwa. In fact, their detention was a stroke of luck, for they were taken to Showa, on the Po Tsangpo, released after a couple of days, and following the river downstream, entered the Rong Chu Valley, where a beautiful tall blue poppy was found growing along the forest margins - the aforementioned, *Meconopsis baileyi.* Pressing-on, they re-entered the Tsangpo gorge and finally discovered those legendary falls close to the monastery of Pemakochung: the drop, barely 10m. Yet they could proceed no further down the gorge, so the possibility remained that another much greater torrent existed in the last, then unexplored reaches of the canyon.

Meconopsis baileyi was not the only collection made on that 1,680-mile journey. A form of *R. arboreum* was gathered under the field number Bailey 4 in the Upper Nyamsang Valley of the Brahmaputra Bend that Bailey named 'Morsheadianum' in honour of his companion. And *R. odoriferum* was returned from the same locale under Bailey 2, this the only collection and introduction of the species made to date. Described from Bailey's herbarium material, which is far from profuse, in combination with a cultivated plant grown at Kew, John Hutchinson's 1927 text appears in Volume 82 of *The Gardeners' Chronicle*.

Slightly smaller leaves, a calyx that is basically an undulate rim with lobes no more than 1mm long, an ovary with 10 or 11 locules, plus a 6-7-flowered inflorescence with corollas that hold just 15 stamens are the features that cleave *R. odoriferum* from its closest relative, *R. polyandrum.* No chromosome count information is available to confirm whether the species is a diploid, a tetraploid or a hexaploid, so any lingering temptation to synonymically combine the two should be resisted on both morphologic and genetic grounds. Regrettably, the style junction difference with *R. crassum* did not stay James Cullen's hand from imposing synonymy in 1980 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Number 1), but it is regarded as sufficient herein to warrant a return to that original specific status. Moreover, the tubular-funnel shaped corollas are much narrower than those adorning typical *R. maddenii* ssp. *crassum,* and thus the principal reason why Odoriferum Group was constituted when the two species were one.

Cultivation of *R. odoriferum* outdoors is restricted to the mildest woodland gardens set along the UK's western seaboard, the species proving tender elsewhere and requiring overwintering under glass. Mature specimens form upright domes that are a little under 2m tall, with the plants flowering relatively freely once established, and displaying white flushed rose blooms. Yet despite the clamour for group status, the species is a decidedly rare find, absent from most of the larger rhododendron collections open to the public.

In the early 1920s, Frederick Bailey was appointed as the Political Officer for Sikkim and Tibet, which meant that in 1924, he was able to assist Frank Kingdon-Ward and Lord Cawdor, by arranging the passports and other essential documentation that enabled them to gain legal entry into Tibet. And it was Bailey, of course, who prompted Kingdon-Ward, a fellow member of the Royal Geographical Society (who would receive his own Gold Medal in 1930, and a Livingstone Medal from the Royal Scottish Geographical Society in 1936), to explore that last, unknown, fifty-mile stretch of the Yarlong Tsangpo River.

The 1926, now classic, *Riddle of the Tsangpo Gorges,* documents those explorations, with a photo-rich updated version of the text, edited by Kenneth Cox, published in 2001.

R. dendricola* ssp. *dendricola

Hardiness:
H2-3.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; Arunachal Pradesh, India; NW Yunnan, China; N Myanmar.
Growing in mixed woodland and at forest margins,
in thickets, on rocks, rocky slopes or cliffs, at elevations of 900-3,000m.

Identification:
Shrub, epiphytic or terrestrial, lax, straggly or broadly upright, 1 to 4.5m high;
branchlets rarely setose.
Leaves oblong-elliptic through obovate-elliptic to elliptic-lanceolate,
7 to 13cm long by 2 to 5.7cm wide;
upper surface sparsely lepidote;
lower surface scales between 0.5 and 4 times their own diameter apart.
Petiole 5-13mm long, rarely setose.
Inflorescence 2-6-flowered; fragrant.
Pedicel occasionally pubescent.
Calyx oblique, rim-like or marginally lobed, these 1mm long, rarely to 2mm,
their outer surface densely lepidote,
their margins often sparsely long-hairy.
Corolla 5.8 to 10cm long, funnel-shaped,
white, creamy-white or white flushed pink,
with a yellow, orange or greenish basal blotch,
the outer surface lepidote all over,
the tube pubescent at the base or sometimes all over,
the lobe margins entire or slightly crinkled.
Style sparsely lepidote along the lower half or third.

Seed Collections:

F 17227	1918	F 27690	1924/1925	KW 11057	1933	KW 20601	1953
F 17738	1918/1919	F 27722	1924/1925	Yu 21005	1937	KW 20651	1953
KW 5447	1922	F 27731	1924/1925	Yu 21049	1937	KW 21512	1953
KW 5449	1922	F 27737	1924/1925	KW 52	1938/1939	KR 2494	1993
F 24774	1924/1925	F 27738	1924/1925	KW 87	1938/1939	CCHH 8100a	1997
F 26441	1924/1925	KW 6676	1926	KW 152	1938/1939	DGEY 046	2001
F 26459	1924/1925	KW 6711	1926	KW 180	1938/1939	DGEY 057	2001
F 26462	1924/1925	KW 7630	1926	KW 280	1938/1939	HECC 10006	2002
F 27685	1924/1925	KW 8016	1927/1928	KW 281	1938/1939	JN 11054	2011
F 27687	1924/1925	KW 10175	1931	KW 440	1938/1939	BE 12-21	2012
F 27689	1924/1925	KW 10180	1931	KW 19259	1950	BE 12-24	2012

Frank Kingdon-Ward was the first Western plant hunter to encounter and collect *R. dendricola,* chancing upon a population of plants in the Nwai Valley of northern Myanmar during May 1914, though no seed was available that early in the season. John Hutchinson described the new species in 1919, his outline appearing in Volume 12 of *Notes from the Royal Botanic Garden, Edinburgh*.

Kingdon-Ward also found *R. walongense,* coming across this species during April 1928 while exploring hills near the Lohit Valley in Assam, northeastern India. He later described the plant in Volume 133 of *The Gardeners' Chronicle,* published in 1953.

R. dendricola supposedly differs from *R. walongense* in not having pubescent hairs across the entire outer surface of the corolla tube, lacking a heavy fringe of ciliate hairs on the calyx margins, and possessing corolla lobe margins that are entire, while the leaves of *R. walongense* are said to be larger, as are the flowers. However, across its wide natural distribution, *R. dendricola* and some of the other previously-specific species already made synonymous with it, can and do exhibit the exact same features, in particular, specimens of *R. supranubium* with impressed styles. Specific status is therefore no longer valid and *R. walongense* is herein reduced to synonymy under *R. dendricola*.

The lack of bristles on the branchlets, petioles and leaves, plus the fragrant corollas, are the main morphologic distinctions between *R. dendricola* and the white-flowered forms of *R. johnstoneanum*. The foliage of the latter is also more rounded.

Height and habit, as well as flower colour and corolla size, cleave *R. dendricola* from *R. leptocladon,* with the species populations physically divided from one another by a rather formidable range of mountains. Despite *R. leptocladon* being a low growing, compact shrub to around 1m high, with yellow blooms less than 5cm long, the two do share some features: similar sized and shaped foliage; an absence of bristles; a rim-like calyx; and corollas that are home to ten stamens.

R. dendricola ssp. *scopulorum* differs from ssp. *dendricola* in having more rigidly textured leaves, along with abaxial scales that are never less than two times their own diameter apart. The corolla outer surface is both pubescent and lepidote all over. There are a few other minor distinctions, such as calyx lobe size, but clearly the two rhododendrons are sisters. A disjunct distribution in southeast Tibet, along the lower reaches of the Po Tsangpo River and in the Tsangpo Gorge itself, discrete from *R. dendricola* and without intermediates found on the ground to date, requires *R. scopulorum* to be given subspecies rather than varietal ranking.

Although *R. dendricola* ssp. *dendricola* was first introduced into UK cultivation by George Forrest in 1918, with numerous re-introductions from Forrest himself, Kingdon-Ward and Yu up until 1953, and modern day collectors resuming the additions from 1993 through until 2012, very few British locales are mild enough to permit the species to be successfully grown outdoors all year round, so the majority of specimens available to view will be housed under glass. Plants from the highest reaches of the distribution have been established in a few west coast and Cornish gardens, the elements notwithstanding, but drainage must be exemplary, reflecting the plant's epiphytic nature, and the flower buds will often be lost, even if hit by just a degree or two of frost, especially once they begin to swell. But for those lucky few...

R. dendricola

R. polyandrum (Cooper 3601)

R. polyandrum

Hardiness:
H3.
Flowering Period:
May-July.
Distribution in the wild:
Bhutan; Arunachal Pradesh, India.
Growing in forests, on hilltops, and on rocky slopes, at elevations of 2,100-3,100m.

Identification:
Shrub or small tree, upright and spreading, or bushy, 1 to 4.6m high;
branchlets moderately through densely lepidote.
Leaves lanceolate through oblong-lanceolate to oblong-obovate,
6 to 12cm long by 2.4 to 4.5cm wide,
apex acute, abruptly acute or obtuse;
upper surface dark green, shiny, lepidote at first;
lower surface scales medium or large-sized, brown or dark brown,
contiguous or up to 0.5 times their own diameter apart.
Petiole 8-18mm long, densely lepidote.
Inflorescence 3-6-flowered; fragrant.
Pedicel 8-20mm long, moderately through densely lepidote.
Calyx lobes 2-4mm long, their outer surface lepidote.
Corolla 4.8 to 7cm long, narrow tubular-funnel-shaped,
white, white flushed pink, or rose-pink,
with or without a pale orange or yellow basal blotch,
the outer surface densely lepidote.
Stamens 20-25;
filaments moderately or densely hairy along the lower half or third,
but not at the base.
Ovary 12-locular.
Style impressed, equal to or shorter than the corolla,
lepidote, but not at the apex.
Capsule oblong or oblong-oval, 15-35mm long.

Seed Collections:

Cooper 3601	1914
Cooper 4980	1915
KW 6413	1924/1925
L&S 3164	1937
AC 5518	2004
AC 5519	2004
AC 5521	2004

R. polyandrum was discovered by Roland Cooper at Chapcha Timpu in Bhutan, on July 8th 1914, while gainfully employed as a plant hunter for A. K. Bulley of Bees Seeds Ltd. The species was described by John Hutchinson in Volume 12 of *Notes from the Royal Botanic Garden, Edinburgh,* published in 1919, the chosen Latin epithet - 'with many stamens' - offering the morphologic key that distinguishes the shrub from all its Series *Formosa* cohorts (once translated), that compliment of 20 to 25 per corolla outclassing the paltry 10 or 11 of all the other species. Bar one: *R. odoriferum,* which has 15, but again, the difference is stark.

Equally, the *R. polyandrum* ovary has 12 cells, while all the other Series members can only boast 5 or 6, with *R. odoriferum* again the only exception, being in possession of 10 or 11 locules.

R. polyandrum is therefore somewhat aberrant within the Series and would clearly be associated with *R. maddenii* ssp. *maddenii* in Series *Dalhousiae* were it not for the impressed style. Indeed, it was declared to be synonymous with that very species in the Subgenus *Rhododendron* revision written by James Cullen and published in Volume 39, Number 1, of *Notes,* during 1980, and in Part 1 of the *Preliminary Synopsis* paper that preceded it in 1978 (Cullen & David Chamberlain, *Notes,* Volume 36). So any of the other observable characteristics that distinguish *R. polyandrum* from ssp. *maddenii* are mostly wishy-washy: the shape of the leaves and the corollas, for instance, are said to be different, but this is minimal unless extreme forms are lined-up side by side; the bark is rough, rather than smooth and flaking; the abaxial scales never overlap on the *R. polyandrum* leaf, whereas they do on the ssp. *maddenii* blades, although they may be contiguous or nearly so, or up to half their own diameter apart, on either shrub; and those very same scales are medium or large-sized for *R. polyandrum,* but small, medium or large-sized for ssp. *maddenii*.

One difference between the two is a kicker, however, and it is the primary reason that torpedoes any thought of synonymy and requires their immediate separation, regardless of the style-ovary junction specification: *R. polyandrum* is a hexaploid with 78 chromosomes, while *R. maddenii* is a tetraploid with just 52. A reproductive barrier therefore exists between the two species that prevents their normal haploid gametes from successfully fusing and creating a viable zygote. For that entity would have to have a compliment of 65 chromosomes, and such an individual has yet to be encountered within the genus.

The type collection of *R. polyandrum,* under Cooper 1454, was made too early in the season to gift any capsules, but the future Curator of Edinburgh Botanic returned in mid-November of 1914 to secure fully matured seed. This arrived in 1915 under the field number 3601, along with a second collection under 4980 made later that same year, but a ten-year wait then ensued before Frank Kingdon-Ward rediscovered the species in 1925. Post a fourth gathering made by Ludlow and Sherriff in 1937, nearly seven decades would fly by before Alan Clark reintroduced the species from Arunachal Pradesh, northeast India, during 2004. Other modern-day plant hunters may also have encountered the species, but if so, returned their seed under the ssp. *maddenii* coverall (although a quick check of the ovary-style junction on those now flowering-size plants will reveal if this was so).

Cultivated specimens of *R. polyandrum* will usually attain medium-tall shrub status outdoors, with bushes 2.5m high, spreading-out to 3.5m or a touch more. But only in gardens along the west coast or those sheltered sites in the south where winter lows are also moderated. For although considered one of the hardiest Subsection *Maddenia* species, greenhouse protection over winter will still be needed if plants are grown along the east coast or inland. Some clones sport white flowers, other rose-pink, with both forms being sweetly scented, their corollas enhanced by a yellow basal blotch often flecked crimson.

R. valentinianum* var. *valentinianum

Hardiness:
H3-4.
Flowering Period:
March-April.
Distribution in the wild:
NE Upper Myanmar; SW Yunnan & Guizhou, China; N Vietnam.
Growing in open scrub and alpine meadow, on rocky slopes and cliffs,
at elevations of 2,700-3,700m.

Identification:
Shrub, low and compact, rounded or spreading, occasionally upright, 0.3 to 1.3m high;
branchlets densely setose.
Leaves elliptic through oblong-oval,
2 to 4.6cm long by 1 to 3.1cm wide;
upper surface lepidote, sparsely through moderately setose or not,
the midrib setose, wholly so, along the lower half, or only at the base,
the margins recurved and densely brown setose;
lower surface scales overlapping, contiguous, or up to 0.5 times their own diameter apart,
the midrib sometimes setose at the base.
Petiole 3-10mm long, densely setose.
Inflorescence 1-6-flowered.
Rhachis setose or not.
Pedicel densely setose.
Calyx deeply lobed, these 4-8mm long,
their outer surface moderately through densely lepidote,
their margins densely setose.
Corolla 2 to 3.5cm long, funnel- through tubular-campanulate,
bright yellow or bright sulphur-yellow,
the outer surface moderately through densely lepidote all over or just on the lobes,
the tube moderately through densely pubescent on the inner and outer surface.
Stamens filaments densely pubescent along the lower third.
Ovary occasionally sparsely setose towards the apex.
Style variably lepidote towards the base.
Capsule 6-9mm long.

Seed Collections:

F 15899	1917
F 17596	1917/1919
F 17963	1917/1919
F 24138	1924/1925
F 24347	1924/1925
F 26112	1924/1925
F 27715	1924/1925

R. valentinianum* var. *changii

Hardiness:
H3.
Flowering Period:
March-April.
Distribution in the wild:
Chongqing, China.
Growing in thickets at elevations of 1,600-2,000m.

Identification:
As var. *valentinianum* except:
Leaves oblong-elliptic through oblong,
3 to 5.5cm long by 2 to 3cm wide;
upper surface smoother, without scales.
Petiole nearly sessile to 3mm long.
Pedicel without bristles.
Calyx lobes to 10mm long,
their margins without bristles.
Corolla deep yellow.
Stamens filaments pubescent along the lower two-thirds.
Style equal to or longer than the corolla.
Capsule 12-15mm long.

Seed Collections:

C&H 9001	1999
JN 11029	2010


R. changii (C&H 9001)

R. valentinianum (F 24347)



R. valentinianum



R. valentinianum

The initial discovery of *R. valentinianum,* made by George Forrest on the mountains of the Shweli-Salween Divide in western Yunnan, occurred sometime between May and June, 1917, with the plant hunter later describing his find in Volume 12 of *Notes from the Royal Botanic Garden, Edinburgh,* the text a joint endeavour with John Hutchinson, which was published in 1919.

Closely related to *R. burmanicum* and *R. fletcherianum,* the two other low-growing, yellow-flowering Series *Formosa* species, *R. valentinianum* can quickly be identified from either of those taxa when in flower by a quick glance into the corolla: if the latter is to hand, the inner surface of the tube will be covered in short, soft, white hairs. Out of flower, *R. ciliatum* will need to be added to the list of lookalikes and the range of identity checks expanded:

R. burmanicum quickly looses any bristles on the young stems, has leaves with a persistently dense covering of scales on the upper surface, and leaf margins that are usually devoid of bristles.

R. fletcherianum has leaf margins that are clearly notched.

R. ciliatum has leaf margins that are flat, so not recurved.

The recently introduced *R. valentinioides* has a much thicker, distinctively wrinkled and leathery - coriaceous - leaf, with the species unlikely ever to be confused with its near namesake.

Outwith the *Maddenia* rhododendrons, two species from the closely allied Subsection *Boothia* flock could also be confused with some forms of *R. valentinianum*. The most obvious, the yellow-flowered *R. megeratum,* will be found to have smaller leaves that are glaucous below and corollas with a short stout style, this sharply deflexed at the base. When in bloom, the white flowers of *R. leucaspis* will be a dead giveaway, but when out of flower, reliance for a correct identification will rest on the bladder-shaped leaf abaxial scales, which are sunk in pits, and although set close together, never touch or overlap.

R. valentinianum var. *changii* was found in what was then the southeast of Sichuan (Szechuan to be magisterially correct to the time), but today is the modern city-state of Chongqing. The variety was named for its collector and described by the renowned Wen-Pei Fang in Volume 12 of *Contributions from the Biological Laboratory of the Science Society of China,* this published in 1939. Forty years on, the taxon was raised to specific status by the same author, shortly before his death.

The disjunct natural distribution does justify separate taxonomic treatment. Equally so, the lack of bristles on the pedicel and calyx margins, plus the near sessile petioles. The plant's leaves are slightly longer, come with a smoother, non-scaly upper surface, and are more rounded than some forms of *R. valentinianum,* while the corollas have a marginally deeper yellow pigmentation, and the calyx lobes and seed capsules are fractionally longer. Yet despite these differences, the *Flora of China* specific-species online entry offers the proviso that *R. changii* is 'very close' to *R. valentinianum*. So close in fact that the original ranking is maintained herein.

A plant described as *R. valentinianum* var. *oblongilobatum* by another respected Chinese botanist and collector, Rhui-cheng Fang - in Volume 4, Part 3, of *Acta Botanica Yunnanica,* published by the Kunming Institute of Botany in 1982 - has been confused in Western horticultural circles and pigeonholed under the recently discovered and named *R. valentinioides,* probably on account of a set of photographs published in *Rhododendrons of China* (Volume 3), which are snapshots of the latter wrongly placed under an entry for the former. In fact, the two taxa are totally separate.

The character differences that distinguish var. *oblongilobatum* from var. *valentinianum* have been listed as a non-bristly pedicel and oblong shaped calyx lobes rather than oblong-

ovate through ovate. They are also only 4-5mm in length instead of 4-8mm, and come with margins devoid of ciliate hairs. Furthermore, no niche geographic distribution has been detailed. So as presented, even the botanists of old would have been hard pushed to justify the partition, for on such trivialities, only hairs are split. Of course, *Flora of China* maintains the division, but herein, the two are considered one.

All of the *R. valentinianum* var. *valentinianum* seed collections introduced into the UK to date bear George Forrest field numbers, for despite Frank Kingdon-Ward finding a population of plants growing in Upper Myanmar during June 1919, and three-quarters of a century later - in April 1995 - the Japanese botanist, Mikinori Ogisu, discovering that the endemic distribution extended into northern Vietnam, no other collector has yet secured seed of the true species, as the two Keith Rushforth gatherings made in Yunnan - dried material in 1993 and seed in 1996 (under KR 4006) - have both been given affinity tags. The plants germinated from Forrest's seven lots have proved hardier than most other Subsection *Maddenia* species grown in British gardens, being able to survive outdoors in sheltered gardens all the way up the east coast, though mature specimens have been lost at both Edinburgh Botanic and Glendoick in the coldest winters.

The species tends to be slow growing, requires a swiftness of drainage that can only be provided on a steep slope, in a raised bed or on a tree stump (even in drier climes), and takes many years to begin flowering. Then, when those specimens do start to bloom, the buds never open all at once, but swell piecemeal over several weeks, thereby avoiding the pitfall of a total loss to the night-time frosts of March or April, but of course, this practice mars the potential for a spectacular display.

Unless conditions match the spring of 2013.

When plants in west coast gardens were held back for a month or more by the cold, but not otherwise damaged by it, which prodded the buds into a mass swelling once the temperature finally rose.

R. valentinianum var. *changii* was only introduced into UK cultivation during 1999, the credit going to Peter Cox and Peter Hutchison. Jens Nielsen made a further gathering in 2010, but even so, few gardens currently boast a specimen.

The taxon epithet for the specific species, chosen by Forrest, honours the French Roman Catholic missionary priest, Père Sylvain Valentin, who helped supervise some of the Scottish plant hunter's local collectors from his mission station at Tsedjrong, to the north of Tsekou (Chigu), in the upper Mekong valley.



R. valentinianum (F 24347)

R. scopulorum (KW 6354)

R. dendricola* ssp. *scopulorum

Hardiness:
H2-3.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet, China.
Growing on steep slopes, open screes and cliffs,
in rocky thickets, and in pine or mixed woodland, at elevations of 1,800-2,450m.

Identification:
Shrub or small tree, broadly upright or bushy, 1 to 4.5m high;
branchlets sparsely setose at first, but usually quickly lost.
Leaves rigid,
elliptic through obovate-elliptic to oblong-obovate or oblong-lanceolate,
4 to 8.2cm long by 1.6 to 3.6cm wide;
upper surface often convex;
lower surface scales between 2 and 4 times their own diameter apart.
Petiole 8-13mm long, rarely sparsely setose.
Inflorescence 2-4-flowered; often fragrant.
Calyx oblique, the lobes 2-3mm long,
their outer surface lepidote,
their margins sometimes without scales, rarely sparsely setose.
Corolla 4 to 6.2cm long, funnel-shaped through funnel-campanulate,
white, white flushed pink or with pink banding outside, or apple-blossom pink,
with or without a yellow or golden basal blotch,
the outer surface sparsely lepidote all over, or just on the lobes,
and sparsely pubescent all over, or just on the tube,
the lobe margins somewhat crinkled.
Style sparsely through moderately lepidote at the base or along the lower third,
rarely hairy at the base.

Seed Collections:

KW 6325	1924
KW 6354	1924
LS&E 12231	1947
LS&E 12264	1947
LS&E 12354	1947
LS&E 12370	1947
CC 7554	1996
CC 7571	1996
AC 3669	1997
TARRVS 111	2002

R. scopulorum was first found growing in the Tsangpo Gorge by Frank Kingdon-Ward, who made the find during November 1924. John Hutchinson would describe the new-to-science shrub in 1930 for *The Species of Rhododendron,* published by the Rhododendron Society and edited by John Barr Stevenson. The Ludlow, Sherriff and Elliott collections of 1947 then extended the known endemicity to sites around Pome (Bomê County), which is also in the southeast of Tibet.

The rigid texture of the leaves, along with their often pale colour and widely-spaced abaxial scales, are distinctive. So too is the outer surface of the corolla, which is usually wholly hairy and scaly. However, the majority of features displayed by the plant mirror those of *R. dendricola* and it is because of this matching morphology that the ranking has been reduced herein. The lack of any known intermediates on the ground, and that niche distribution - along the Tsangpo Gorge and the lower watershed of the Po-Tsangpo River, where the species is common - necessitates subspecies status.

R. dendricola ssp. *scopulorum* was first introduced into British gardens by Kingdon-Ward in 1924, reintroduced by Frank Ludlow, George Sherriff and Henry Elliott in 1947, with four modern-day gatherings adding to the sextet: two made in 1996 by Peter and Kenneth Cox; one by Alan Clark in 1997; and the last, to date, in 2002, by Tomasz Anisko, Ronald Rabideau and Scott Vergara. Like its sister subspecies, outdoor cultivation of *R. scopulorum* is restricted to well-sheltered sites along the west coast, so it remains a rare find, absent from most UK rhododendron collections. Where it can succeed, the plants have proven to be free flowering from a young age when grown from seed and to form laxly upright bushes to around 2m high over time. Too much shade results in a leggy, tangled habit, but this is often unavoidable if the microclimate necessary for specimens to survive over winter is to be maintained.



R. scopulorum (KW 6354)



R. scopulorum



R. scopulorum



R. scopulorum (KW 6354)

R. leptocladon

Hardiness:
H3-4.
Flowering Period:
March-April.
Distribution in the wild:
S Yunnan, China; Lao Cai Province, Vietnam.
Growing in forests, on banks and cliffs, often epiphytically on trees,
at elevations of 1,800-3,000m.

Identification:
Shrub, epiphytic, somewhat compact through leggy, 0.5 to 1m high, possibly to 2m;
branchlets without bristles.
Leaves elliptic through oblong-elliptic to ovate,
4 to 10cm long by 2 to 4cm wide;
upper surface lepidote at first;
lower surface scales contiguous to 1.5 times their own diameter apart.
Petiole 5-7mm long, without bristles.
Inflorescence 3-4-flowered; fragrant.
Calyx rim-like or marginally lobed, these 1-2mm long,
their outer surface densely lepidote at the base.
Corolla 2.9 to 4.3cm long, funnel-shaped through tubular funnel-shaped,
greenish-yellow through yellow, darker in the throat,
the outer surface sparsely lepidote,
the tube pubescent.
Style lepidote at the base or along the lower half.

Seed Collections:

KR 1877	1991
KR 1929	1991
KR 2314	1992
KR 2932	1994

Eugène Poilane was the first Western plant hunter to find *R. leptocladon,* discovering a population located on the slopes of Fansipan, close to Sa Pa, a market town in Vietnam's Lao Cai Province, during July 1926. The region was then of course under French colonial administration and known as Tonkin; the mountain, as the Massif de Lo Sui Tong; and the settlement of Sa Pa (Sand Village in Yunnanese Mandarin), called Chapa. The hill station itself was home to a military post and a swathe of discordant holiday villas. The species botanic description, written by Paul Louis Dop, can be found in Volume 3 of *Flore Générale de l'Indo-Chine [Paul Henri Lecomte et al.],* which was published in 1930.

Seed of *R. leptocladon* was not introduced into the UK until the very end of 1991, when Keith Rushforth returned from his first expedition to northern Vietnam, and he remains the only plant hunter to have secured viable capsules. These were first harvested from plants growing alongside the road from Sa Pa to Phong Tho - specifically at Dèo Hoàng Liên Sòn in the Hoang Lien National Park (field number KR 1877) - and then from a second population later found on the eastern ridge of Fansipan (KR 1929). The germinated youngsters were relatively straightforward to establish, grew away without problem and proved hardier than expected, succeeding in mild southern gardens as well as those favoured locales along the west coast, though a cool greenhouse was still required to overwinter specimens elsewhere. They also began to flower freely from quite a young age, opening a profusion of lime-yellow-coloured, widely funnel-shaped blooms that were close to 8cm across and which over time, faded to butter-yellow.

And it was at this point that rhodo-savvy botanists could be heard taking a deep breath - for *R. leptocladon* had an impressed style, which meant that its placement as a synonym of *R. lyi,* which has a tapered ovary-style juncture, was in error. Specific status was restored as the species was also found to differ from the other yellow-flowered Series *Formosa* rhododendrons in having no bristles on the branchlets, petioles or leaves.

In consequence, *R. leptocladon* is now believed to be most closely related to *R. dendricola,* which despite being a taller-growing plant with white flowers that are twice as long, has similar sized and shaped foliage, an absence of bristles, a rim-like calyx and ten stamens. On the ground, several hundred miles and some sizeable mountain ranges now separate the two species, with the most northerly populations of *R. leptocladon* found in southern Yunnan, while the distribution of *R. dendricola* only extends into the northwest of that province.

The *R. leptocladon* Latin epithet translates as 'with thin twigs'.

R. fletcherianum

Hardiness:
H4-5.
Flowering Period:
March-May.
Distribution in the wild:
SE Tibet; NW Yunnan, China.
Growing in forests, on steep slopes, boulders and cliffs,
at elevations of 2,900-4,300m.

Identification:
Shrub, compact and spreading to broadly upright and leggy, 0.6 to 1.2m high;
branchlets densely setose.
Leaves oblong-obovate through oblong-elliptic to oblong-lanceolate,
2.3 to 5.6cm long by 1 to 2.8cm wide,
decurrent on the petiole;
upper surface sparsely lepidote or not,
the margins distinctly crenulate and setose;
lower surface scales between 3 and 6 times their own diameter apart.
Petiole 4-10mm long, narrowly winged, setose.
Inflorescence 2-5-flowered.
Pedicel moderately through densely pilose.
Calyx pale green, deeply lobed, these 8-12mm long,
their outer surface lepidote at the base,
their margins moderately through densely pilose.
Corolla 3 to 4.9cm long, widely funnel-shaped,
pale yellow,
the outer surface sparsely lepidote or not.
Ovary conspicuously setose on the upper half.
Capsule setose along the upper half.

Seed Collections:

R 22302	1932
R 22659	1932
BASE 9577	2000

Until the team of rhododendron aficionados that comprised the British-American Salween Expedition rediscovered *R. fletcherianum* in the spring of 2000, and in the process extended its range into northwest Yunnan, only Joseph Rock had encountered this species in the wild. He had collected herbarium specimens and seed, in June and August 1932, while exploring the mountainsides above the village of Tsarung (now Cawarong), in Zayü County, southeast Tibet, and recorded the altitudinal endemic range as being between 4,118m and 4,270m. But for the next thirty years, the plants and the plates languished under the coverall of a *R. valentinianum* aff. determination, until H. H. Davidian reviewed the material and decided that a new species was in fact to hand, his botanic description appearing in the Royal Horticultural Society's *Rhododendron and Camellia Year Book 1962*.

Biogeographically, although *R. fletcherianum* resides midway between *R. ciliatum* (to the west) and *R. valentinianum* (to the south and the east), it is morphologically distinct from both of them, for although the pointed leaves are hairless above (albeit with a fringe of bristles along the margins), the edges of the blades are crenulate, being clearly notched and toothed from the apex to the base. In addition, on the leaf underside, the scales are palpably distant from one another, being no less than three times, and often up to six times, their own diameter apart. Equally, the petiole is flat above and grooved, but more importantly, narrowly winged, with the leaf base decurrent on both sides. And finally, the ovary is not only heavily covered in scales, but the upper half is bearded with bristles, which remain in place on the maturing seed capsules.

Of course, when the flowers open, their pale yellow hue immediately cleaves the species away from the white-flushed-pink *R. ciliatum,* and the near total lack of hairs or scales on the lobes or the tube of the corollas, achieves the same state of grace with either variety of *R. valentinianum*.

A small amount of Rock's *R. fletcherianum* seed arrived on British shores late in 1932 and the species has been in cultivation in the UK ever since, proving both hardy and free-flowering, but note, fast drainage is a must have requirement, with soggy roots swiftly advertising their displeasure through leaf spot and die back. Specimens start off their life as compact, spreading domes, and stay that way for many years, until a sudden desire to grow upwards takes over and the plants become leggy as they strive to top the 1m-mark. Sheltered gardens along the east coast, as well as those in the south and along the western seaboard should be able to grow *R. fletcherianum* outdoors without any problem, but following the Yunnan BASE find on the Shweli-Salween Divide at just above 2,900m, there are mutterings that Doctor Joe might have got his 1932 altitude figures transposed. Hence the addition of the lower H4 figure in the hardiness rating range.

Davidian's choice of *R. fletcherianum* for the epithet honours not the fictitious Norman Stanley, but Harold Roy Fletcher, who was the Regius Keeper at the Royal Botanic Garden, Edinburgh, between 1956 and 1970.



R. fletcherianum (R 22302)



R. fletcherianum (R 22302)

R. fletcherianum (R 22302)

R. valentinioides

Hardiness:
H3-4.
Flowering Period:
April-May.
Distribution in the wild:
Jingdong, Jinping, Malipo & Wenshan Counties, SE Yunnan, China.
Growing on rocks and broad-leaved trees, and in thickets on steep dry slopes,
at elevations of 1,800-3,100m.

Identification:
Shrub, epiphytic and terrestrial, rounded or broadly upright, 0.5 to 3m high;
branchlets densely setose.
Leaves thick,
oblong-elliptic through oval,
3 to 5cm long by 1.5 to 3.5cm wide;
upper surface rugose, sparsely lepidote,
the midrib setose at first,
the margins revolute, moderately through densely short-setose;
lower surface scales contiguous or up to 0.5 times their own diameter apart,
the midrib setose at the base.
Petiole 3-5mm long, setose.
Inflorescence 2-5-flowered; fragrant.
Calyx large, deeply lobed, these 8mm long,
their outer surface densely lepidote and glandular,
their margins long-ciliate or glabrous.
Corolla 2 to 6.5cm long, funnel-campanulate,
bright or deep yellow,
the outer surface densely lepidote all over, and short-pubescent all over.
Style lepidote at the base.

Seed Collections:

C&H 7186	1995
AC 1230	1995
AC 1258	1995

R. valentinioides was discovered by Peter Cox and Peter Hutchison in the autumn of 1995 growing on Laojun Shan, a mountain in Wenshan County, southeast Yunnan, close to the border with Vietnam. Specific status and the taxon epithet were assigned in a full botanic description written several years ago by David Chamberlain, in concert with the two Peters, but which unfortunately, is still apparently awaiting formal publication because of a technicality over the type specimen and the Convention on Biological Diversity. The hitch relates to the Prior Informed Consent provisions of the regulations, where permission for the export of a specimen from its country of origin must be given official sanction at the highest levels of government. However, the still unofficial name has been circulated widely since it first appeared in the Glendoick Gardens plant catalogue of 2010 and is now in common use throughout the UK, in Europe, and in the USA.

In the decade or so immediately after its discovery, botanists and horticulturalists alike, wrongly filed *R. valentinioides* under the tongue-twisting sobriquet *R. valentinianum* var. *oblongilobatum,* which is an entirely separate taxon, although herein considered to be synonymous under *R. valentinianum*. As a result, many beautifully engraved metal and plastic labels have had to be changed, courtesy of the aforementioned discordant entry in *Rhododendrons of China,* Volume 3 (*Science Press,* Beijing, 1999), with reimbursement of these costs by the publisher or the authors currently considered unlikely.

The almost-but-not-quite bullate foliage - oblong-oval in shape with recurved margins that are fringed with very short bristly hairs, densely so sometimes, but on occasion, only partially - is usually enough to identify *R. valentinioides* from its taxonomic near-namesake relations, especially as the various appendage features are also larger than those sported by either variety of *R. valentinianum,* as well as *R. fletcherianum,* in all aspects. The taxon is probably most closely related to *R. burmanicum,* which differs in having non-persistent bristles on the branchlets and far less rugose leaves, with a much denser covering of scales found on the leaf upper surface. When the flowers of *R. valentinioides* open however, any persisting identification worries will be swiftly brushed aside by the deepest-hued yellow corollas of any Subgenus *Rhododendron* species outwith the tropical Vireya rhododendrons of Section *Schistanthe*.

Back in 1995, Cox and Hutchison pipped another team of western plant hunters to botanic immortality via the first introduction of *R. valentinioides* into British gardens by just a few weeks, for the two Peters had barely stepped off the slopes of Laojun Shan when another expedition, led by Alan Clark, arrived. Both teams found *R. valentinioides* growing epiphytically in woodland, and on moss-covered rocks and boulders, as well as terrestrially, with its roots in the ground, alongside the access road. Capsules were gathered, seed sown and germinated, and today, specimens will be found in any number of west coast, southern and east coast gardens, for the young plants have proved far hardier in cultivation than nearly all the other *Maddenia* species, despite the ‘official’ H3-4 rating shown opposite.

R. valentinioides has an upright, rather than mounding habit, but growth is somewhat slow, with drainage requirements matching those of the other Series *Formosa* species that prefer to keep their feet up in the trees. Currently, the oldest specimens are still dwarf-ish to low shrubs, but they are likely to mirror *R. burmanicum* and ultimately become 2m high bushes in due course. Fortunately, flowering too seems to follow the example set by *R. burmanicum* rather than that of *R. valentinianum,* with the youngsters opting for spectacle rather than whimper.

R. valentinioides (AC 1258)



R. valentinioides (AC 1230)



R. valentinioides (AC 1258)

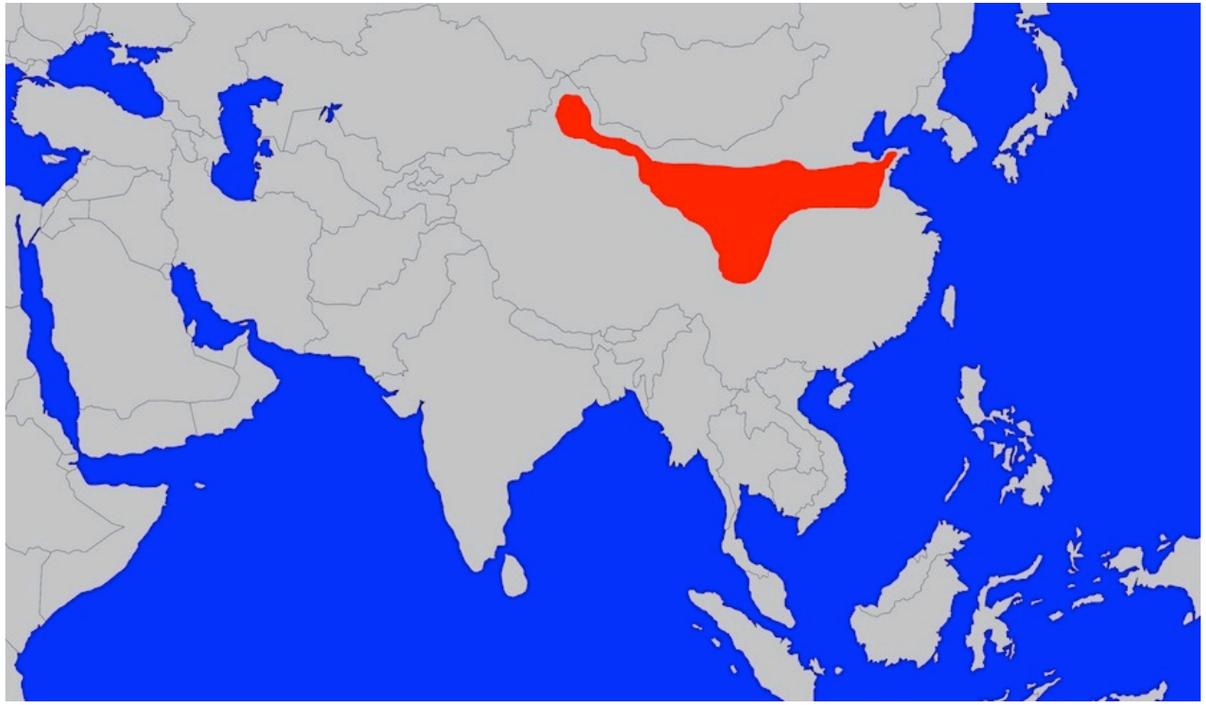


R. valentinioides (AC 1258)

R. valentinioides (AC 1258)

Section *Lepipherum* Subsection *Micrantha:*


R. micranthum



Taxa:

R. micranthum

Taxonomic Revision:

Placement of the monotypic Subsection *Micrantha* remains as designated in the 1996 Edinburgh Revision classification.

Subsection Morphology:

Shrubs, straggly at first becoming bushy, 0.6 to 2.5m high; branchlets slender, lepidote, variably pubescent at first.

Leaves evergreen, coriaceous, oblong-elliptic through oblanceolate to lanceolate, 1.5 to 6cm long by 0.4 to 2.5cm wide, apex acute, rounded or obtuse, and mucronate, base obtuse or narrowly cuneate, sometimes decurrent on the petiole; upper surface dark green, shiny, sparsely through moderately lepidote or without scales, the midrib sparsely puberulent or without hairs; lower surface moderately through densely lepidote, the scales medium-sized, broadly-rimmed, brown, overlapping, contiguous or up to 0.5 times their own diameter apart.

Leaf anatomy comprises a single-layered upper epidermis; the cuticle is thin; water tissue is absent; the lower epidermis cells are somewhat prolonged into papillae.

Petiole 2-8mm long, the margins sometimes ridged, lepidote.

Inflorescence terminal, or terminal and axillary in the uppermost 1-3 leaves, racemose, 10-28-flowered, the individual flowers very small.

Rhachis 10-26mm long, conspicuous, densely pubescent.

Pedicels 7-20mm long, slender, variably lepidote, pubescent or without hairs.

Calyx small, 5-lobed, these linear, lanceolate or triangular and 0.5-3mm long, their outer surface lepidote, their margins ciliate.

Corolla 0.4 to 1cm long, funnel-campanulate through campanulate, very deeply lobed, white or milky-white, without spots, the outer surface densely lepidote.

Stamens 10, unequal, as long or longer than the corolla, straight or very slightly declinate; the filaments glabrous.

Ovary conoid, 1-2mm long, 5-6-locular, densely lepidote.

Style straight, slender, equal to or shorter than either the corolla or the stamens, impressed into a depression at the ovary apex, rarely with a few hairs or scales at the base.

Capsule oblong, 4-8mm long, straight, moderately through densely lepidote.

Seeds elongate, prominently winged, with an appendage at each end.

R. micranthum

Hardiness:

H5-6.

Flowering Period:

May-July.

Distribution in the wild:

NE Yunnan, W Sichuan, Hunan, Gansu, Shaanxi, W Hubei, Henan, Shanxi, Hebei, Shandong, Beijing, Tianjin, Liaoning, Jilin & Heilongjiang, China; Korea.

Growing in thickets and scrub, on slopes, in dry gorges, on cliffs and rocks, at elevations of 1,000-3,200m.

Identification:

Shrub, straggly at first becoming bushy, 0.6 to 2.5m high;
branchlets slender, lepidote, variably pubescent at first.
Leaves oblong-elliptic through oblanceolate to lanceolate,
1.5 to 6cm long by 0.4 to 2.5cm wide;
upper surface dark green and shiny;
lower surface densely lepidote,
the brown scales overlapping, contiguous or up to 0.5 times their own diameter apart.
Inflorescence terminal, or terminal and axillary in the uppermost 1-3 leaves,
10-28-flowered.
Rhachis 10-26mm long, conspicuous, densely pubescent.
Corolla 0.4 to 1cm long, funnel-campanulate through campanulate, very deeply lobed,
white through milky-white,
the outer surface densely lepidote.
Stamens 10, usually longer than the corolla.
Style usually shorter than either the corolla or the stamens, impressed.

Seed Collections:

W 1218	1901	NEKG 143	1989
W 660	1907	BJG 037	1994
W 1200	1908	BJG 067	1994
W 1320	1908	BJG 137	1994
W 4262	1910	QLG 011	1996
R 15004	1925		

The wild distribution of *R. micranthum* is extensive, spreading from Korea out across the northeastern, central and northern provinces of China, though not extending into Inner Mongolia, Ningxia, Qinghai or Xinjiang, and while completely absent from the Himalayan hub of the genus, the species has been discovered growing in the west of Sichuan, and in the northeast corner of Yunnan. And remarkably, despite this vast natural endemicity, little variation will be found across the various individual populations.

The Russian botanist and collector Nicolai Stepanovich Turczaninow first described the species in an 1837-published edition of the *Bulletin de la Société Imperiale des Naturalistes de Moscou*. This was followed by a more detailed rendering in Volume 21 of the series, published in 1848. The initial exposition was made from specimens collected to the north of Peking (now, of course, Beijing) by an un-named collector, one of the many Russian plant hunters who sent their newly gathered material to Turczaninow for him to classify and describe, as a bad fall had left the botanist unable to continue with his own fieldwork.

At first glance, especially when in flower, *R. micranthum* shows a clear resemblance to the species of Subsection *Leda,* but as phylogenetic analysis has shown, they occupy separate clades within Section *Lepipherum* (*The Molecular Systematics of Rhododendron (Ericaceae): A Phylogeny Based Upon RPB2 Gene Sequences,* Goetsch et al, *Systematic Botany,* Volume 30, Number 3, 2005). The plants are also reflective of some Subsection *Lapponica* members, but again the DNA evidence rules out a merger.

A lack of any persistent rusty-brown tomentum on the branchlets, in concert with the shiny, more smooth-surfaced leaves, will key the somewhat taller-growing *R. micranthum* from any of the Subsection *Leda* species, while the multi-flowered truss, distinctive rhachis and long shoots swiftly cleave it from those rhododendrons that are resident in Subsection *Lapponica*. Considered a monotypic subsection by Western botanists, members of the same profession in China have described an additional two plants:

R. liaoxigense, which comes from upland areas in the west of Liaoning province, has yet to be introduced into UK cultivation, but growing around the 500m contour, these plants should be hardy enough to survive outdoors in British gardens and a yellow-flowered ledum-like species would surely have rhodophiles everywhere clamouring for a specimen. A Google image search currently produces no viable results, which might suggest a possible lack of horticultural value. The species was described by S. L. Tung and Z. Lu in the *Bulletin of Botanical Research, Harbin,* Volume 8, Number 2, 1988.

Jens Nielsen and Remi Nielsen collected the second named taxon, *R. brevicaudatum,* in Guizhou Province on an expedition during 2009, though only a single lone individual was found and the capsules had already dehisced. A small amount of seed was gathered under the field number NN 0963 and a portion of this was made available on the 2010 American Rhododendron Society annual exchange, so a few individuals might have acclimatised to the British maritime climate in one or two gardens, but again, this is likely another taxon for the connoisseur. For while 'botanically interesting' the rhododendron may be, its flowers are tiny in comparison to the foliage, and the leaves themselves, of no outstanding visual appeal. The plant was described by R. C. Fang and S. S. Chang in Volume 10, Number 3, of *Acta Botanica Yunnanica, Kunming,* which was also published in 1988.

Photos of the sole individual plant encountered in the wild by Jens and Remi, as well as a cultivated flowering specimen, can currently be viewed on the website of the ARS Danish Chapter at https://www.rhododendron.dk/brevicaudatum.html.

R. micranthum itself was introduced into the UK during 1901, Ernest Wilson securing seed for the Veitch horticultural emporium from a population of plants found in western Hupeh (now Hubei), with first-flowering occurring just three years later at the firm's Coombe Wood nursery. A further four seed lots would arrive from Wilson, the last of these in 1910, plus one from Joseph Rock in 1925, after which, a more than six-decades-long hiatus ensued before Western teams re-encountered the species during 1989 and 1994, the latter collections made on the hills to the north of Beijing.

The species remains a rarity in both private and public gardens, possibly because young plants have shown themselves to be susceptible to bark split. This can be avoided if specimens are grown against a wall or given an extra modicum of over-wintering protection in their formative years. When mature, the shrubs are fully hardy and able to shrug-off the worst of the weather in most places where rhododendrons can be cultivated outdoors. Bushy domes around 2.5m high and wide will then result, these not spectacular in flower, but certainly a welcome addition as June rolls into July.

Section *Lepipherum* Subsection *Monantha:*



Taxa:

R. concinnoides
R. flavantherum
R. kasoense
R. monanthum

Taxonomic Revision:

The placement of Subsection *Monantha* remains as designated in the 1996 Edinburgh Revision classification.

The four species resident in the subsection are likely the least well-known rhododendrons in the entire genus and are absent from virtually every garden in the UK, private or public, botanic institute or horticultural collection.

Genetically, they may prove to be the linking species between Section *Lepipherum* and the tropical Vireya rhododendrons of Section *Schistanthe,* but this has yet to be evidenced in any published phylogenic study.

Within Section *Lepipherum,* the quartet are most closely related to the residents of Subsection *Boothia* and Subsection *Uniflora,* though the corolla shape, exserted stamens and style, and the winged seeds reflect the morphology of the Section *Schistanthe* species.

The trait of primarily flowering in the wild during September and October, is unique.

Subsection Morphology:

Shrubs, compact and low, spreading, or lax and straggly, often epiphytic, 0.3 to 3m high; branchlets variably lepidote, otherwise glabrous at maturity; bark grey-white, peeling.

Leaves evergreen, coriaceous,
elliptic, ovate-elliptic, obovate, oblong or lanceolate,
2 to 7.3cm long by 1 to 2.8cm wide,
apex obtuse, rounded or acute, and apiculate or mucronate,
base obtuse, cuneate, tapering or rounded;
upper surface dark or olive-green, variably lepidote, sometimes loosely so;
lower surface glaucous or finely papillose, usually densely lepidote,
the scales pale or dark brown, unequal,
medium- or large-sized, flat and broadly-rimmed,
almost contiguous to 3 times their own diameter apart.

Leaf anatomy comprises a 3-layered upper epidermis,
with the cells in the top layer being smaller than those in the layers below;
the cuticle is around half as thick as the top cells are deep;
water tissue is absent;
the lower epidermis cells are prolonged into papillae.
Sclereid cells are present.

Petiole 3-15mm long, variably lepidote.

Inflorescence terminal, subumbellate (shortly racemose), 1-2-3-flowered;
the buds opening in the autumn.

Rhachis (when present) 1-2mm long, lepidote.

Pedicel 2-10mm long, densely lepidote.

Calyx minute, rim-like, undulate or 5-lobed,
these triangular or rounded and 0.5-4mm long,
their outer surface densely lepidote,
their margins lepidote and occasionally ciliate.

Corolla 1.4 to 2.6cm long, 5-lobed,
tubular-funnel-shaped to tubular-campanulate,
slightly oblique and compressed laterally,
with scarcely spreading but reflexed lobes,
yellow, tinged with green when dry, or purple,
the outer surface variably lepidote.

Stamens 10, declinate, exserted;
filaments densely villous at the base or along the lower half or third.

Ovary conoid or oblong, 3-4mm long, 5-celled, densely lepidote.

Style slender, usually declinate, exserted, longer than the corolla and the stamens,
impressed in a shouldered depression at the ovary apex,
glabrous or sometimes lepidote at the base or along the lower half.

Capsule cylindric, 8-20mm long, densely lepidote.

Seeds elongate, winged and with a conspicuous appendage at each end.

R. monanthum

Hardiness:
H3.
Flowering Period:
October-December.
Distribution in the wild:
SE Tibet; NE Myanmar; NW Yunnan, China.
Growing at forest margins, amongst scrub, on rocky slopes and cliffs,
in shrubby meadows, and epiphytically on trees, at elevations of 2,000-3,600m.

Identification:
Shrubs, low and spreading, 0.3 to 1.2m high;
branchlets often shortly setose-glandular at first,
but glabrous and eglandular when mature.
Leaves elliptic through ovate-elliptic to obovate or oblong,
2 to 5cm long by 1 to 2.5cm wide;
lower surface scales set 0.5 to their own diameter apart.
Petiole 4-8mm long, densely lepidote.
Calyx undulate-lobulate and 1-2mm long.
Corolla 1.4 to 2.4cm long, tubular-funnel-shaped through tubular-campanulate,
creamy, lemon, greenish or deep yellow.

Seed Collections:

F 19844	1921/1922	KW 13230	1937
F 19956	1921/1922	LS&T 6572	1938
F 20879	1921/1922	CCHH 8041	1997
F 21825	1921/1922	CCHH 8133	1997
F 22654	1921/1922	CCHH 8208	1997
F 25617	1924/1925	DGEY 142	2001
F 25858	1924/1925	DGEY 288	2001
R 22056	1932	JN 11065	2011
KW 13195	1937	JN 12142	2012

George Forrest was the first Western plant hunter to find *R. monanthum,* discovering the species while exploring on the Lu-po Pass, in the Mekong-Salween Divide of northwest Yunnan, during November 1905. His type specimens, however - under Forrest 951 - were initially thought to be *R. sulfureum* and filed away as such by Friedrich Diels. This mistaken determination was rectified in 1916 when Sir Isaac Bayley Balfour and William Wright Smith published a full botanic description for the new taxon in Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh*.

John Hutchinson then placed *R. monanthum* within the Boothii Series in his lepidote entries for 1930's *The Species of Rhododendron,* though John Macqueen Cowan would later change that association in an article for *The Rhododendron Year Book 1948,* moving the species into the Uniflorum Series. H. H. Davidian maintained this placement in Volume 1 of his *The Rhododendron Species,* published in 1982, but noted a measure of affinity with the rhododendrons domiciled in the Tephropeplum Series. He additionally chose to leave *R. concinnoides, R. flavantherum* and *R. kasoense* resident in the Triflorum Series. However, James Cullen, then the lead botanist working on a major update of the classification at Edinburgh Botanic, whose focus was specifically on the lepidote species, had seen similarities between all four species - the corolla shape; the exserted stamens and style; but most importantly, the winged and finned seeds - and created Subsection *Monantha* specifically to hold them, this new pigeonhole formally announced in the paper he co-authored with David Chamberlain in 1978 (*A Preliminary Synopsis of the Genus Rhododendron,* within Volume 36 of *Notes*), which was then outlined in detail within the full 1980-published Subgenus *Rhododendron* revision (*Notes,* Volume 39, Number 1).

Within the new subsection, certain morphologic characteristics do show that there is a loose relationship with the *Boothia* and *Uniflora* rhododendrons - most particularly, with regard to the usually single-flowered *R. monanthum* - but as indicated above, it is the diagnostics of the seeds that are the crucial identifier and the main reason for the quartet's separate grouping. Because the elongated shape and distinctive appendages at either end mirror the seed structure evolved by the tropical Vireya species from Section *Schistanthe,* rather than the membership of Section *Lepipherum*. Which as indicated opposite, positions the four plants as the likely linking taxa between those two sections.

A short petiole 4-8mm long, calyx lobes that are undulate and just 1-2mm long, and lower leaf surface scales that are distant from one another by between half and their own diameter, are the features that can be used to key *R. monanthum* from the subsection's other residents, with mature height and corolla colour additional aids. Seven collections made by Forrest between 1921 and 1925, one by Joseph Rock in 1932, two from Kingdon-Ward in 1937, and a final Frank Ludlow, George Sherriff and George Taylor gathering in 1938 - detailed on lists of UK-introduced seed (*The Rhododendron Handbook 1967,* Part One, published by the Royal Horticultural Society, for instance) - must all have failed to germinate for according to Davidian - Volume 1, page 382 - at the time of writing, the species was absent without leave. That changed during 1997 when viable capsules were secured by David Chamberlain, Peter Cox, Steve Hootman and Peter Hutchison on an expedition to the mountains of the Shweli-Salween Divide in Yunnan Province.

R. monanthum has since shown itself to be very slow growing, although plants have bloomed and opened 1-, 2- or 3-flowered trusses of deep yellow, bell-shaped corollas. But as those buds swell fairly late on in a typical British autumn - towards the end of November and into December - frost-free conditions must prevail, which even with climate change, is asking a lot sans any protective glass. However, photographs of the species in cultivation showing the flowers and the foliage, can currently be viewed on the ARS Danish Chapter website at https://www.rhododendron.dk/monanthum.html.

R. flavantherum

Hardiness:
H2-3.
Flowering Period:
November-December.
Distribution in the wild:
the Churung Confluence, Tsangpo Gorge, SE Tibet.
Growing on north facing vertical cliffs at elevations of 2,500-2,800m.

Identification:
Shrub, 1.8 to 3m high.
Leaves oblong-elliptic, 3 to 4cm long by 1.3 to 2cm wide;
lower surface scales 2 to 3 times their own diameter apart.
Petiole 5-8mm long, sparsely lepidote.
Calyx deeply lobed and 2.5-4mm long.
Corolla 1.5 to 2cm long, tubular or tubular-campanulate,
bright clear yellow.
Stamen anthers deep orange.
Style lepidote at the base or along the lower half.

Seed Collections:
No authenticated introductions have been documented.

R. flavantherum was the first of the trio of Subsection *Monantha* species that Frank Kingdon-Ward would discover, gathering dried material under KW 6313 in the Tsangpo Gorge in late November 1924. The collection location was on near vertical cliffs close to the Churung Confluence, the point where a significant tributary - the Churung Chu - joins the Tsangpo and the course of the main river veers round to the north. As with the two other *Monantha* finds Ward would make, the botanic description, jointly written with John Hutchinson, appears in *The Species of Rhododendron,* published in 1930.

On the day it was found, *R. flavantherum* was in full bloom, but this was wrongly recorded as a second flowering in Ward's field notes, the plant's true nature being overlooked. So like its two relatives - *R. concinnoides* and *R. kasoense* - the species was initially assigned to the old Triflorum Series, with a resemblance to *R. xanthostephanum* of Subsection *Tephropepla* also noted some years later. The Edinburgh Revision moved all three to the newly created Subsection *Monantha* and here, the larger calyx lobes will distinguish *R. flavantherum* from each of its cohorts, with height of growth additionally identifying it from both *R. monanthum,* and the recently introduced *R. concinnoides*.

Despite a dearth of herbarium specimens, some authors believe the taxon should be considered a form of *R. monanthum,* while others would opt to make it synonymous. But with the requisite evidence for such lacking, the status quo is maintained herein.

Kingdon-Ward's type specimen is the only officially recorded collection of the species to date, so, in theory, the species has not been introduced into UK cultivation. However, James Cullen, writing in his 2005 book *Hardy Rhododendron Species,* remarks that the taxon appears 'in some garden lists', so Kingdon-Ward's field note observations - that *R. flavantherum* was not found in the depths of the nearby forest, but on perpendicular crags, which although facing north, were not otherwise heavily shaded - should aid the selection and maintenance of a suitable planting position for those lucky few acquirers. If such exist.

The Latin epithet refers to the colour of the stamen anthers.

R. concinnoides

Hardiness:
H3.
Flowering Period:
September-October.
Distribution in the wild:
Mishmi Hills, Arunachal Pradesh, India.
Growing epiphytically in conifer and rhododendron forest,
on rocks and tree stumps in rhododendron thickets, at elevations of 2,440-3,350m.

Identification:
Shrub, lax, 0.3 to 1.3m high.
Leaves elliptic through obovate-elliptic, 2.3 to 4.5cm long by 1 to 2.5cm wide;
lower surface scales near contiguous to 0.5 times their own diameter apart.
Petiole 3-6mm long, densely lepidote.
Calyx lobes 1mm long, their margins often ciliate.
Corolla 1.6 to 2.6cm long, tubular-campanulate,
pinkish-purple on the lobes fading to white at the base, with darker spotting inside.

Seed Collections:

APA 85	2005	KR 8402	2006	KR 8498	2006

Frank Kingdon-Ward discovered *R. concinnoides* in the Delei Valley of northeastern India during May 1928. Then part of Assam, but now administratively relocated into Arunachal Pradesh, the river-cut gorge is a periphery of the Mishmi Hills, its tributary flowing down to join the Lohit River a hundred miles or so upstream of Sadiya. Ward returned to the area in August of that year, collecting the type specimen herbarium material under KW 8578, and visited again in mid-September when the plant "was in full bloom, with many fallen corollas" (KW 8168 and KW 8227). The Hutchinson-Ward botanic description can be found in 1930's *The Species of Rhododendron,* which was edited by John Barr Stevenson and published by the Rhododendron Society.

Initially associated with *R. concinnum,* as the epithet suggests, and pigeonholed in the old Polylepis Subseries of the Triflorum Series, even then the botanists regarded the species as an aberrant, the tubular-campanulate oblique corollas unlike any displayed on specimens of its cohabitees. Suggestions of links to the *Maddenii* or *Tephropepla* species had been mooted over the years, but the placement remained unchanged until James Cullen created Subsection *Monantha* in 1978. The botanist also stated that in all likelihood, *R. concinnoides* was merely a purple-flowered version of *R. monanthum,* but added that until more material was available for study, its status should remain unchanged.

Twenty-five years later, *R. concinnoides* was finally introduced into UK gardens when a team that included Ken Cox, Steve Hootman and Tom Hudson, rediscovered the species in the autumn of 2005. Mature capsules - under the Arunachal Pradesh-Abroka Expedition field number APA 85 - gifted viable seed and young plants were soon available from one or two of the UK's specialist nurseries. As expected, these are autumn-flowering and display lavender through purple corollas in trusses of 3. However, a lack of general hardiness and the frost-free conditions essential for the blooms to survive unscathed, means outdoor cultivation is restricted to the mildest coastal gardens. The epiphytic nature of the species in the wild also means that very sharp drainage is a prerequisite, and if grown under glass, flowering will occur sporadically, from September through to January.

R. kasoense

Hardiness:
H3.
Flowering Period:
November.
Distribution in the wild:
SE Tibet; Arunachal Pradesh & Assam, India.
Growing epiphytically in dense mixed forest, and in thickets and on rocks,
at elevations of 2,100-2,800m.

Identification:
Shrub, compact or straggly, 0.3 to 2.4m high.
Leaves lanceolate through oblong-lanceolate,
3 to 7.3cm long by 1 to 2.8cm wide;
lower surface sparsely lepidote,
the scales 1.5 to 3 times their own diameter apart.
Petiole 5-15mm long, lepidote.
Calyx rim-like or lobed, these 0.5mm long.
Corolla 1.6 to 2cm long, tubular-campanulate, yellow.
Stamen anthers red.

Seed Collections:

KW 8522	1927/1928
KW 8700	1927/1928
KW 11052	1933
LS&T 6583	1938
KW 347	1938/1939
HECC 10009	2002
HECC 10024	2002
HECC 10040	2002
BE 09-01	2009
KR 10380	2012
KR 10577	2012

R. kasoense was first found on Kaso Peak in the Delei Valley, Frank Kingdon-Ward unknowingly completing his troika of Subsection *Monantha* discoveries on August 15th, 1928. But unlike those other two finds - *R. concinnoides* and *R. flavantherum* - this species would later be rediscovered growing at other locations distant from the type specimen, notably in 1938, by Frank Ludlow, George Sherriff and George Taylor, at Nyug La, in southeastern Tibet. The botanic description, penned by Ward and John Hutchinson, appears with those for the other two taxa, in 1930's *The Species of Rhododendron,* all wrongly associated with the Triflorum Series plants, *R. kasoense* specifically, with *R. lutescens*.

Fast-forward to modern times and within Subsection *Monantha, R. kasoense* can be quickly identified from the other two yellow-flowering species, as well as from an out-of-flower *R. concinnoides,* by checking the length of the petioles, which are often up to 15mm long, almost twice the maximum stretch of those on the other three. In addition, the calyx is usually rim-like, but even when minute and undulate, it sports lobes that are no more than 0.5mm long.

Confusion regrettably reigns on the introduction date, with some authors doubtful that the species was in cultivation prior to 2002 when three batches of seed - secured by Peter Hutchison, Philip Evans, and Peter and Kenneth Cox, on an expedition to Arunachal Pradesh (HECC 10009, 10024, and 10040) - arrived back in the UK. However, two editions of *The Rhododendron Handbook* (published by the RHS before and after the convolutions of the Edinburgh Revision, in 1967 and 1998, respectively) list KW 8522, KW 11052 and KW 347, plus LS&T 6583, as all being *R. kasoense* capsules, while back in the early 1930s, *The Species of Rhododendron* detailed the type collection along with a second Kingdon-Ward gathering from 1928 - KW 8700 - though of course, this last may only relate to another herbarium specimen. Again, germination may, or may not, have taken place.

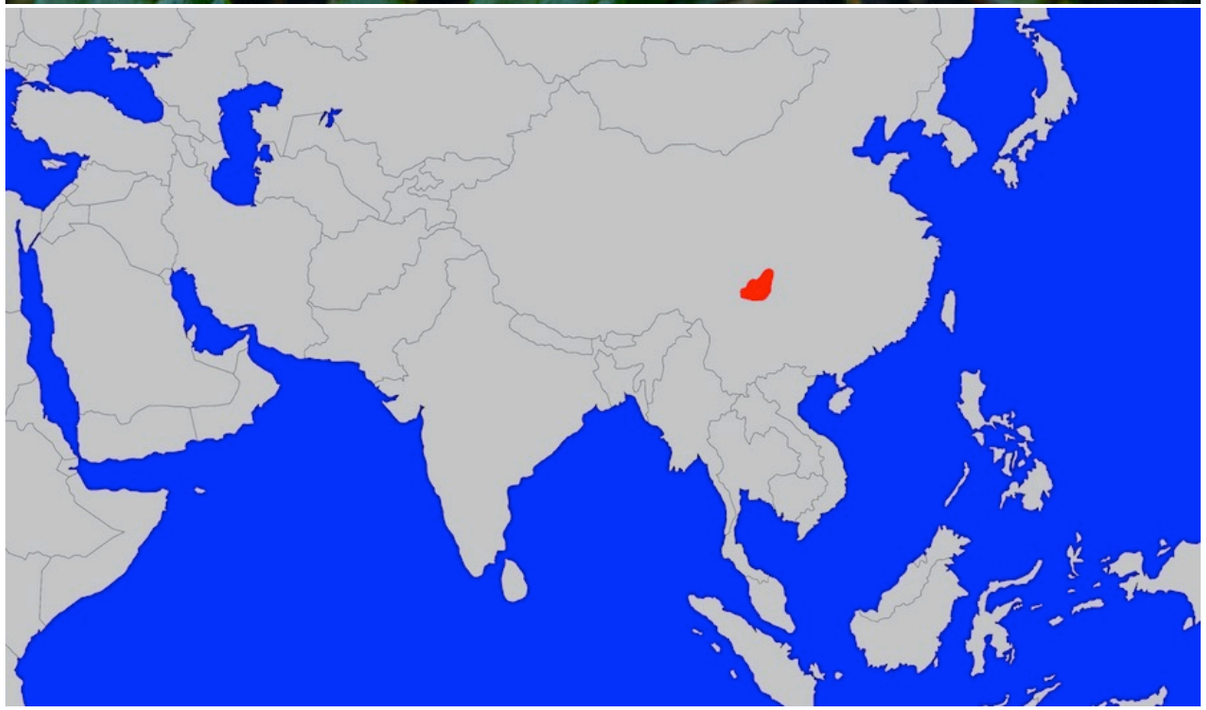
In the wild, Kingdon-Ward's field notes report that specimens are more compact when found growing in full exposure, being 0.3-0.6m high, whereas they are 'lanky' and 2-2.4m high when established in shade. However, in British gardens, a sunny and open site might also equate to a cold and frosty one, which would prove an anathema to successful cultivation, especially given the November bloom time. Realistically therefore, placement outdoors all year round is restricted to the mildest coastal locales along the southwestern and western seaboards.

The recent introductions under those three HECC field numbers have now bloomed and in doing so, unveiled 3-5-flowered trusses, somewhat more populous than the botanic description allows. The abaxial leaf scales have also thrown up a conundrum in that on the mature foliage, intermixed with the sparse pale brown scales, are some distinctly yellowish ones, these around 5 times their own diameter apart. Moreover, the covering as a whole, is rather detersile.

Section *Lepipherum* Subsection *Moupinensia:*



R. petrocharis (GUIZ 120)



Taxa:

R. dendrocharis
R. moupinense
R. petrocharis

Taxonomic Revision:

The placement of Subsection *Moupinensia* remains as designated in the 1996 Edinburgh Revision classification.

Subsection Morphology:

Shrubs, compact to lax and straggly, usually epiphytic, 0.3 to 1.5m high;
branchlets thin, short or long, lepidote,
variably setose at first, the bristles rarely persistent;
bark cinnamon-brown, smooth, matt, sometimes peeling.

Leaf bud scales deciduous.

Leaves evergreen, thick and rigid, coriaceous,
ovate through elliptic to obovate, rarely to near orbicular,
0.9 to 4.6cm long by 0.3 to 2.5cm wide,
rarely to 6cm long by 4cm wide,
apex obtuse or rounded, and apiculate or mucronate,
base obtuse, cuneate or rounded;
upper surface bright or dark green, shiny or somewhat matt,
usually elepidote, but occasionally sparsely lepidote,
the scales when present mostly quickly deciduous,
and sometimes brown-setose at first, the bristles swiftly deciduous,
the midrib sometimes pubescent at or towards the base, rarely more so,
the margins slightly recurved, sometimes persistently setose;
lower surface pale green, glaucous or brownish, densely lepidote,
the scales usually unequal, small or medium-sized, brown, dark brown or reddish-brown,
slightly overlapping, contiguous or up 1.5 times their own diameter apart.

Leaf anatomy comprises a 2-layered upper epidermis,
with the cells in either layer being roughly equal in size;
the cuticle is as thick as the cells are deep; water tissue is absent;
the lower epidermis cells are prolonged into papillae.
Sclereid cells are present.

Petiole 2-9mm long, lepidote,
sometimes pubescent, moderately through densely setose.

Inflorescence terminal, cymose, 1-2-flowered;
the bud scales deciduous or persistent.

Rhachis 1-2mm long, lepidote,
sometimes pubescent, occasionally setose.

Pedicel 2-9mm long, densely lepidote,
often densely pubescent, sometimes setose.

Calyx usually conspicuous, 5-lobed, these oblong or ovate and 1-4mm long,
their outer surface lepidote, sometimes pubescent,
their margins often ciliate.

Corolla 1.5 to 2.5cm long and 3.5 to 5.5cm across, 5-lobed,
saucer-shaped, widely-funnel-campanulate or open-funnel-campanulate,
white, white flushed pink or pale red, rose-pink or rosy-red,
often spotted deep red or purple, sometimes heavily,
the outer surface glabrous and elepidote,
the tube usually densely pubescent inside, rarely sparsely so or glabrous.

Stamens 10, unequal,
shorter than the corolla, roughly equal to or shorter than the style;
filaments densely pubescent along the lower half or third,
but occasionally only at the base.

Ovary conoid or ovoid, 2-4mm long, 5-locular, densely lepidote,
occasionally pubescent at the apex.

Style long or short, straight or declinate,
shorter or slightly longer than the corolla,
longer than or roughly equal to the stamens,
sometimes pubescent at the base,
expanding smoothly and gradually into the ovary.

Capsule cylindrical, ovate or tapering, 10-25mm long, densely lepidote.

Seeds elongate, winged and with a conspicuous appendage at each end.



R. moupinense



R. moupinense

R. dendrocharis

R. dendrocharis

Hardiness:
H5.
Flowering Period:
March-April.
Distribution in the wild:
W Sichuan, China.
Growing epiphytically on conifer and broad-leaved trees,
and terrestrially on rocks and cliffs, at elevations of 1,800-3,200m.

Identification:
Shrub, compact, 0.3 to 0.7m high.
Leaves elliptic through obovate to oval,
0.9 to 2.5cm long by 0.3 to 1.5cm wide;
upper surface sometimes brown-setose at first, but quickly glabrous;
lower surface scales unequal, brown or dark brown,
contiguous to 1.5 times their own diameter apart.
Corolla 1.5 to 2.5cm long, and 3.5 to 5.5cm across,
widely-funnel-campanulate to saucer-shaped,
bright rosy-red, rose-pink or white,
often heavily spotted deep red.
Style slender, straight or declinate,
shorter than the corolla, and shorter, equal to or slightly longer than the stamens,
sometimes densely pubescent at the base.

Seed Collections:

CCH 3915	1989
CCH 4012	1989
Cox 5016	1990
AC 4798	2001
NN 0944	2009
JN 12293	2012

Although not introduced into UK cultivation until 1989 - when David Chamberlain, Peter Cox and Peter Hutchison returned seed from western Sichuan - *R. dendrocharis* was first described by Adrien Franchet in Volume 33 of the *Bulletin de la Société Botanique de France* over a hundred years earlier in 1886. The French missionary priest Armand David had collected herbarium specimens of the species from around Moupin (Baoxing County) in May 1869, returned them to Paris and it was from this dried material that Franchet wrote his account.

If the corolla is excepted, morphologically, *R. dendrocharis* will be seen to be smaller than *R. moupinense* in all its parts, with the leaves never longer than 2.5cm in length and a mature height rarely above 0.7m, half that of its more widely grown relative. Flowering occurs later in the season too, beginning in March rather than early February, and when those blooms are available for inspection, the style will be found to be significantly shorter than the corolla, roughly matching the length of the stamens. The *R. moupinense* style, in contrast, is clearly longer than the stamens, and sometimes even pips the corolla.

The task of distinguishing the species from the very similarly sized and featured *R. petrocharis* would be problematical were it not for three factors: the persistently bristly leaf margins of the latter - *R. dendrocharis* and *R. moupinense* soon loose any hairs or bristles the juvenile foliage may at first display; the longevity of the bristles on the stems of *R. petrocharis* - the loriform-setose hairs remain in place for several years; and the length of the style - the trait that distinguishes *R. dendrocharis* from *R. moupinense* is equally applicable to *R. petrocharis*. Less decisively, abaxial scale colour and corolla shape can aid a correct identification, these being brown and widely funnel-shaped for *R. dendrocharis,* but reddish-brown and nearer funnel-shaped for *R. petrocharis*.

In the wild, *R. dendrocharis* will be found growing on a variety of trees, both evergreen and deciduous, this proclivity reflected in the choice of its Latin epithet, which translates as ‘tree-adorning’, though specimens also thrive in soil pockets on and between large rocks, and at the edges of cliffs, where water run-off is equally swift. Drainage is therefore the key to successful cultivation, which according to all reports is without problem if this criticality is met. Given the early season bloom time, a site offering protection from spring frosts is essential, but otherwise, the species is fully hardy outdoors along the east coast - thriving at Glendoick to the east of Perth, for instance, where buried under snow, it came through the recent severe winters unscathed - though almost inevitably, the flowers will occasionally be lost to the weather. However, *R. dendrocharis* is not suitable for the coldest gardens inland.

The combination of small attractive leaves and large beautiful flowers, produced by most clones in profusion, on a plant that is suitable for even tablecloth-sized urban plots, meant most rhodophiles went swiftly into acquisition mode the moment the species became available at the UK’s specialist nurseries. And they have delighted in their purchase ever since.

R. dendrocharis (CCH 3915)

R. dendrocharis (C 5016)

R. dendrocharis (CCH 3915)



R. moupinense (EN 4186)

R. moupinense

Hardiness:
H4-5.
Flowering Period:
February-March.
Distribution in the wild:
C & W Sichuan, Guizhou, & NE Yunnan, China.
Growing epiphytically on broad-leaved trees, and on rocks and cliffs,
at elevations of 1,900-4,000m.

Identification:
Shrub, somewhat compact, lax or straggly,
rounded, spreading or broadly upright, 0.6 to 1.5m high.
Leaves narrowly ovate through elliptic to obovate or oval,
2 to 4.6cm long by 1.1 to 2.3cm wide,
but sometimes to 6cm long by 4cm wide;
upper surface midrib often sparsely pubescent at the base;
lower surface scales unequal, brown, contiguous to their own diameter apart.
Corolla 3 to 4.8cm long, 3.5 to 5cm across, widely-funnel-campanulate,
white, white flushed pink or red, or deep rose-red,
often spotted dark red or purple.
Ovary sometimes pubescent at the apex.
Style long and slender, straight or declinate,
usually slightly longer than the corolla, always longer than the stamens,
glabrous or sparsely pubescent towards the base.

Seed Collections:

W 879	1909
W 4256	1910/1911
EN 4186	± 1985
CEE 140	1991
AC 1157	1995

Named for the locale at which it was first encountered, *R. moupinense* was also discovered by the Lazarite priest Jean Pierre Armand David, but in 1870, the year after his *R. dendrocharis* find. Moupin, also known as Paoksing-hsien, is today part of Baoxing County, the town situated on the banks of the Qingyi River almost at the centre of Sichuan Province. The species botanic description, here too penned by Adrien Franchet, will likewise be found in the 1886-published Volume 33 of the *Bulletin de la Société Botanique de France*.

R. moupinense can be keyed from the other two members of the subsection using its taller habit and much longer leaves, both of these features usually double the dimensions exhibited by either *R. dendrocharis* or *R. petrocharis*. Any hairs or bristles found on the stems or leaf margins moreover, are quickly lost with age, this a clear demarcation from *R. petrocharis,* while the style is always substantially longer than the stamens, which is never the case with *R. dendrocharis*.

Ernest Wilson was the first, and until the mid-1980s, the only plant hunter to have introduced the species into UK cultivation, his premier batch of seed arriving at Kew via the Arnold Arboretum in 1909, with the fruit from a second gathering made on the 1910-1911 expedition also crossing the Atlantic from Boston courtesy of Charles Sprague Sargent, the garden's first director. Plants from the premier collection under W 879 are usually white flowered, while those from the second encounter - W 4256 - display pink blooms and have proved to be a touch hardier in British gardens.

Like all epiphytes, *R. moupinense* requires a swiftly draining planting site to be grown successfully and despite coming from relatively low elevations, has a known dislike for high summer temperatures. Equally surprising, mature specimens have shown a constitution sufficiently hardy to be grown in all but the coldest of UK locales, though youngsters should be coddled through their first few winters as they are susceptible to bark-split. Once established, however, the species is fairly tolerant of drought, despite possessing a diminutive root ball, and the flowers, produced in ever increasing quantity, are frost hardy in the bud and usually unspoilt by overnight dips of just one or two degrees below zero on the Celsius scale, though if a diaphanous fleece were to hand to drape over a specimen as the sun goes down, so much the better.


R. moupinense


R. moupinense


R. moupinense

R. petrocharis

Hardiness:
H5.
Flowering Period:
March-April.
Distribution in the wild:
NC Sichuan & NE Guizhou, China.
Growing on rocks and cliffs at elevations of 1,800-2,300m.

Identification:
Shrub, compact, but upright and open in shade, 0.5 to 1m high;
branchlets densely setose, the brown bristles persistent for several years.
Leaves ovate through elliptic to near orbicular,
1 to 3.5cm long by 0.5 to 2.5cm wide;
upper surface often sparsely lepidote at first,
the scales when present mostly quickly deciduous,
the midrib sometimes pubescent, the margins persistently brown-setose;
lower surface scales unequal or equal, medium-sized, brown or reddish-brown,
marginally overlapping, contiguous or to their own diameter apart.
Corolla 2 to 3cm long, 3.5cm across, open-funnel-campanulate,
white or pale pink,
often with two small rays of greenish-yellow spots at the mouth of the tube,
the tube sometimes pubescent inside, but only sparsely so.
Style long and slender, straight or declinate,
shorter than the corolla, longer than the stamens.

Seed Collections:

GUIZ 120	1985
SICH 2185	2001



R. petrocharis (GUIZ 120)

Until its introduction into British gardens from northeastern Guizhou during 1985, *R. petrocharis* had been considered by many expert rhododendron doyens to be synonymous with *R. dendrocharis,* although James Cullen had maintained the taxon's specific status in his Edinburgh Revision texts. That position was proved to be fully justified following a resumption of field studies in China by Western botanists and horticulturalists during the early 1980s, for its distinguishing features were readily apparent on the newly available dried material and later, on the cultivated plants.

The species was first discovered at Wenchuan-hsien in north-central Sichuan by Hans Wolfgang Limpricht at the end of April 1914 and described in 1921 by Friedrich Diels in Volume 17 of *Repertorium Specierum Novarum Regni Vegetabilis,* though the identification bullet points opposite reflect plants now in cultivation rather than the original dried material collected by Limpricht, which, while almost certainly the same species, displays some clear morphological differences with the newer specimens - dead or alive - style length and the bristly leaf margins being the most obvious.

The 1985 introduction under GUIZ 120 was a gathering made by John Simmons, Hans Fleigner and James Russell, on, or close to, Fanjin Shan, and these plants have declinate styles that are usually significantly longer than the stamens, but shorter than the corolla, plus persistent bristles on the branchlets and the leaf margins. The corollas are funnel-campanulate in shape, with the inner surface of the tube normally glabrous, but occasionally sporting a sparse covering of pubescent hairs. In combination, these two characteristics will quickly identify specimens of *R. petrocharis* from the other two members of Subsection *Moupinensia*.

Cultivation is straightforward and without problem providing drainage is exemplary, a planting site in a raised bed or on a tree stump being the ideal. In their *Encyclopedia of Rhododendron Species,* Peter and Kenneth Cox reported back in 1997 that plants growing at Glendoick exhibited yellowish foliage if they were sited in full sun, a fact cognoscenti with collections in the southern counties should note.

The chosen Latin epithet translates as 'gracing the rocks'.



R. petrocharis (GUIZ 120)

R. petrocharis (GUIZ 120)

Section *Lepipherum* Subsection *Rhodorastrum:*


R. taquetii



Taxa:

R. dauricum
R. ledebourii
R. mucronulatum
R. mucronulatum ssp. *mucronulatum*
R. mucronulatum ssp. *taquetii*
R. sichotense

Taxonomic Revision:

The subsection remains as designated in the 1996 Edinburgh Revision
- apart from the '*Rhodorastra*' to '*Rhodorastrum*' update -
though as envisaged when the full Subgenus *Rhododendron* text was published in 1980,
and later confirmed in 1996's *The Genus Rhododendron: its classification & synonymy,*
the species count has increased from two to four.

However, due to the isolated distribution of its population, what was then
R. mucronulatum var. *taquetii,* has herein been raised to subspecies status.

A research paper published in 2012,
AFLP analysis of the genetic diversity of closely related rhododendron species of the section Rhodorastra (Ericaceae) from Siberia and the Far East of Russia,
written by N. A. Tikhonova, M. A. Polezhaeva and E. A. Pimenova,
for the *Russian Journal of Genetics,* Volume 48,
has confirmed that all four species are indeed genetically disparate.

Subsection Morphology:

Shrubs, dwarf and compact, or upright, open and spreading, 0.1 to 4m high;
branchlets thin, lepidote, puberulous;
new shoots from buds below those of the inflorescences;
bark greyish-brown, striate.

Leaf bud scales persistent or deciduous.

Leaves deciduous, semi-deciduous or evergreen,
thick and coriaceous, or thinly-textured,
lanceolate to elliptic, oblong-oval to oval, to occasionally near orbicular,
0.6 to 8cm long by 0.4 to 3.6cm wide,
apex acute, acuminate, rounded or broadly obtuse, and mucronate,
base acute, tapered, rounded, obtuse or broadly cuneate;
upper surface bright or dark green,
turning purplish-brown or reddish-purple if overwintered,
matt or shiny, glabrous,
variably lepidote, usually eglandular, sometimes sparsely or densely glandular,
the midrib shortly puberulent or glabrous,
the margins entire or crenulate,
glabrous or variably strigose, the hairs when present loriform;
lower surface pale green, variably lepidote, the scales medium-sized, but unequal,
translucent at first, turning brown or rusty-brown,
overlapping, contiguous or between 0.5 and 4 times their own diameter apart,
eglandular, rarely densely glandular.

Leaf anatomy comprises a single-layered upper epidermis;
the cuticle is thin; water tissue is absent;
the lower epidermis cells are not prolonged into papillae.
Sclereid cells are absent.

Petiole 2-10mm long,
variably lepidote, variably puberulous, occasionally setose.

Inflorescence umbellate,
terminal, or terminal and axillary at the ends of the branches, 1-3-flowered;
usually opening before the new leaves extend;
the bud scales persistent or deciduous.

Rhachis 0.5-1mm long,
usually lepidote, but sometimes without scales.

Pedicel 2-10mm long, usually very short, obscure,
moderately through densely lepidote,
moderately through densely puberulous,
occasionally setose.

Calyx minute, 5-lobed or rim-like, the lobes ovate or triangular and 0.5-1mm long,
their outer surface moderately through densely lepidote,
usually glabrous, occasionally setose,
their margins variably lepidote, sometimes without scales,
usually glabrous, occasionally setose.

Corolla 1.3 to 3.3cm long, 5-lobed,
openly-funnel-shaped, sometimes widely so,
mauve through purple to pink, rarely white,
the outer surface densely hairy towards the base,
the inner surface glabrous or pilose.

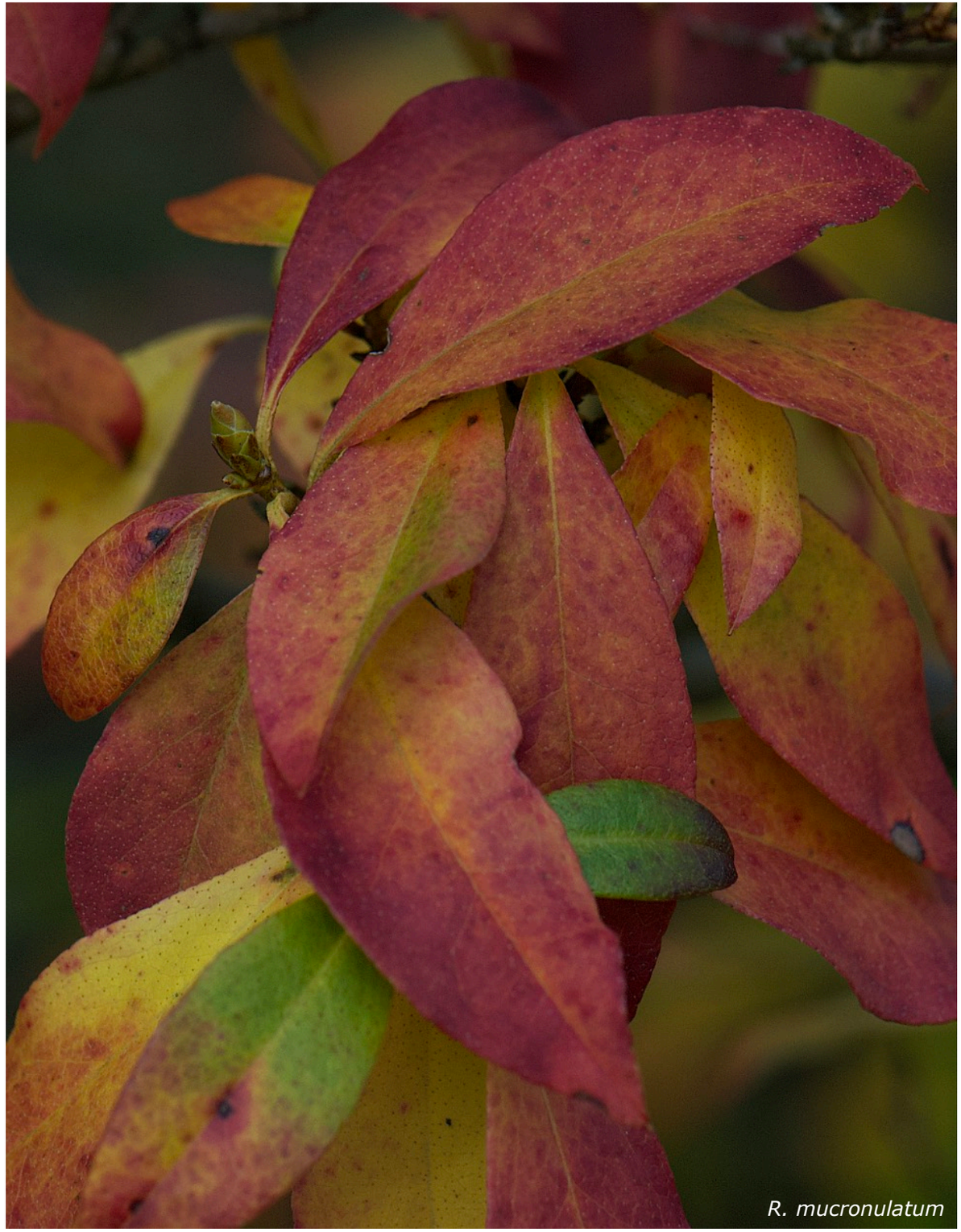
Stamens 10, unequal, exserted, but shorter than the corolla;
filaments pubescent towards the base.

Ovary conoid or oblong, 2-4mm long, 5-locular,
densely lepidote, glabrous.

Style slender, declinate, elepidote, glabrous,
impressed into a depression at the ovary apex,
as long as or longer than the corolla, longer than the stamens.

Capsule ovoid or oblong, 7-16mm long, straight or slightly curved,
densely lepidote, glabrous.

Seeds elongate, without wings or appendages.



R. mucronulatum

R. dauricum

R. dauricum
Hardiness:
H7.
Flowering Period:
Late December-March.
Distribution in the wild:
Mongolia; N China; the Angara-Sayan, Dahuria & Ussuri Regions of E Siberia, Russia;
Hokkaido, Japan.
Growing in *Betula* or *Larix* woodland, or along forest margins,
at elevations from sea level to 1,600m.

Identification:
Shrub, erect but straggly, 0.5 to 2.8m high.
Leaves semi-deciduous, coriaceous, thick,
some overwintering, but usually lost by flowering (in the wild),
elliptic through oblong-oval to oval,
1 to 5cm long by 0.5 to 2cm wide,
apex rounded or broadly obtuse, and mucronate,
base rounded, obtuse or broadly cuneate;
upper surface bright or dark green,
turning purplish-brown or reddish-purple in winter, shiny,
moderately through densely lepidote, eglandular;
lower surface densely lepidote,
the scales overlapping, contiguous or 0.5 to 1.5 times their own diameter apart.
Petiole 2-8mm long.
Inflorescence 1-3-flowered.
Corolla 1.3 to 2.2cm long, open funnel-shaped,
purple, deep rosy-purple, violet-pink, pink or white.

Seed Collections:

W 9251	1917/1919
Doleshy 802	1984
Doleshy 816	1984
AGS 441	1988
KFB 54	1989
Fox 90/030	1990
HJL 091	1993
ESUS 33	1994
NACPEC 97091	1997
MFMO 0351	2003

In addition to the ten authenticated introductions listed above,
between 1975 and 2007, fifteen lots appeared on the American Rhododendron Society
annual seed exchange, these mostly gathered on Hokkaido by members of the
Japanese Rhododendron Society, with just three sourced from eastern Siberia.


R. dauricum

Endemic across Siberia from the Altai Mountains in the west to Kamchatka and Sakhalin in the east, the *R. dauricum* distribution takes in Lake Baikal and Dauria, as well as the Siberian-Mongolian-Manchurian Divide, before island-hopping its way down to Hokkaido, the Japanese archipelago's main northern terminus. The species was introduced into British gardens as early as 1780, was the second entry on a list of five rhododendrons described by the Swedish botanist Carl Linnaeus in his *Species Plantarum,* which had been published thirty years earlier in 1753 - the chosen epithet borrowed from the region where it grew, Dauria, an area of splendid mountains, lakes and rivers now subsumed within the thoroughly unromantic cover-all of Transbaikal - and thirty years before that, it had been discovered and collected by Daniel Gottlieb Messerschmidt, a German physician, naturalist and geographer, during his seven-year exploration of Siberia, begun in 1720 at the behest of the-then Russian monarch, Peter the Great.

Out in those wild and windy locales, *R. dauricum* is able to withstand temperatures as low as -32°C, the foliage near deciduous as a result, with very few of the leathery leaves overwintering and all dropped by the time the flowers open. However, given the extensive range over which the species has spread, geographic variations within the population are to be expected, with the first, a near evergreen version of the plant, possibly introduced into the UK as early as 1798. John Sims described this as *R. dauricum* var. *sempervirens* in 1817 (*Botanical Magazine,* Volume 44, Tab 1888), but subsequent fieldwork by Russian botanists has determined these evergreen plants to be two separate species: those native to the Altai Mountains of western Siberia are now described as *R. ledebourii;* those found in Primorsky Krai in the Russian Far East, initially at Olga Bay on the Sea of Japan, then later on the slopes of the Sikhote-Alin Mountains, as *R. sichotense*. The botanic descriptions for both these rhododendrons were written by Antonina Ivanovna Pojarkova (1897-1980) and appeared in Volume 18 of *Flora Unionis Rerumpublicarum Sovieticarum Socialisticarum,* which was published in 1952 when it was under the editorship of Vladimir Leontjevich Komarov (1869-1945). Western botanists have therefore now sunk *R. dauricum* var. *sempervirens* under *R. ledebourii*.

That the three species are closely related is obvious at a glance, so much so that the specific status of R. *ledebourii* and *R. sichotense* has been challenged, with some botanists reducing their ranking to subspecies status. However, in 2012, a study was published that answered this conundrum: *AFLP analysis of the genetic diversity of closely related rhododendron species of the section Rhodorastra (Ericaceae) from Siberia and the Far East of Russia*. It was authored by N. A. Tikhonova, M. A. Polezhaeva and E. A. Pimenova, and appeared in Volume 48 of the *Russian Journal of Genetics.* A genetic fingerprinting technique - Amplified Fragment Length Polymorphism - was used to show that all four Subsection *Rhodorastrum* species were distinct individuals, with the differences found in their DNA requiring each to be treated as a unique specific species.

Identifying *R. dauricum, R. ledebourii* and *R. sichotense* from each other in the wild is usually without problem, especially given the geographic separation of the latter two, but the mild, maritime, UK winter climate usually makes a mockery of the near deciduous, semi-evergreen and evergreen foliage status of these three plants, which means that the accepted keying in British gardens is really not applicable. Recourse can instead be made to the presence, or the absence, of sticky glands on the leaf surface: without such, *R. dauricum;* slightly sticky on the upper surface only, *R. ledebourii;* decidedly sticky on both the upper and the lower surfaces, *R. sichotense.* Technically, the latter two should overwinter far more leaves than the former, these turning purplish-brown or reddish-purple and remaining attached to densely clothe both species through flowering until the new leaves begin to emerge. Except that many forms of *R. dauricum* often emerge from a UK winter in a similar state of dress to which they entered it, wherever they are being grown across the British Isles, so it is a sophism we shall simply have to live with. A flowering period of late December - if the weather is mild - through to March for *R. dauricum,* can be compared with the March-April bloom time for *R. ledebourii* and *R. sichotense,* and while this may assist an identification, gospel it is not, so breaths should not be held.

The characteristics that cleave either subspecies of *R. mucronulatum* from their three cohorts in the subsection are still relevant: completely deciduous leaves, which are thin, rather than thick and leathery; that foliage lanceolate in shape and pointed at either end, not elliptic or rounded; and abaxial leaf surface scales that are set decidedly distant from one another by between two to four times their own diameters, so not overlapping or contiguous or merely up to two times their own width apart.

R. fittianum, which was described by Sir Isaac Bayley Balfour in Volume 10 of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1917, although reduced to a synonym of *R. dauricum* in 1930's *The Species of Rhododendron,* is actually now known to be a *R. racemosum* hybrid, a cross with *R. trichostomum* in fact, and a rogue that had been found growing in a tray of the-then specific ranked *R. radinum*.

In cultivation, specimens of *R. dauricum* are usually no more than 2m high and wide, their growth habit upright, with ascending branches, though more vertically challenged forms from Japan are also available. So too are white-flowered selections, the lovely 'Hokkaido' clone being one of these. Poor drainage is usually the cause of any demise, with plants shrugging-off the ill effects from frosted young growth with the quick appearance of a second flush of shoots whenever such a disaster strikes. Swelling flower buds or already open corollas fare worse, succumbing if temperatures fall even a few degrees below zero. Yet if favourable conditions endure, plants will be swathed in a mass of pink, rosy-purple or white blooms for three weeks or more.



R. dauricum

R. dauricum ‘Hokkaido’

R. dauricum ‘Hokkaido’

R. ledebourii

Hardiness:
H7.
Flowering Period:
March-April.
Distribution in the wild:
Khangai Mountains, Mongolia; Altai Mountains & S Sayan Mountains, Siberia, Russia.
Growing on stony slopes, in clearings, along streams in larch and spruce forests,
and in subalpine areas, at elevations up to 1,800m.

Identification:
Shrub, upright, open or spreading, 0.5 to 2m high.
Leaves evergreen or semi-evergreen, thick, coriaceous,
retained through flowering,
ovate-elliptic through obovate-elliptic,
0.6 to 2.8cm long by 0.4 to 1.3cm wide,
apex rounded or broadly obtuse, and mucronate,
base rounded, obtuse or broadly cuneate;
upper surface dark olivaceous green, turning reddish-purple in winter, shiny,
sparsely lepidote, sparsely glandular;
lower surface densely lepidote,
the scales overlapping, contiguous or 0.5 to 2 times their own diameter apart.
Petiole 2-6mm long.
Inflorescence 1-3-flowered.
Corolla 1.5 to 2.6cm long, open funnel-shaped,
pink-violet or reddish-purple.

Seed Collections:
No authenticated introductions have been documented, but between 1996 and 2008,
seventeen lots appeared on the American Rhododendron Society annual seed exchange,
all but one collected by Elena Chernykh at sites along either the Katun River in Altai Krai,
or the Seyma River in Nizhny Novgorod Oblast.

R. ledebourii was named for the German-Estonian botanist Carl Friedrich von Ledebour (1785-1851), who authored *Flora Altaica* in 1833 (the first ever botanic appraisal of the plants resident on the Altai Mountains of Central and Eastern Asia), and beginning in 1841, wrote the first comprehensive flora of vascular plants found throughout the whole of Russia, this the 4-volume *Flora Rossica*. The species botanic description itself was penned by Antonina Pojarkova for Volume 18 of the *Flora Unionis Rerumpublicarum Sovieticarum Socialisticarum,* published in 1952.

The wild population of *R. ledebourii* is resident on the slopes and ridges of the Altai and Sayan Mountains in southern Siberia, which lie to the west of Lake Baikal, and on the adjoining Khangai Mountains of Mongolia, areas where *R. dauricum* is also found. On the ground, identifying one from the other relies on two factors: principally, in winter, *R. dauricum* is near deciduous, holding on to very few leaves and these lost entirely by the time flowering begins; *R. ledebourii* on the other hand, is effectively evergreen, retaining a dense cloak of foliage right through flowering until the new shoots begin to extend, though the leaf colour changes in autumn from a dark olivaceous green to purple-brown or reddish-purple. Less decisively, the *R. ledebourii* adaxial leaf surface is somewhat glandular, while that of *R. dauricum* lacks any such sticky protuberances.

Despite their populations being two thousand miles apart, *R. ledebourii* is however, most closely related to *R. sichotense*. This species grows in the Primorsky Krai region of the Russian Far East, where again *R. dauricum* is also found. It too overwinters its foliage, shedding the leaves only when the new growth appears, but a dense covering of sticky glands on both the upper and lower leaf surface allows for a swift identification.

In British gardens, where *R. ledebourii* has been grown since its introduction at the very end of the 18th century - as indicated previously, John Sims would describe the plant as *R. dauricum* var. *sempervirens* in 1817 - keying often relies on the March-April flowering period, which is much later than typical *R. dauricum,* along with that slightly sticky/not sticky at all, upper leaf surface comparison, for the UK's mild maritime climate rarely forces *R. dauricum* to reveal its true nature.

From the other occupant of Subsection *Rhodorastrum,* the decidedly deciduous *R. mucronulatum,* the shape and thickness of the leaf, along with the scale density will quickly distinguish *R. ledebourii* from either of its two subspecies: lanceolate, pointed at both ends, thin, with only a sparse speckling of scales on the adaxial surface (these between 2 and 4 times their own diameter apart), indicate *R. mucronulatum* is being examined; elliptic, rounded at both ends, thick and leathery, densely lepidote, the adaxial surface often rusty-brown and the scales overlapping, contiguous or on occasion distant to near twice their own width, confirms *R. ledebourii* as the plant being studied.

Cultivation in British gardens mirrors that for *R. dauricum,* with only poor drainage likely to cause difficulties, specimens of *R. ledebourii* being just as hardy and as equally floriferous, the 1990 Award of Merit clone - 'Hiltingbury' - attesting to this fact. The later March-April bloom time offers the display a better chance of escaping any overnight sub-zero temperatures, for if they are hit, the corollas and any partially open buds will be lost.

The Edinburgh Revision texts formally made the John Sims-defined *R. dauricum* var. *sempervirens* synonymous under *R. ledebourii* in 1996 when *The Genus Rhododendron: Its Classification & Synonymy* was published, while in total contrast, the second edition of the RHS *International Rhododendron Register and Checklist* - of 2004 vintage - chose to maintain Sempervirens Group, the entry giving no hint that these plants were actually bog-standard *R. ledebourii*.



R. ledebourii





R. ledebourii



R. ledebourii



R. mucronulatum

R. mucronulatum* ssp. *mucronulatum

Hardiness:
H7.
Flowering Period:
Late December-March.
Distribution in the wild:
Mongolia; Primorsky Krai, E Siberia, Russia;
Hubei & Shandong, China; Korea; Honshu & Kyushu, Japan.
Growing in *Betula* or *Larix* woodland or along forest margins, at elevations of 300-1,470m.

Identification:
Shrub, erect, straggly and open, 1 to 4m high.
Leaves deciduous, thin, none overwintering,
lanceolate through elliptic-lanceolate to elliptic,
3 to 8cm long by 1.3 to 3.6cm wide,
apex acute or acuminate, and mucronate,
base acute or tapered;
upper surface bright green, matt or shiny,
sparsely lepidote,
the margins variably strigose;
lower surface sparsely lepidote,
the scales 2 to 4 times their own diameter apart.
Petiole 2-10mm long, occasionally setose.
Inflorescence single-flowered.
Corolla 2.1 to 3.3cm long, widely funnel-shaped,
deep rosy-purple, mauve-pink or bright rosy-pink, rarely white.

Seed Collections:

CK 188	1981	KFB 144	1989
BEC 45	1982	RJL 033	1991
Doleshy 705	1983	H&S 92/044	1992
Doleshy 714	1983	H&S 92/349	1992
Doleshy 716	1983	BJG 032	1994
KNW 369	1984	ESUS 12	1994
KNW 437	1984	MW 109	1997
KNW 441	1984	Whittemore 229	2001
KNW 455	1984		

In addition to the authenticated collections listed above,
between 1977 and 1980, eight lots appeared on the American Rhododendron Society
annual seed exchange, these gathered in South Korea and Japan,
while another five batches were listed between 2004 and 2017,
two of which were sourced from the Russian Far East.

R. mucronulatum was first described in 1837 by Nikolai Stepánovich Turczaninow (1796-1863), the Russian botanist writing in Volume 10, Number 7, of the *Bulletin de la Société Imperiale des Naturalistes de Moscou,* with his choice of Latin epithet referring to the hard sharp point found at the taxon's leaf tip. Closely related to *R. dauricum,* with intermediate forms bridging the two populations in eastern Siberia, *R. mucronulatum* is nonetheless easily distinguished.

Keying relies primarily on differences between the foliage:

The *R. mucronulatum* leaf is thinly textured, lanceolate-shaped and therefore pointed at both ends, plus sparsely lepidote on the underside, with the scales between two and four times their own diameter apart.

The *R. dauricum* leaf is thick, elliptically-shaped, and so rounded at either end, and densely lepidote below, with the scales overlapping, touching or at most, 1.5 times their own diameter apart.

In cultivation across the UK moreover, *R. mucronulatum* remains truly deciduous, loosing all its leaves in the autumn, while *R. dauricum* usually overwinters at least some of its foliage, a practice not duplicated to anything like the same degree by most wild plants, with very few leaves retained at the branch tips. In complete contrast, *R. ledebourii* and *R. sichotense* hold on to most of their foliage right through the winter months, those leaves even persisting through flowering, and only being shed once the new shoots start to develop. In addition, their leaf shape, its thickness and the abaxial surface scale densities match those for *R. dauricum,* making the distinctions with *R. mucronulatum* even clearer.

In 1919, the Japanese botanist Takenoshin Nakai described *R. mucronulatum* var. *ciliatum,* a form of the species found on the Korean Peninsula that has a more densely hairy leaf margin. Although this was made synonymous in the Edinburgh Revision, use of the varietal epithet is still widespread, with most Korean botanists identifying wild plants as simply 'ciliatum' (*JARS,* Volume 69, Number 2, *Plant Hunting on the South Korean Peninsula,* written by Kristian Theqvist). Of course, that appellation is proscribed within Genus *Rhododendron* as *R. ciliatum* was published in 1851 by Sir Joseph Dalton Hooker - in the third part of *The Rhododendrons of Sikkim-Himalaya* - naming a newly-discovered plant from Subsection *Maddenia* and the nomenclature rules prohibit any duplication at species ranking or below. Morphology too cannot alleviate the problem, for even though field study reports detail the hairs as longer than those found on their Russian counterparts in eastern Siberia, with a denser concentration, this was known by James Cullen when he imposed synonymy in his 1980 Subgenus *Rhododendron* revision text (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Number 1).

However, a dwarf form of the species has evolved on the upper slopes of Mount Halla on the island of Jejudo, which lies some sixty miles distant from the Korean mainland. Originally described as *R. taquetii* by Hector Léveillé in 1913, it was then reduced to a variety of *R. mucronulatum* by Takenoshin Nakai in 1914, and made fully synonymous by the same author five years later in 1919. A late 1980s resurrection failed to take account of the taxon's previous epithet, but restored the 1914 ranking, which is herein raised to subspecies status on account of the disjunct biogeography. Growing to no more than 30cm high in the wild and 1m in cultivation, *R. mucronulatum* ssp. *taquetii* is a compact and densely twiggy shrub that is easily distinguished from the much taller and sprawling form of its sister.

R. mucronulatum ssp. *mucronulatum* arrived in the UK during 1882 via a somewhat circuitous route, the surgeon at the Russian embassy in Beijing, Dr Emil Bretschneider, an amateur botanist, sending seed (or possibly live plants) to the Arnold Arboretum in Boston, whence some were shipped across the Atlantic to Kew. A reintroduction took place in 1907 when the Royal Botanic Garden received a consignment of plants from the Yokohama Nursery Company of Japan, and few British rhododendron gardens have been without a specimen since then, for a mature shrub will light up the woodland with a shower of pink or purple flowers from late December onwards, a time when most other rhododendrons are still dormant.

Exceptionally hardy, as the H7 rating confirms, *R. mucronulatum* is able to shrug off anything even a severe UK winter can subject it to, though a frost will spoil the blooms and in the spring, decimate the early growth, so the choice of planting site is critical to long-term success, with frost drainage rather than the provision of shade, the key criteria. A second flush of growth emerging later in the season will usually rectify any damage done earlier in the year, but occasionally, serious hurt can be inflicted, and if this becomes a regular annual event, such repeated injury will obviously prove debilitating. Cold spell setbacks aside, the plants are otherwise trouble-free and quite fast growing, with an open and erect deportment that may sometimes require the use of secateurs to balance or beautify. Note too that just before the leaves are shed, they deliver an autumn blaze of colour that can often be truly incandescent.



R. mucronulatum (Kurashige 1029)

R. mucronulatum

R. mucronulatum

R. sichotense

Hardiness:
H7.
Flowering Period:
March-April.
Distribution in the wild:
Olga Bay & E slopes of Sikhote-Alin, Primorsky Krai, Russia.
Growing in conifer and mixed woodland in river valleys, on mountain ridges and slopes,
at elevations from near sea level to 1,800m.

Identification:
Shrub, upright, open or spreading, 1.2 to 3m high.
Leaves evergreen or semi- evergreen, thick, somewhat coriaceous,
retained through flowering,
ovate-elliptic through obovate-elliptic to near orbicular,
1.5 to 4cm long by 0.9 to 2.8cm wide,
apex rounded, and mucronate,
base rounded or obtuse;
upper surface bright green or dark olivaceous green, turning reddish-purple in winter,
shiny,
moderately through densely lepidote, densely glandular;
lower surface densely lepidote,
the scales overlapping, contiguous or 0.5 to 2 times their own diameter apart,
densely glandular.
Petiole 3-6mm long.
Inflorescence 1-3-flowered.
Corolla 2.1 to 2.7cm long, widely funnel-shaped,
pale pinkish-purple or rose.

Seed Collections:

MW 243	1997

In addition to the sole authenticated introduction listed above,
two lots, sourced from plants in Primorsky Krai, Russia,
appeared on the American Rhododendron Society Seed Exchange in 1999 and 2004.

Olga Bay, on the coast of Primorsky Krai, eastern Siberia, is a mountain-girt inlet off the Sea of Japan. First discovered in 1859, it is relatively small cove, less than seven miles long and just 2.5 miles wide at the mouth, and it was the site where *R. sichotense* was first encountered, growing in the wooded river valleys that flow down to its head. Sometime later, the species was also found on the eastern slopes of the Sikhote-Alin Mountains, a 2,000m-high range of peaks that run for 560 miles in an arc to the northeast of Vladivostok and for which Antonina Ivanovna Pojarkova (1897-1980) named the species she described in 1952 (*Flora Unionis Rerumpublicarum Sovieticarum Socialisticarum,* Volume 18).

Visually, across the summer months, *R. sichotense* is a mirror of *R. dauricum,* which also grows in the region, yet as winter advances, it will be seen to be most closely related to *R. ledebourii,* a species found 2,000 miles away on the Altai Mountains of western Siberia. Because both are evergreen, and both retain the bulk of their leaves through until the spring, only allowing them to fall once flowering is over and their new shoots have begun to extend. Those leaves are thick and leathery, elliptical in shape, and rounded at the apex and at the base, characteristics that immediately distinguish *R. sichotense* from the two subspecies of *R. mucronulatum,* whose foliage is thin, pointed and distinctly deciduous. A dense covering of glandular scales, present on both the upper and lower surfaces of the leaf blades, key the species from *R. ledebourii* and *R. dauricum,* the former having leaves that are slightly sticky on the upper surface only, the latter bearing eglandular foliage.

R. sichotense has only relatively recently been introduced into UK cultivation. It has a broadly upright habit that is likely to attain a height and spread of 2m in time. The pinkish-purple or rose-coloured flowers open during March-April, later than those of *R. dauricum* and *R. mucronulatum,* so often avoid the night-time frosts that could spoil the blooms, these an array of funnel-shaped corollas somewhat wider at the mouth than those sported by either of its close relatives. They also have more rounded lobes, the margins of which often overlap. And once again, reports indicate that good drainage is a prerequisite for maintaining the species in the best of health.


R. sichotense




R. sichotense


R. sichotense


R. taquetti

R. mucronulatum* ssp. *taquetti
Hardiness:
H7.
Flowering Period:
March-April.
Distribution in the wild:
Jejudo, South Korea.
Growing on wooded or open mountain slopes at elevations of 1,350-1,950m.

Identification:
Dwarf shrub, compact, rounded or spreading, 0.1 to 1m high.
Leaves deciduous, thin, none overwintering,
lanceolate through elliptic-lanceolate to elliptic,
3 to 8cm long by 1.3 to 3.6cm wide,
apex acute or acuminate, and mucronate,
base acute or tapered;
upper surface bright green, matt or shiny,
sparsely lepidote,
the margins variably strigose;
lower surface sparsely lepidote,
the scales 2 to 4 times their own diameter apart.
Petiole 2-10mm long, occasionally setose.
Inflorescence single-flowered.
Corolla 2.1 to 3.3cm long, widely funnel-shaped,
deep rosy-purple, mauve-pink or bright rosy-pink.

Seed Collections:

Doleshy 703	1982

In addition to the sole authenticated introduction listed above,
two lots appeared on the American Rhododendron Society Seed Exchange,
one in 1977, the other in 1984.

Père Emile Joseph Taquet (1873-1952), a Frenchman sent to Korea in 1897 by the Société des Missions Etrangères de Paris, a Roman Catholic missionary organisation of secular priests and lay persons, was based on the island of Jejudo between 1902 and 1916. At the time, this was known to Europeans as Quelpaert or Quelpart - from the name of the Dutch trading ship that first 'discovered' the island - but from 1945 to 2000, as Cheju-do (after which the spelling changed to conform with the official Romanisation of Hangul, the Korean alphabet). Jejudo is South Korea's largest island, an expanse of some 1,833km^2, located about 83 kilometres (50 miles) south of the mainland peninsula in the Korea Strait. It was formed when an underwater volcanic eruption occurred approximately two million years ago.

Taquet began botanising the local flora in 1906 and it was in June 1911 that he found a dwarf-growing rhododendron on the slopes of Mount Halla, the 1,947m high, now extinct, shield volcano, at the island's centre, which is also South Korea's highest peak. Herbarium material was sent to Paris and in 1913, Hector Léveillé described the new species in Volume 12 of *Repertorium Specierum Novarum Regni Vegetabilis,* naming the plant for its collector.

Three years before this however, in 1910, the Japan-Korea Treaty was signed (under duress) and the whole of the Korean Peninsula, including Jejudo - the island known to the occupying forces as Saishū - was officially annexed, despite already being a protectorate within the Empire (though without the right to administer its own affairs). Teams of well-trained Japanese botanists, including the highly respected Takenoshin Nakai, had therefore long been working to catalogue the flora and in 1914, Nakai reduced *R. taquetii* to a variety of *R. mucronulatum* (*Veg. Quelpaert,* page 71). Then subsequently, in Part 8 of the multi-volume *Flora Sylvatica Koreana,* published in 1919, he made it fully synonymous with the species, which effectively wiped the plant off the radar for almost sixty years.

That status changed in May 1976, when American Rhododendron Society members Warren Berg and his wife Patricia, visited the island with Hideo Suzuki, of the Japanese Rhododendron Society, and found sweeps of the dwarf species growing from 1,350m right up to the rim of the Mount Halla crater, these individual domes covered in stunning pink blooms. Live specimens and seed were collected and the plant successfully introduced into cultivation, with H. H. Davidian describing the taxon as *R. mucronulatum* var. *chejuense* in 1989 (*The Rhododendron Species,* Volume 2, on page 309 amidst a host of other new taxa), unaware that it was actually the rediscovered *R. taquetii* documented by Léveillé in 1913. That oversight was corrected by David Chamberlain within the RHS *Rhododendron Handbook* of 1998, but with varietal ranking still in effect.

The dwarf plants that have evolved on Jejudo, have a completely isolated distribution, a niche that mirrors the range of *R. yakushimanum,* for instance, which is domiciled to another island refuge just 320 miles away to the southeast and in consequence, classified as a subspecies of *R. degronianum*. Consistency of approach requires that *R. taquetii* be assigned the same level of ranking under *R. mucronulatum,* and that status is adopted herein.

On the upper slopes of Mount Halla, *R. mucronulatum* ssp. *taquetii* grows to between 10 and 30cm in height. In UK cultivation, freed from the harsh environment experienced on Jejudo, the species can reach to around 1m, though specimens still remain densely twiggy mounds, compact and gnarled. These are fully hardy outdoors across the whole of the British Isles and flower freely from a young age even when grown from seed. They also bear leaves whose fiery autumn display can put many a deciduous azalea to shame.

The completely deciduous nature of the foliage keys the subspecies from *R. dauricum, R. ledebourii* and *R. sichotense,* the thin leaf, pointed at both ends, with a sparse covering of scales on the abaxial surface that are individually distant from one another by between two and four times their own diameter, never touching or overlapping, assisting that identification. *R. mucronulatum* ssp. *mucronulatum* is a much taller-growing shrub, sometimes to 3 or 4m high, with an erect, sprawling and straggly habit.



R. taquetii

R. taquetii

R. taquetii

Section *Lepipherum* Subsection *Saluenensia:*



R. saluenense



Taxa:

R. calostrotum
- *R. calostrotum* ssp. *calostrotum*
- *R. calostrotum* ssp. *keleticum*
- *R. calostrotum* ssp. *riparium*

R. prostratum

R. riparioides

R. saluenense
- *R. saluenense* var. *chameunum*
- *R. saluenense* var. *saluenense*

Taxonomic Revision:

Subsection *Saluenensia* comprised two specific ranked species in the 1996 Edinburgh Revision: *R. calostrotum* and *R. saluenense*.

However, new scientific research has determined that there are actually four: *R. riparioides,* a tetraploid, where 2*n* = 52, this genetically isolating it from the three remaining diploid subspecies of *R. calostrotum,* where 2*n* = 26; and *R. prostratum,* also a tetraploid and therefore unable to successfully breed with the diploid *R. saluenense* ssp. *chameunum,* under which it had been sunk. These changes are fully detailed in their respective entries.

R. saluenense was also split into two subspecies: ssp. *saluenense* and ssp. *chameunum* (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36, 1978). However, subsequent field study has revealed that the geographic division between the two is not as distinct as believed in the 1970s, with Chinese botanists opting for varietal status (*Flora of China,* online). That ranking is followed herein.

Subsection Morphology:

Small or dwarf shrubs, erect, rounded, spreading or prostrate, 0.03 to 1.5m high; branchlets moderately through densely lepidote, the scales sessile or stalked, glabrous, setose or not, when present the bristles quickly deciduous or persistent.

Leaf-bud scales deciduous, semi-persistent or persistent.

Leaves evergreen, coriaceous, sometimes aromatic, oblong-orbicular, oblong-obovate, oblong-elliptic, elliptic, elliptic-ovate, ovate or oval, rarely elliptic-lanceolate, lanceolate or near linear, 0.4 to 3.8cm long by 0.2 to 2.4cm wide, apex acute, rounded, or obtuse, and apiculate or mucronate, the mucro straight or reflexed, base rounded, obtuse or broadly cuneate, rarely tapering; upper surface pale or dark green, sometimes silvery-bluish, pale greyish or bluish-green, occasionally purplish-crimson at first, matt or more rarely shiny, often glaucous, variably lepidote or not, the scales when present overlapping, more rarely 0.5 to 8 times their own diameter apart, often dried-up, rarely setose,

the base of the midrib sometimes setose,
the margins loriform-ciliate or not, more rarely setose;
lower surface very densely lepidote, the scales crenulate, overlapping,
brown, fawn, cinnamon or orange-pink,
usually arranged in several distinct tiers,
the outermost long-stalked and cup-shaped,
but sometimes flattened and not arranged in tiers, or the tiers poorly defined,
the midrib and veins occasionally sparsely setose.

Leaf anatomy comprises a single-layered upper epidermis;
the cuticle is variable, half to as thick as the cells are deep;
water tissue is absent;
the lower epidermis cells are not prolonged into papillae.
Sclereid cells are absent.

Petiole 1-6mm long, lepidote, sometimes setose.

Inflorescence terminal, umbellate, 1-3-6-flowered;
the bud scales persistent or deciduous.

Pedicel 7-32mm long, sometimes flushed red,
variably lepidote, the scales usually long-stalked and cup-shaped,
setose or not.

Calyx 5-lobed to the base,
these pinkish-purple, reddish-purple, scarlet or crimson in colour,
and lanceolate, ovate-elliptic, ovate, ovate-oblong or oblong-oval in shape,
each 3-10mm long, usually unequal,
their outer surface moderately through densely pubescent or glabrous,
variably lepidote along the middle, or not,
rarely setose,
their margins ciliate, with long- or short-stalked hairs,
more rarely setose.

Corolla 1.2 to 3cm long, 5-lobed, widely-funnel-shaped, rotate or saucer-shaped,
mauve through purple to pink, rarely white,
usually with darker spotting at the base of the upper three lobes,
the outer surface moderately through densely pubescent, rarely glabrous,
moderately through densely lepidote along the middle of the lobes, rarely elepidote.

Stamens 10, slightly unequal, long-exserted, 6-24mm long;
filaments densely villous towards the base.

Ovary conoid, 2-3mm long, 5-locular,
densely lepidote, glabrous or pubescent, rarely setose.

Style red, declinate, impressed into a depression at the ovary apex,
longer than the stamens,
glabrous or pubescent at the base, elepidote.

Capsule conoid or ovoid, 4-10mm long,
densely lepidote, occasionally pubescent, rarely setose,
enclosed by the calyx lobes.

Seeds elongate, without wings or appendages.



R. riparium

R. saluenense



R. chameunum

R. saluenense* var. *saluenense

Hardiness:
H6.
Flowering Period:
April-June.
Distribution in the wild:
SE Tibet; NW Yunnan, China; NE Upper Myanmar.
Growing at forest margins, in thickets, on stony hillsides, cliffs and ledges,
at elevations of 3,000-4,300m.

Identification:
Small shrub, broadly upright, 0.3 to 1.5m high;
branchlets moderately through densely lepidote,
moderately through densely brown setose, the bristles persistent.
Leaf-bud scales deciduous, semi-persistent or persistent.
Leaves often aromatic,
oblong-orbicular through oblong-elliptic, sometimes oblong-obovate or oval,
1.4 to 3.6cm long by 0.8 to 2.4cm wide,
apex rounded, sometimes obtuse,
and apiculate or mucronate, the mucro straight or reflexed,
base rounded, obtuse or broadly cuneate;
upper surface dark green, usually glossy,
moderately through densely lepidote,
the scales 0.5 to 6 times their own diameter apart, persistent but often dried-out,
sparsely through moderately setose, or not,
the margins setose, rarely not;
lower surface scales dark through pale brown, fawn or yellowish-green,
in several tiers, but somewhat flattened,
the midrib and veins sparsely setose.
Petiole 1-5mm long, lepidote, persistently setose, rarely not.
Inflorescence 1-3-flowered, more rarely 4-6-flowered.
Pedicel 8-25mm long, red, variably setose, rarely not.
Calyx lobes 5-8mm long.
Corolla 2.1 to 3cm long, widely funnel-campanulate,
magenta through purple, purplish-red or red, rarely bluish-purple,
with darker purple-red or crimson spots on the upper lobes.
Ovary usually glabrous, rarely setose.
Capsule sometimes pubescent, rarely setose.

Seed Collections:

F 12934	1914	R 11238	1923/1924	Yu 7860	1937
F 14054	1917/1919	R 11506	1923/1924	Yu 19058	1937
F 16739	1917/1919	KW 6934	1926	Yu 20607	1937
F 18905	1917/1919	KW 7012	1926	Yu 22163	1937
F 19479	1921/1922	KW 9633	1931	Yu 22929	1937
F 19913	1921/1922	R 21997	1932	R 110	1948/1949
F 20912	1921/1922	R 22297	1932	R 152	1948/1949
F 21760	1921/1922	R 23545	1932	Cox 6035	1992
F 21772	1921/1922	R 23548	1932	KGB 693	1993
F 22666	1921/1922	R 23556	1932	Cox 6517	1994
KW 5436	1922	R 23620	1932	Cox 6529	1994
R 11001	1923/1924	R 23627	1932	JN 260	1999
R 11005	1923/1924	R 23634	1932	C&N 5859	2007
R 11010	1923/1924	KW 10542	1933	BE 12-16	2012
R 11012	1923/1924	KW 10582	1933	BE 12-20	2012
		KW 13371	1937		


R. saluenense

R. saluenense* var. *chameunum

Hardiness:
H6.
Flowering Period:
April-June.
Distribution in the wild:
SE Tibet; SW Sichuan, N & NW Yunnan, China; NE Upper Myanmar.
Growing above the tree line in open, stony and peaty alpine meadows,
at elevations of 3,300-4,600m.

Identification:
as var. *saluenense* except:
Small shrub, rounded, spreading, prostrate or decumbent,
0.03 to 0.6m high, rarely to 1m.
Leaves 0.4 to 2.3cm long by 0.3 to 1.2cm wide;
upper surface purplish-crimson and often with deeper purple margins at first,
becoming dark green at maturity,
but then often turning coppery, reddish or purple in winter,
elepidote when mature, but occasionally moderately through densely lepidote,
the scales 0.5 to 6 times their own diameter apart,
without setae except at the base of the midrib.
Pedicel 7-23mm long.
Calyx lobes 3-10mm long.
Corolla 1.4 to 2.9cm long, occasionally unspotted.
Ovary usually glabrous.

Seed Collections:

F 12968	1914	R 23546	1932	KGB 448	1993
F 13258	1914	Yu 8611	1937	AGS 1776	1994
F 13383	1914	Yu 8645	1937	AGS 2143	1994
F 13904	1917/1919	Yu 19088	1937	CNW 314	1994
F 14043	1917/1919	Yu 20928	1937	CNW 318	1994
F 16449	1917/1919	R 5	1948/1949	CNW 330	1994
F 19437	1921/1922	R 56	1948/1949	CNW 1160	1994
F 19994	1921/1922	R 175	1948/1949	CNW 1256	1994
F 25508	1924/1925	SBLE 453	1987	AC 1758	1996
F 25560	1924/1925	Cox 6112	1992	AC 1762	1996
F 25835	1924/1925	SSNY 131	1992	AC 1764	1996
F 25923	1924/1925	KGB 206	1993	AC 1849	1996
R 18450	1929	KGB 293	1993	JN 242	1996
R 23330	1932			JN 302	1996



R. saluenense

Abbé Jean-Andre Soulié, a French missionary priest then based at Tsekou (modern-day Chigu), in eastern Tibet, and an amateur plant hunter when not proselytising for the Missions Étrangères de Paris organisation, discovered *R. saluenense* near Dong, a small settlement in the valley of the Upper Mekong, sometime during 1894. In June 1895, he found a second population of plants on the Sela Pass, these on the Mekong-Salween Divide. As was custom, those specimens were returned to Paris and forwarded-on to the Muséum National d'Histoire Naturelle and its pre-eminent, rhodo-savvy botanist of the time, Adrien Franchet, whose description of the new species appears in Volume 12 of the *Journal de Botanique,* published in 1898.

Twelve years later in Yunnan, during June 1910, George Forrest came upon a small prostrate shrub while exploring the eastern flank of the Lichiang Range (today known as the Yulong Shan). No more than 10cm high, growing on rocks and in moist peaty soil close to the altitudinal limit at which plants could survive, it displayed crimson-coloured saucer-shaped flowers with darker spotting. William Wright Smith, then Deputy Regius Keeper at Edinburgh Botanic, wrote the species description in 1914, designating the epithet as *R. prostratum* (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 8). Wright Smith's prose indicates that he found the plant so near to *R. saluenense* that it caused him 'much hesitation in separating No. 5862 [Forrest's field number] by something more than a varietal name'.

The Scotsman also discovered the somewhat taller growing *R. chameunum,* the initial find made in June 1914 on the Chungtien Plateau (now Zhongdian), which is also located in western Yunnan. Additional gatherings were made later that same year in August, on the Kari Pass near Fugong, and in September, at another site on the Mekong-Salween Divide. The species botanic description was published in Volume 13 of *Notes* in 1920, this jointly written by Forrest and Sir Isaac Bayley Balfour. H. H. Davidian, in the first volume of his tetralogy *The Rhododendron Species,* published in 1982, reports that *R. chameunum* can be a prostrate or matted cushion with limbs no more than 5cm off the ground, a rounded and spreading shrub to 0.6m high, or a broadly upright bush to 1m in height.

Further exploration by Forrest and many of the other plant hunters combing the region - Frank Kingdon-Ward, Joseph Rock and Te-Tsun Yu - showed that *R. chameunum* was the most widely distributed of the three species, *R. prostratum* found only at higher altitudes, while *R. saluenense* was restricted to a much smaller area where *R. chameunum* also grew, its distribution favouring less exposed sites. Equally, more recent field study has shown that as altitude is gained, a gradual transition occurs on the ground between *R. chameunum* and *R. prostratum,* the habit changing from broadly upright, to compact and spreading, then prostrate as the environmental conditions worsen with elevation.

In 1978, the Edinburgh Revision botanists made *R. prostratum* synonymous under *R. chameunum* (*Notes,* Volume 36), and reduced the ranking of that taxon to a subspecies of *R. saluenense*. In one respect this conformed to the internationally accepted nomenclature rules, placing the 1898-described *R. saluenense* as the specific species, but the far more widespread population of *R. chameunum* swayed James Cullen's hand despite its later publication with regard to *R. prostratum*. The chosen ranking has also proved problematical, as subspecies status requires the taxa to have at least part of their endemic population in an exclusive niche away from their cohorts. This is clearly not the case on the ground, where field study has shown that ssp. *saluenense* is always found in fairly close proximity to ssp. *chameunum*. Indeed, Doctor Cullen confirms this in the full Subgenus *Rhododendron* text (*Notes,* Volume 39, Number 1, 1980). In 1982 therefore, the respected Chinese botanist Fang Rhui-cheng, opted for varietal status, as well as for epithet priority, publishing *R. saluenense* var. *prostratum* in Volume 4, Number 3, of the journal *Acta Botanica Yunnanica.* That combination would be adopted herein were polyploidy not to have proved an issue, for var. *prostratum* is a tetraploid with 52 chromosomes in each of its cells, while var. *saluenense* and the sunk *R. chameunum,* are diploids with 26.

Specific status is therefore returned to *R. prostratum,* while varietal ranking is the most appropriate for the two forms of *R. saluenense,* specifically as *R. saluenense* var. *saluenense,* and as *R. saluenense* var. *chameunum*.

Five chromosome counts are actually given in *The Rhododendron Year Book 1950* for *R. saluenense,* four being diploid, one a tetraploid. Regrettably, no field number is quoted for the latter, though it is recorded as a Forrest collection, with the actual specimen sourced from John Barr Stevenson's garden at Tower Court, Ascot. It is unlikely therefore that the plant will ever be precisely identified, as the rhododendrons at Tower Court have since been distributed between a number of gardens and nursery firms, so options such as treating the specimen as a seed pan rogue, transferring it across to *R. prostratum,* or designating it *R. pseudosaluenense*, must all for the moment be abandoned, with the dissentient entry left hanging.

Modern-day published texts follow Doctor Cullen, so they offer not one single jot of differentiation between *R. prostratum* and var. *chameunum,* with even the original diagnoses offering little on which to base a key. However, the detailed H. H. Davidian descriptions in Volume 1 of *The Rhododendron Species* indicate that the young leaves of var. c*hameunum* are purplish-crimson in colour, or have margins that are deep purple, characteristics not evident on the new foliage of *R. prostratum,* which is dark green from the off. Calyx lobe length also offers some morphological differentiation, with those of var. *chameunum* between 3 and 10mm long, those of *R. prostratum,* between 5 and 7mm.

Splitting apart the re-geared varieties of *R. saluenense* mostly relies on habit and ultimate height: var. *chameunum,* prostrate or compact, and usually no more the 0.6m high; var. *saluenense,* broadly upright, and reaching to 1.5m. These differences are more stark at the population extremes, with specimens of var. *chameunum* sourced from higher elevations barely topping 10cm. The leaf upper surface also offers a key: so if persistently lepidote and usually setose, var. *saluenense* will be to hand; glossy, without scales or bristles, var. *chameunum*. But note that both varieties bear setose hairs on their branchlets and petioles.

Which persist long into maturity, and this distinction quickly identifies the two plants from the three *R. calostrotum* subspecies, as well as from *R. riparioides,* all of which may display bristles on their newly extended shoots and leaf stalks, but will have shed these long before the branchlets and petioles fully mature.

Forrest was not only responsible for introducing *R. saluenense* var. *chameunum* into British gardens, he takes the same credit for *R. saluenense* var. *saluenense,* with seed of both plants arriving back in the UK during 1914. In cultivation, var. *saluenense* and the low altitudinal forms of var. *chameunum* are easy to grow, flower freely from a young age and are hardy enough to be grown in gardens across the whole of the UK. However, the high elevation clones of the latter are decidedly more difficult, perfectly hardy of course, but very slow growers, taking many years to reach flowering size and often unhappy with our mild maritime climate. They perform best in the cooler environs of northeast England and eastern Scotland.

Despite its fairly extensive endemicity, many botanists believe that *R. saluenense* var. *saluenense* is actually a stabilised natural hybrid intermediate between *R. calostrotum* ssp. *riparium,* and the taller-growing form of *R. saluenense* var. *chameunum,* as both of the putative parents are extant in the same area as their nominal conception. Future genetic research will determine if this view is correct or not.

Charidotes Group is populated by a rhododendron Reginald Farrer first discovered on the Chawchi Pass in northeast Upper Myanmar during early July, 1920, introducing the find into UK cultivation under his field number Farrer 1690.

Initially gifted specific status, *R. charidotes* was cleaved from the-then equally ranked *R. chameunum,* by having bristles on the calyx lobes, ovary and capsule. It too can be a prostrate creeping shrub no taller than 7cm or a rounded bush up to 0.3m high, however, with calyx lobes varying between 5 and 10mm long, and extending young growth that is dark green from the get go rather than purple-crimson at first, it would appear to bridge the morphological gap between var. *chameunum* and *R. prostratum.* Regrettably, the genetic chasm - the polyploid divide - remains unsurmounted, because the taxon is a straightforward 2*n* = 26 diploid (or at least, so the tested specimen grown from Forrest's F 25560 introduction proved to be back in 1950).

R. charidotes was made synonymous under var. *chameunum* in the 1996 Edinburgh Revision texts and that position is maintained herein. At least, until a future tetraploid chromosome count upsets the apple cart.



R. saluenense (F 21772)



R. saluenense (KW 7012)



R. saluenense (R 11238)



R. chameunum (F 25508)



R. chameunum (F 13904)





R. chameunum (Yu 8645)

R. chameunum (F 12968)



R. prostratum (R 25303)



R. prostratum (R 25303)

R. prostratum

Hardiness:
H6.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; SW Sichuan & NW Yunnan, China.
Growing in open, stony and peaty alpine meadows,
to near the altitudinal limit of vegetation, at elevations of 3,600-5,300m.

Identification:
Dwarf shrub, prostrate, prostrate-spreading or compact-spreading, 0.03 to 0.6m high;
branchlets moderately through densely lepidote,
moderately through densely brown setose, the bristles persistent.
Leaf-bud scales deciduous or persistent.
Leaves oval through oblong-oval to oblong-elliptic or near orbicular,
0.4 to 2.3cm long by 0.3 to 1.2cm wide,
apex rounded, and apiculate or mucronate, the mucro straight or reflexed,
base rounded or obtuse;
upper surface dark green at first and at maturity, usually glossy,
elepidote when mature, but occasionally sparsely lepidote,
the margins sparsely through moderately setose;
lower surface scales brown, in several tiers, but somewhat flattened,
the midrib and veins sparsely setose.
Petiole 1-3mm long, lepidote, persistently setose.
Inflorescence 1-3-flowered.
Pedicel 8-23mm long, red, variably setose.
Calyx lobes 5-7mm long.
Corolla 1.6 to 2.3cm long, widely funnel-campanulate,
crimson or deep purple-rose,
with darker crimson spots at the base of the upper lobes.
Ovary sometimes pubescent.
Capsule sometimes pubescent.

Seed Collections:

F 5862	1910	CNW 265	1994
F 10285	1912/1914	CNW 334	1994
F 21265	1921/1922	CNW 1247	1994
F 30543	1930/1931	AC 1726	1996
F 30891	1930/1931	JN 264	1996
R 25303	1932	JN 270	1996

It was on the eastern side of the Yulong Shan in Yunnan, then known as the Lichiang Mountain Range, at an elevation close to 4,700 metres, which is almost at the upper altitudinal limit of where vegetation can survive, where George Forrest first encountered a prostrate, spreading shrub no higher than 10cm, ablaze with crimson flowers. It clung to life in the moist, peaty soil, its branches trailing over the half-buried rocks. Herbarium material and seed were gathered that day in June 1910 under the field number F 5862 and despatched to the expedition's principal sponsor, the Cheshire firm of Bee's Ltd, owned by A. K. Bulley. As with the 1904-1906 expedition, Edinburgh Botanic got the dried specimens, but this time, via a side deal with Bulley, J. C. Williams at Caerhays Castle in Cornwall got a share of any rhododendron or conifer seed. So F 5862 was germinating in a seed tray in the West Country before the year was out, though it took those plants until April 1917 to reach flowering size. For growth was very slow and they proved far trickier in cultivation than had *R. saluenense,* the species with which they were associated in the 1914 botanic description written by William Wright Smith and published in *Notes from the Royal Botanic Garden, Edinburgh,* Volume 8.

Smith had initially considered a varietal ranking determination under *R. saluenense,* in part because of the distinctive and matching calyx - 5-lobed to the base - but equally, because the leaves, pedicels and corolla were very similar. In the end however, he went with specific status and *R. prostratum* retained this ranking until Doctor James Cullen began reviewing the herbarium material and live plants for his Subgenus *Rhododendron* revision texts (*Notes,* Volume 36, 1978; Volume 37, 1979; and Volume 39, Number 1, 1980). And even though the rhododendron had been found to be a tetraploid with 52 chromosomes by the science team at RHS Wisley - their counts for 360 species having been published in *The Rhododendron Year Book 1950* - this did not prevent the taxon from being sunk under *R. saluenense* ssp. *chameunum,* a diploid with just 26 chromosomes (as is the specific species, *R. saluenense*).

However, scientists now know that:

> 'In contrast to the gradual evolutionary process whereby new species evolve from isolated populations, new species of plants can also arise abruptly. The most common mechanism for abrupt speciation is through the formation of natural polyploids. Once a tetraploid arises in a population, it can generally hybridize with other tetraploids. However, these tetraploids are reproductively isolated from their parental species. Tetraploids that cross with diploids of the parental species will result in triploids that are typically sterile. This phenomenon provides a "reproductive barrier" between the polyploids and the parental species - a driving force for speciation'.
> *Understanding Polyploidy: Insights into the Evolution and Breeding of Azaleas.*
> Thomas G. Ranney and Jeff R. Jones, North Carolina State University.
> Published in *The Azalean,* Winter 2008.

So *R. prostratum* is a newly evolved species, as evidenced from the chromosome count, which cannot successfully breed with its likely near mirror-image parent, Cullen's *R. saluenense* ssp. *chameunum*. Remaining sunk under that taxon is therefore no longer viable, nor can it be made a subspecies or a variety of *R. saluenense* as this species too is a diploid. Wright Smith's specific status is thereby restored. An additional point should also be noted: those extra strands of DNA now present in its cells have allowed *R. prostratum* to colonise ground up to 700m higher in altitude than its putative progenitor.

Identifying *R. prostratum* from *R. saluenense* var. *chameunum* in a garden context relies on feature differences that were detailed in Volume 1 of H. H. Davidian's *The Rhododendron Species,* published back in 1982, as all other texts - including the 1997 Cox-authored alternate bible *The Encyclopedia of Rhododendron Species* - reflect the Edinburgh Revision synonymy. Davidian writes that the young leaves of var. *chameunum* are purplish-crimson in colour, or they have margins that are deep purple, characteristics that are not evident on the new foliage of *R. prostratum,* which is dark green. The calyx lobes too differ, being between 3 and 10mm long for var. *chameunum,* 5 to 7mm long for *R. prostratum*. An erect habit to 1.5m high, along with the densely lepidote upper leaf surface are the morphological devices that can be used to distinguish *R. saluenense* var. *saluenense* from *R. prostratum,* while bristles on the branchlets and petioles will cleave the taxon from all the remaining members of Subsection *Saluenensia*.

R. prostratum was reintroduced into UK cultivation by George Forrest in 1912, as well as again, in 1921, with two final seed lots arriving from his last expedition to Yunnan in 1930. Joseph Rock secured capsules in 1932, but then a sixty-two year hiatus ensued before Alan Clark, Jens Nielsen and Murray Wilson rediscovered the species on Beima Shan in northwestern Yunnan during the autumn of 1994. Two additional gatherings to those listed opposite appeared on the American Rhododendron Society Seed Exchange: Jens Nielsen sourcing capsules from Haba Shan in Yunnan during 2002; and in 2018, Hans Eiberg returned seed from Peacock Pass in the same province. Equally, as with many of the other re-instated polyploids, the species may also have been collected by other individuals or teams, but identified and listed under var. *chameunum*.

In cultivation, specimens of *R. prostratum* are very slow growing and require a niche planting site where excellent drainage can be provided without the soil drying out completely. They are fully cold hardy across the whole of the UK - at least, where anyone gardens - but like the membership of Subsection *Lapponica,* dislike a prolonged period of overly high summer temperatures, so do best in northern locales. As the flower buds often open in April, the plants will also require protection from a late spring frost.



R. prostratum (R 25303)

R. calostrotum (Yu 19757)

R. calostrotum* ssp. *calostrotum

Hardiness:
H6-7.
Flowering Period:
April-June.
Distribution in the wild:
N & NW Yunnan, China; NE & E Upper Myanmar.
Growing on cliffs and in stony alpine meadows,
at elevations of 3,300-4,300m.

Identification:
Small shrub, erect, rounded or creeping, 0.2 to 1.5m high;
branchlets densely lepidote,
rarely setose at first, but if so the bristles quickly deciduous.
Leaf-bud scales deciduous.
Leaves oblong-orbicular through oblong-oval to oval or elliptic,
1.2 to 3.5cm long by 0.5 to 2cm wide,
apex rounded or obtuse, and apiculate, the mucro reflexed,
base rounded or obtuse;
upper surface pale green, pale silvery-bluish, pale greyish or bluish-green,
matt, usually glaucous, densely lepidote,
the scales overlapping or rarely up to 0.5 times their own diameter apart,
persistent but dried-up,
the margins ciliate or not;
lower surface scales brown, dark brown or cinnamon, arranged in 3 or 4 distinct tiers.
Petiole 2-6mm long, densely lepidote.
Inflorescence 1-2-flowered, more rarely 3-flowered.
Pedicel 9-27mm long.
Corolla 1.3 to 2.8cm long, widely funnel-shaped, rotate or saucer-shaped,
magenta, pink or purple,
often with darker spots on the upper lobes.

Seed Collections:

Farrer 1045	1919	LS&T 5855	1938	AC 3627	1997
F 24572	1924/1925	LS&E 13123	1946/1947	BASE 9716	1997/2000
F 25011	1924/1925	LS&E 13780	1946/1947	KR 6093	1999
F 27065	1924/1925	LS&E 13974	1946/1947	TARRVS 128	2002
F 27121	1924/1925	LS&E 14030	1946/1947	KR 9983	2010
F 27497	1924/1925	LS&E 15073	1946/1947	KR 9985	2010
F 27658	1924/1925	LS&E 15796	1946/1947	TDA 640	2014
F 29666	1930/1931	AC 3011	1996	TDA 657	2014
KW 9294	1931	AC 3036	1996	TDA 665	2014
L&S 1649	1936	AC 3052	1996	TDA 667	2014
L&S 1771	1936	AC 3053	1996	TDA 701	2014
KW 13367	1937	AC 3067	1996	TDA 718	2014
Yu 19757	1937	AC 3611	1997	TDA 722	2014
Yu 20066	1937	AC 3618	1997	TDA 725	2014
LS&T 3975	1938	AC 3611	1997	BE 15-18	2015
LS&T 4711	1938	AC 3618	1997	BE 15-29	2015
		AC 3619	1997		



R. calostrotum 'Gigha'

R. calostrotum was discovered in July 1914 by Frank Kingdon-Ward, the population of plants found growing in northeast Upper Myanmar, on Naung-Chaung, the eastern spur of Imaw Bum, an isolated peak on the N'Mai (or Mwai)-Salween Divide. The former waterway, regardless of the spelling, becomes the far more familiar Irrawaddy below its confluence with the Mali River in Kachin State. The species description was written by Ward and Sir Isaac Bayley Balfour and appears in Volume 13 of *Notes from the Royal Botanic Garden, Edinburgh,* which was published in 1920.

In 1978, Doctor James Cullen, then Assistant Regius Keeper at Edinburgh Botanic and responsible for the lepidote revision of the Genus *Rhododendron* classification, writing in Volume 36 of *Notes,* redefined the taxon from a hodgepodge of specific ranked lookalike species, and ended up with four subspecies placed under *R. calostrotum* and two under *R. saluenense,* those associated with the former being ssp. *keleticum,* ssp. *riparioides,* ssp. *riparium* and of course, ssp. *calostrotum* itself. Subsequently, one of these - *riparioides* - proved to be genetically segregated from the other three and as a consequence, has been awarded specific status, but otherwise, the c*alostrotum* reworking stands.

All four are easily separated from the three other members of the subsection - herein configured as *R. saluenense* var. *saluenense,* its lower-growing companion, *R. saluenense* var. *chameunum,* and *R. prostratum* - by a complete lack of persistent bristles on the branchlets and petioles. A few of the *R. calostrotum* clones may display setose hairs on their young growth at first, but these are quickly shed from twig and leaf stem so they are setae-free by maturity. The leaf margins are not included in the above keying as these often display loriform-ciliate hairs, which can appear very bristle-like.

R. riparioides can be identified from the three *R. calostrotum* subspecies through an examination of its abaxial leaf surface. Here, the scales are flattened and instead of being arranged in 3 or 4 distinct tiers, form either a single layer, or the tiers - 2 or 3 of such - will be blurred, producing a smooth surface, with a somewhat felted look.

Ssp. *keleticum* too is usually easily spotted, an absence of scales on the upper leaf surface flagging the majority of clones, while those with lepidote tendencies set their scales distant from one another, between 0.5 and 6 times their own diameter apart, never touching or overlapping.

Distinguishing the remaining two subspecies from one another relies on the number of flowers each carries within the inflorescence. One or two corollas, three at most, and ssp. *calostrotum* will be to hand; one through five, ssp. *riparium*.

The keying set out by Doctor Cullen in the full Subgenus *Rhododendron* revision text (*Notes,* Volume 39, Number 1, 1980), also suggests a pedicel length of 16 to 27mm for ssp. *calostrotum* and 10-15mm for ssp. *riparium,* but unfortunately, any number of garden specimens fail to rigorously adhere to this ruling, and nor, in fact, does the dried material pinned on an equal number of filed-away herbarium sheets, as the published descriptions in Volume 1 of *The Rhododendron Species* attest (H. H. Davidian, 1982), specifically the entry for *R. nitens* on page 299 (this made synonymous under ssp. *riparium* in the Edinburgh Revision).

Peter and Kenneth Cox, in their 1997 *Encyclopedia of Rhododendron Species,* note an additional demarcation: that the upper leaf surface of ssp. *calostrotum* is usually glaucous; that of ssp. *riparium,* rarely so.

It could be argued that these minor morphological differences do not of themselves warrant subspecies status, but the wild endemic distribution must also be taken into account when setting the ranking. Both subspecies are found in Upper Myanmar and in the northwest of China's Yunnan Province, but the ssp. *riparium* population extends across into Arunachal Pradesh and southeast Tibet, and that adjunct ultimately determined their botanical treatment.

Chinese botanists however, take a different view, giving *R. keleticum* specific status and dividing *R. calostrotum* into two varieties, with var. *calciphilum* documented on the *Flora of China* website as possessing smaller leaves, calyx lobes and corollas than var. *calostrotum,* with no other form being recognised.

The Western approach is followed herein.

Frank Kingdon-Ward should have been the first plant hunter to introduce *R. calostrotum* ssp. *calostrotum* into UK cultivation when he again scaled Imaw Bun in 1919, this time from the western side. Except the seed he brought back under KW 3390, turned out to be ssp. *keleticum,* thus the kudos went instead to Reginald Farrer and Euan Cox, the contents of their capsules coming from plants atop Hpawshi Bum, this peak located some twenty miles to the southeast of Kingdon-Ward's population.

Farrer graphically described the encounter in an article for the early December edition of *The Gardeners' Chronicle:*

> 'Now we are for the first time at 12,400 feet, in the region of the dwarf, high-alpine Rhododendrons. And of these there are three here, all over the open brows and rocks… …the third, which covers the barest open braes and tops of moorland in a close, flat carpet of dark foliage, from which on pedicels (in pairs) of an inch or so, rise large, round blossoms of a rich, warm magenta-rose… …the flower… …further set off by the brown reverse of the leaves and by the very vivid milky glaucescence of the young shoots.'

In cultivation, ssp. c*alostrotum* has proved to be equally charming, as well as free-flowering. Bud formation begins at a very young age, the record currently two years from seed, although the first specimen to bloom - at Kew during April 1923, when it was no more than 7cm in height - took four years to do so. Hardiness is sufficient for specimens to be grown outdoors in a British garden wherever the soil pH is supportive, the plants perfect for a rock garden and able to thrive in full sun even in the southern counties providing the growing medium remains damp across the summer months. Meet that requirement and one other - the usual proviso of good drainage - and the species is problem-free and easy to grow.

Labelled specimens bearing the designation '*R. calostrotum* Rock' - gathered on the good Doctor's 1948-49 trip to Yunnan, the collection field number being R 178 - are actually specimens of *R. riparioides*.

The species epithet, when translated from Latin, denotes its 'beautiful covering'.



R. calostrotum



R. calostrotum (Yu 19757)

R. calostrotum* ssp. *keleticum

Hardiness:
H6-7.
Flowering Period:
May-June.
Distribution in the wild:
SE Tibet; NW Yunnan, China; NE Upper Myanmar.
Growing in bamboo forests, alpine meadows, on slopes, scree and cliffs,
at elevations of 3,000-4,600m.

Identification:
Creeping shrub, prostrate or mounding, rounded or spreading, 0.03 to 0.4m high;
branchlets moderately through densely lepidote,
rarely setose at first, but if so the bristles quickly deciduous.
Leaf-bud scales semi-persistent or deciduous.
Leaves elliptic-lanceolate through elliptic to oblong,
more rarely near linear through lanceolate,
0.6 to 2.1cm long by 0.2 to 1cm wide,
apex acute, rounded or obtuse, and apiculate, the mucro long and straight or reflexed,
base tapered, rounded or obtuse;
upper surface dark green, shiny,
elepidote, rarely lepidote,
but when present the scales 0.5 to 6 times their own diameter apart,
the margins ciliate or not;
lower surface scales brown or fawn, arranged in 3 or 4 distinct tiers.
Petiole 1-4mm long, moderately through densely lepidote, rarely setose.
Inflorescence 1-3-flowered.
Pedicel 14-32mm long, rarely setose.
Corolla 1.5 to 3cm long, widely funnel-shaped or rotate,
purple, purplish-rose, pale or deep purplish-red,
with crimson spots on the upper lobes, rarely unspotted.

Seed Collections:

F 18918	1919	F 21756	1921/1922	Yu 20924	1937
KW 3390	1919	F 21757	1921/1922	R 58	1948/1949
F 19915	1921/1922	F 22659	1921/1922	CCHH 8201	1997
F 19919	1921/1922	KW 5430	1922	AC 4480	2000
F 20235	1921/1922	R 11188	1923/1924	AC 4496	2000
F 20255	1921/1922	R 11191	1923/1924	AC 4642	2000
F 20861	1921/1922	Yu 19314	1937	DGEY 251	2001
F 20864	1921/1922	Yu 20266	1937	KR 10031	2010
		Yu 20706	1937		

Although the merger of *R. keleticum* and *R. radicans* into the *R. calostrotum* ssp. *keleticum* taxon caused a stir at the time, most aficionados regained their cool when Peter Cox pointed out that plants in cultivation 'would easily pass as either *keleticum* or *radicans* using the old descriptions' and that he had seen 'groups of seedlings ranging completely from typical *keleticum* to typical *radicans*. So the fuss made about this amalgamation stems from ignorance'. But he also suggested that 'from a horticultural point of view, this plant together with *radicans* as a variety should have full specific status' though 'botanically, it does seen to merge with *calostrotum* ssp. *riparium* and certainly merges with *radicans*' (all four quotes taken from *The Smaller Rhododendrons,* 1985, page 125).

The lack of scales on the upper leaf surface - a total absence or just a sparse presence, when each individual will be variably distant from its neighbour, never touching or overlapping, and in concentrations that never approach the dense patina found on the leaves of the other two *R. calostrotum* subspecies or *R. riparioides* - appears to have persuaded Chinese botanists to maintain the old ranking, albeit with *R. radicans* synonymously subsumed. However, to quote from another Cox-authored publication - *The Encyclopedia of Rhododendron Species,* 1997 - written after several extended field trips to China, ssp. *keleticum* 'merges with ssp. *riparium* at lower altitudes'. So the situation on the ground does reflect the 1978 James Cullen revision (Volume 36, *Notes from the Royal Botanic Garden, Edinburgh*), which is followed herein.

George Forrest discovered both poles of the population: the compact, rounded and spreading ssp. *keleticum* on the Salween-Kiuchiang Divide at Tsarong in southeastern Tibet during August 1919, F 18918 being the type specimen and the first seed introduced into cultivation; the creeping and matted *R. radicans* - now ssp. *keleticum* Radicans Group - exactly two years later in the same region, F 19919 being the type and capsule reference. Forrest's field notes for the two finds, appended to the herbarium sheets at Edinburgh Botanic, make interesting reading, with *R. keleticum* recorded as 'a semi-prostrate shrub of 3-6 inches' and *R. radicans* as 'a matted prostrate shrub of 6-8 inches', which rather makes a nonsense of the horticultural group holdout approach. The language-of-the-dead epithets translate as 'charming' and 'rooting' respectively, with their Forrest-Bayley Balfour botanic descriptions - also in classical Latin, of course - both to be found in Volume 13 of *Notes,* 1920's Number 61 for *R. keleticum,* and 1922's Number 65 for *R. radicans*.

Morphologically, non-bristly branchlets and petioles, plus a usually acute leaf apex, will distinguish ssp. *keleticum* from the two *R. saluenense* varieties and *R. prostratum*, but the often scale-free adaxial surface of the foliage is an ineffective key here because the trait is shared by a significant percentage of the *R. prostratum* population.

In British gardens, *R. calostrotum* ssp. *keleticum* is perfect for the rock garden or a peaty bank, in full sun in northern climes or with a modicum of dappled shade in the south. The flowers open later in the season than on many of the introduced ssp. *calostrotum* clones and so usually avoid a late spring frosting, with the near-rotate blooms held above the foliage on perpendicular pedicels. Masses of them on a well-grown specimen; this host not quite fully obscuring the leaves. The branches will often root as they creep along the ground, so an underplanting of spring-flowering bulbs - *Crocus, Narcissus,* etc. - would be detrimental. Also to be avoided if possible, is a planting site that is regularly subject to early autumn frosts - a feature of some east coast gardens - for although ssp. *keleticum* is fully hardy and able to be planted out across the whole of the UK, the maritime climate and its sometimes full-on instant switchover to winter after a lingering Indian summer, is not appreciated by a high-altitude plant adapted to living out much of its life under a protective blanket of snow.

R. keleticum (R 58)

R. keleticum 'Radicans'

R. keleticum ‘Radicans’

R. keleticum (R 58)

R. keleticum (F 19919)



R. riparioides (R 18453)



R. riparioides (F 25506)

R. riparioides

Hardiness:
H6-7.
Flowering Period:
May.
Distribution in the wild:
Weixi, NW Yunnan, China.
Growing amongst and on rocks above *Abies* forests, in alpine meadows and on cliffs,
at elevations of 3,600-4,800m.

Identification:
Small shrub, erect or decumbent, 0.3 to 1.5m high;
branchlets densely lepidote, sometimes moderately setose.
Leaf-bud scales deciduous.
Leaves often aromatic, elliptic through elliptic-ovate,
1.2 to 3.8cm long by 0.6 to 2cm wide,
apex usually acute, but sometimes rounded or obtuse, and apiculate, the mucro reflexed,
base tapering, rounded or obtuse;
upper surface pale greenish blue-grey, matt, usually glaucous,
moderately through densely lepidote,
the scales overlapping or rarely up to 0.5 times their own diameter apart,
the margins ciliate;
lower surface scales cinnamon or orange-pink, flattened,
in 2 or 3 poorly defined tiers or not in tiers,
the surface smooth and flat, appearing almost felted.
Petiole 2-6mm long, densely lepidote.
Inflorescence 1-5-flowered.
Pedicel 8-20mm long.
Corolla 1.3 to 2.8cm long, widely funnel-campanulate,
bright purple through crimson-purple,
often with darker spots on the upper lobes,
the outer surface elepidote.

Seed Collections:

R 6353	1923/1924	R 18453	1929
F 25503	1924/1925	R 18454	1929
F 25506	1924/1925	F 30540	1930/1931
F 25542	1924/1925	R 178	1948/1949
F 25683	1924/1925	AC 1895	1996
F 25921	1924/1925	JN 765	1999
F 25922	1924/1925	TARRVS 173	2002
R 18380	1929	BE 15-09	2015
R 18381	1929		

Many gardens and gardeners grow *R. riparioides* in their collections without knowing it, the label designating a prized specimen as *R. calostrotum* 'Rock's Form'. If mature, those plants will be around 1.5m high, have large leaves almost 4cm in length with a bluish-green, usually glaucous upper surface, and they will display fine, crimson-purple flowers in May, though half of the available buds may have popped-out the previous autumn.

A closer study of the leaves will show a fairly dense covering of overlapping scales on the adaxial surface, which individually, may occasionally be up to half their own diameter apart. This is matched by an equally dense patina on the abaxial surface below, except that here, the scales will be flattened together, the leaf surface smooth, with an almost felted look, rather than arranged in a set of distinct tiers. Complicating matters somewhat, recent field study of the species population at Weixi in northwestern Yunnan - the only location where authenticated specimens of *R. riparioides* have been found to date - has shown that the orange-pink scales may also adopt the well-defined ranking that is found on the leaves of the three *R. calostrotum* subspecies, but only across two or three tiers, never four. The scales still remain flattened however, so in consequence, the discrete rows are never as precisely drawn.

That close relationship with *R. calostrotum* was formalised in the Edinburgh Revision classification, the species designated as *R. calostrotum* ssp. *riparioides* by James Cullen and David Chamberlain in Part 1 of their paper, *A Preliminary Synopsis Of The Genus Rhododendron,* which was published in Volume 36 of *Notes from the Royal Botanic Garden, Edinburgh,* during 1978. As indicated above, prior to that revision, the taxon had been regarded as simply a form of *R. calostrotum* and given no more prominence than that (see page 296 of H. H. Davidian's *The Rhododendron Species,* Volume 1, 1982, for instance). However, genetic research published in 2003, showed that the revision's botanists were right to separate-out those plants from the morass:

Janet C. Cubey, writing her PhD thesis at the University of Liverpool - she is currently the Editor-in-Chief of the *RHS Plant Finder,* having worked exclusively for the horticultural organisation in a variety of scientific roles over her entire career - looked at the ploidy levels of all the Subsection *Saluenensia* rhododendrons and found that *R. calostrotum* ssp. *riparioides* was consistently a tetraploid.

When sperm and egg come together, the genetic information each contains combines to form a new individual. Half the DNA data comes from the male, the other half from the female, and it is held within those two specialised haploid cells on structures that have been termed chromosomes. Each rhododendron pollen grain - the male sperm or gamete - has thirteen individual chromosomes. The female gamete - the egg - also has thirteen, though the information coded on those strands might be different from that carried by the male if, for example, a red-flowered *R. arboreum* were attempting to have its way with a white-flowered member of the same species. When fertilisation occurs, those two groups of thirteen chromosomes pair-up within a single cell to re-establish the norm. Technically, two haploid gametes have joined to form a diploid, which holds twenty-six chromosomes: two copies of each; thirteen homologous chromosome pairs in total.

Expressed mathematically, a rhododendron gamete or haploid cell - either an egg or a sperm - can be defined as $n = 13$, with the fertilised egg recorded as $2n = 26$.

For *R. calostrotum* ssp. *riparioides,* $2n = 52$.

An extra copy of both chromosome sets are present in each cell.

This state occurred through abnormal cell division, either during mitosis - when the sperm and egg are formed (with each haploid gamete usually holding just one set of the thirteen chromosomes, unless an error has transpired) - or at meiosis - when the fusion of two unreduced $2n$ gametes takes place (resulting in a zygote cell with double the correct number of chromosomes) - the latter being the most likely cause here. Such polyploidy is now known to be near endemic in Kingdom *Plantae,* with some estimates suggesting that up to 80% of all current living species are the result of such genetic accidents. Evidence has also been found in the genome of many plants that indicates such duplications could have occurred in their lineage millions of years ago, this branch of the science now known as paleopolyploidy.

Returning to ssp. *riparioides,* a desktop flow cytometer was the laboratory device used to generate the chromosome count: basically, the cells to be examined are suspended in a stream of fluid and passed by an electronic detector. Such equipment is now commonplace in all university and biotechnology laboratories, with the results available virtually instantaneously, in real time. Janet Cubey's 2003 paper, which was titled *A cytological and morphological taxonomic study of Rhododendron L. subsection Saluenensia,* reported that three of the *R. calostrotum* subspecies - *calostrotum, keleticum* and *riparium* - were diploids with the normal compliment of twenty-six chromosomes per cell, but that *R. calostrotum* ssp. *riparioides* had fifty-two, making it a genetically isolated tetraploid.

This means that like all the other made-synonymous lepidote polyploids identified throughout this volume, as such, it can no longer be treated as a subspecies of *R. calostrotum* and requires specific ranking to be applied.

In 2005, the authors of the *Flora of China* website took note of Janet's published account and updated the text of their own online entry to reflect this status change, with the International Plant Names Index - a nomenclature database jointly maintained by the Royal Botanic Garden, Kew, the Harvard University Herbarium, and the Australian National Herbarium - swiftly following suit.

That new ranking is of course, happily maintained herein, but currently, it remains the only tetraploid rhododendron to be officially recognised as a brand new species, despite the gamut of such polyploids identified in previously published scientific research papers.

The type specimen of *R. riparioides* has been determined to be a George Forrest gathering under the field number F 25503. Collected in June 1924 on the Shui-lu Shan to the west of Weixi in northwest Yunnan, the plant hunter writes of a 0.6m high shrub with aromatic foliage and deep purple-rose with crimson flowers, even deeper hued in the bud. But as with ssp. *riparium* - the last of the Subsection *Saluenensia* rhododendrons to be discovered - when the herbarium sheets were re-examined by Doctor Cullen for his full Subgenus *Rhododendron* revision text of 1980 vintage, the credit for the discovery was transferred to a rival collector, in this case Joseph Rock, who had gathered specimens and introduced seed during his 1923-24 expedition under the field number R 6353, except the dried material and capsules secured at the beginning of those explorations, had at the time, been wrongly consigned under *R. saluenense*. A later gathering from the Austrian-American's 1948-49 trip, this sponsored by the American Rhododendron Society, is the ubiquitous *R. calostrotum* 'Rock's Form', mentioned at the start of this account and introduced under the field number R 178. Writing in his 1985 book *The Smaller Rhododendrons,* Peter Cox rates this plant on a par with the FCC-awarded 'Gigha' clone of ssp. *calostrotum*.

A known susceptibility to the powdery mildew fungus is the only detrimental hiccup specimens will likely experience in UK cultivation, though the predilection to flower in the autumn has counterproductive consequences with regard to the spring display.

Morphologically, as has already been reported, the lack of any persistent bristles on the branches and petioles cleaves *R. riparioides* from the two varieties of *R. saluenense*.



R. riparium (KW 6903)

R. calostrotum* ssp. *riparium

Hardiness:
H6-7.
Flowering Period:
Late May-July.
Distribution in the wild:
S & SE Tibet; Arunachal Pradesh, NE India; NW Yunnan, China; NE Upper Myanmar.
Growing on rocky slopes in forests, on damp ground and in alpine meadows,
at elevations of 3,050-4,550m.

Identification:
Small shrub, erect or decumbent, 0.2 to 1.5m high;
branchlets densely lepidote,
rarely setose at first, but if so the bristles quickly deciduous.
Leaf-bud scales semi-persistent or deciduous.
Leaves oblong-elliptic through oblong-obovate to ovate,
0.5 to 2.5cm long by 0.4 to 2cm wide,
apex rounded or obtuse, and apiculate, the mucro reflexed,
base rounded or obtuse;
upper surface bright or pale through dark green, pale greyish or bluish-green,
matt or shiny, rarely glaucous,
variably lepidote,
the scales overlapping or rarely 0.5 to 8 times their own diameter apart,
persistent but dried-up,
the margins ciliate;
lower surface scales brown, dark brown, fawn or cinnamon,
arranged in 3 or 4 distinct tiers.
Petiole 2-6mm long, densely lepidote.
Inflorescence 1-5-flowered.
Pedicel 10-25mm long.
Corolla 1 to 2.8cm long, widely funnel-shaped or rotate,
pink, pinkish-purple or magenta-pink,
often with darker purple or crimson spots on the upper lobes.

Seed Collections:

F 20896	1921	KW 9394	1931	CC 7542	1996
KW 5482	1922	KW 9517	1931	CC 7563	1996
F 25817	1924/1925	KW 9717	1931	AC 3258	1997
KW 5828	1924/1925	KW 10542	1933	AC 3302	1997
KW 6903	1926	KW 10582	1933	AC 3314	1997
KW 6984	1926	Yu 19754	1937	AC 3319	1997
KW 7061	1926	LS&T 3785	1938	C&N 6021	2007
KW 7062	1926	LS&T 6588	1938	C&N 6023	2007
KW 7523	1926	KW 19450	1950	C&N 6026	2007
KW 8229	1927/1928	Cox 6157	1992	KR 9949	2010

R. riparium (KW 8229)

Five previously specific-ranked species comprise the amalgamate that is now *R. calostrotum* ssp. *riparium* post the Edinburgh Revision: *R. calciphilum, R. kingdonii, R. nitens* and *R. rivulare.* All were made synonymous in Part 1 of the Cullen-Chamberlain-authored *Preliminary Synopsis* paper of 1978 vintage (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36). Indeed *R. riparium* itself - first described in 1930's *The Species of Rhododendron* - was also at one point in its botanical history - from around 1954 to 1978 - briefly subsumed under *R. calostrotum,* with only *R. nitens* maintained at its original rank (due to its more upright habit and far later flowering period). Yet although the plants that make up this coalescence often seem palpably different to one another in cultivation, field reports indicate that they merge into a cline in the wild (*The Encyclopedia of Rhododendron Species,* Peter and Kenneth Cox, 1997).

The type specimen of *R. riparium* was collected on the Doshong La in a region of southern Tibet known as the Tsangpo Bend, Frank Kingdon-Ward making the gathering under the field number KW 5828 on June 23rd, 1924. Technically, the specimen is an isotype - previously known as a cotype - as it is also the holotype for *R. rivulare*. Basically, this was because Ward named his find *R. rivulare* in the description that he penned for *The Gardeners' Chronicle* periodical (Series 3, Volume 86, 1929), but unfortunately, Heinrich von Handel-Mazzetti had prior claim to that very same epithet within Genus *Rhododendron* having so christened an evergreen azalea species with that moniker in 1921 (*Anzeiger der Akademie der Wissenschaften in Wien,* Volume 58), with *R. riparium* emerging from the rethink. And the mistakes kept piling up, for had another Kingdon-Ward-collected plant been identified as a new species earlier than it eventually was, the nomenclature priority would have gone to *R. nitens,* gathered on the Taru Tra - or Tara Tru - of northeastern Upper Myanmar during early November 1922, but a specimen established at Tower Court was only spotted as being something different during 1936. Equally, a George Forrest introduction under F 20896, collected in October 1921, which had previously been determined to be *R. saluenense,* is now listed as *R. calostrotum* ssp. *riparium* in the RHS *Rhododendron Handbook 1998,* thereby assigning credit for the discovery to the Scotsman rather than his Mancunian rival.

R. calostrotum ssp. *riparium* differs from *R. calostrotum* ssp. *calostrotum* in having a few more corollas in the inflorescence - sometimes: the ssp. *riparium* buds being 1 to 5 flowered; those of ssp. *calostrotum* holding 1, 2 or more rarely 3 individual saucers. The leaf upper surface of ssp. *riparium* is rarely glaucous, while the foliage of ssp. *calostrotum* almost always has a waxy bloom. Pedicel length is given as another key - up to 15mm long for ssp. *riparium;* 16 through 27mm for ssp. *calostrotum* - except the 14 to 25mm figure for *R. nitens* quoted by H. H. Davidian in *The Rhododendron Species,* Volume 1, 1982, does rather question the validity of this precept. Elsewhere within the genus, such minor peccadillos would have been ignored or granted no more than varietal differentiation, but here, subsection ranking is required because of the taxon's natural endemic distribution. Because on the ground out in the wild, ssp. *riparium* extends into Arunachal Pradesh and southeastern Tibet, well beyond the limits of the ssp. *calostrotum* range, which is confined to Upper Myanmar and northwestern Yunnan.

A densely lepidote upper leaf surface cleaves specimens of ssp. *riparium* from those of ssp. *keleticum* even when these show a sparse covering of scales, for on the former they will be overlapping or touching, on the latter, variably distant from one another. Branchlets and petioles devoid of setose hairs when mature key the subspecies from either variety of *R. saluenense*, where the twigs and the leaf stalks are persistently bristly.

In UK cultivation, to succeed with *R. riparium* the same stipulation applicable to *R. calostrotum* must be met: to not let the soil dry out, especially across the summer months, yet still provide good drainage.

Two horticultural groups are presently maintained by rhodophiles and the RHS, their membership composed of the smaller-leaved plants that trend towards ssp. *keleticum,* namely Calciphilum Group, and Nitens Group.

The foliage of the Calciphilum Group occupants is elliptic in shape, 0.5 to 1.3cm long, with an upper surface greyish or bluish-green in tone. The shrubs open rosy-purple or pinkish flowers in late May and often bloom again in the autumn, regrettably, to the detriment of the following year's display.

The residents of Nitens Group can sometimes be found flowering as late as August, though June through July is when the blooms normally appear, these pinkish-purple or magenta-pink corollas utterly delightful and produced from a very early age. The plants have shiny foliage that is 0.7 to 2.5cm long, oblong-obovate through oblong-elliptic in shape, and bright green when young, though the erect habit can become quite sparse with age. A point also worth noting, is that of all the Subsection *Saluenensia* rhododendrons, those from Nitens Group will be found the most difficult to grow well.



R. riparium 'Calciphilum'

R. riparium ‘Nitens’

Section *Lepipherum* Subsection *Scabrifolia:*



R. spinuliferum



Taxa:

R. hemitrichotum
R. mollicomum
R. racemosum
R. scabrifolium
R. scabrifolium ssp. *pubescens*
R. scabrifolium ssp. *scabrifolium* var. *scabrifolium*
R. scabrifolium ssp. *scabrifolium* var. *spiciferum*
R. spinuliferum

Taxonomic Revision:

Chinese botanists continue to place the Subsection *Scabrifolia* species in Subgenus *Pseudorhodorastrum,* the taxa split between two sections - *Trachyrhodion* and *Rhodobotrys* - as per Hermann Sleumer's 1949-published *Ein System der Gattung Rhododendron*.
Peltate scales, subterminal or leaf axil new growth, and lateral inflorescences were the characteristics used to justify such a split, but this was not maintained in the 1996 Edinburgh Revision and recent DNA phylogenetic studies have shown the division to be false.

DNA evidence has also confirmed that *R. scabrifolium* var. *pauciflorum,* as long suspected, is indeed a natural hybrid, a cross between var. *spiciferum* and *R. spinuliferum,* while field study reporting on *R. pubescens* requires it to be treated as a subspecies of *R. scabrifolium,* rather than retain specific status or be sunk, because the endemic distribution extends into southwest Sichuan, where it is isolated.

Otherwise, the subsection remains as set out by James Cullen and David Chamberlain in their 1978-published *Preliminary Synopsis* text (*Notes from the Royal Botanic Garden, Edinburgh, V*olume 36).

Subsection Morphology:

Shrubs, or rarely small trees, upright and spreading to low and compact, often straggly, 0.15 to 4.6m high; branchlets lepidote, usually pubescent, the white or grey-white hairs filiform-acicular, short and fine, and often bristly, the setae loriform, grey-white and usually longer than the hairs, sometimes with swollen bases; bark brown through greyish-brown, striate, scaling off in shreds and flakes, or smooth.

Leaves evergreen, coriaceous or papery, lanceolate through oblong-elliptic to obovate, 1 to 10.5cm long by 0.3 to 4.5cm wide, apex obtuse, rounded or acuminate, and apiculate or mucronate, rarely not, base cuneate, obtuse or rounded; upper surface dark green, sometimes bullate, scabrid or not, variably lepidote, rarely without scales,

usually densely pubescent, the filiform hairs short and fine,
bristly or not,
the setae with or without swollen bases and usually longer than the acicular hairs,
the margins revolute or flat, pubescent or not, bristly or not;
lower surface white-papillose or pale green, shiny or matt,
glabrous or pubescent, bristly or not, lepidote,
the scales vesicular, rimless, unequal,
not contiguous, between 0.5 and 4 times their own diameter apart.

Leaf anatomy comprises a 2-layered upper epidermis,
with the cells in the top layer being smaller than those in the layer below;
the cuticle is around half as thick as the top cells are deep;
water tissue is absent; the lower epidermis cells are prolonged into papillae.
Sclereid cells are present in the leaf tissue of each member of the subsection.

Petiole 1-10mm long, lepidote, pubescent or glabrous, bristly or not.

Inflorescence axillary, in the uppermost leaf axils, or terminal and axillary,
umbellate or shortly racemose, in several clusters,
or more rarely forming a raceme along the stem, 1-3-5-flowered;
the buds ovoid or fusiform, pointed or blunt,
the scales persistent during flowering, more rarely deciduous,
their outer surface lepidote and pubescent.

Rhachis 0.5-3mm long, lepidote or not, usually pubescent, sometimes sparsely bristly.

Pedicel 2-19mm long, usually lepidote, pubescent, sometimes bristly.

Calyx rim-like, cupular or 5-lobed,
these rounded, triangular or ovate and 0.5-2mm long, rarely to 6mm,
their outer surface lepidote, pubescent or glabrous,
their margins lepidote or not, pubescent or not, bristly or not.

Corolla 0.6 to 3.4cm long, 5-lobed,
widely or narrowly funnel-shaped, or tubular,
pale or deep pink, pale rose, purplish-red, brick-red or crimson,
white tinged pink or white edged with pink, sometimes spotted,
the outer surface lepidote or not, these scales occasionally glandular,
pubescent or glabrous,
the inner surface puberulent within the tube or glabrous.

Stamens 8-10, unequal, declinate;
filaments glabrous or pubescent towards or at the base.

Ovary conoid, ovate, oval or oblong, 1-4mm long, 5-locular,
densely lepidote, densely pubescent, rarely glabrous.

Style declinate or straight,
impressed into a depression at the ovary apex, longer than the stamens,
glabrous or pubescent at the base.

Capsule oblong through oblong-oval, 4-17mm long,
densely lepidote, pubescent or glabrous.

Seeds elongate, without wings or appendages.



R. racemosum (FED 61)

R. scabrifolium

R. scabrifolium ssp. *scabrifolium* var. *scabrifolium*

Hardiness:
H3-4.
Flowering Period:
March-April.
Distribution in the wild:
N Yunnan, China.
Growing in scrub on rocky slopes at elevations of 1,500-3,000m.

Identification:
Shrub, compact and bushy through tall and leggy, 0.2 to 3m high;
branchlets densely pubescent,
moderately through densely bristly, the setae with swollen bases.
Leaves papery but tough,
narrowly elliptic through oblanceolate to lanceolate,
2.3 to 9.5cm long by 0.6 to 2.8cm wide;
upper surface bullate, scabrid, lepidote or not,
moderately through densely pubescent, bristly, the setae with swollen bases,
the midrib and veins impressed,
the margins revolute or flat, pubescent, usually bristly;
lower surface pale green, moderately through densely pubescent,
densely bristly, the setae with swollen bases,
densely lepidote, the scales medium-sized, brown or pale brown,
between one and four times their own diameter apart, rarely half their own diameter apart,
the midrib and veins raised.
Petiole 3-8mm long, densely pubescent,
moderately through densely bristly, the setae with swollen bases.
Inflorescence axillary, 1-3-5-flowered.
Pedicel 5-19mm long, bristly or not.
Corolla 0.9 to 1.7cm long, widely funnel-shaped,
white through deep pink, rose, crimson or deep reddish,
the tube 0.3-0.7cm long.
Stamens 10;
filaments pubescent towards the base or glabrous (rarely).
Ovary pubescent.
Style declinate,
sparsely pubescent at the base or glabrous (rarely).
Capsule 4-9mm long, densely pubescent.

Seed Collections:

F 11031	1912/1914	KW 5004	1921	McLaren S 39	1932/1939
F 11072	1912/1914	R 6291	1923/1924	AC 826	1995
F 15103	1917/1919	R 25234	1932	AC 828	1995
F 15504	1917/1919	R 25443	1932	JN 12225	2012
KW 5001	1921	R 25446	1932		

R. scabrifolium ssp. *scabrifolium* var. *spiciferum*

Hardiness:
H3-4.
Flowering Period:
March-May.
Distribution in the wild:
C & SE Yunnan, & W Guizhou, China.
Growing in coniferous forests, at forest margins, in thickets and on dry rocky slopes,
at elevations of 800-2,500m.

Identification:
as var. *scabrifolium* except:
Shrub, upright or spreading, 0.15 to 1.5m high.
Leaves 1.2 to 4cm long by 0.2 to 1.3cm wide,
the margins revolute;
lower surface scales sometimes yellowish.
Petiole 1-3mm long.
Pedicel 4-7mm long.
Corolla 1 to 1.5cm long, narrowly funnel-shaped,
pink, rarely white,
the tube 0.6-1.7cm long.
Capsule 6-10mm long.

Seed Collections:

McLaren AA 12	1932/1939
SBEC K160	1981
AC 774	1993
CNW 1101	1994
CNW 1102	1994
CNW 1103	1994
CNW 1119	1994
CNW 1131	1994
CNW 1137	1994
CNW 1139	1994
CNW 1305	1994
CNW 1309	1994
CNW 1327	1994
CNW 1328	1994
AC 2000	1996
AC 2001	1996

Both varieties of *R. scabrifolium* were discovered by Abbé Jean-Marie Delavay and described by Adrien Franchet: *R. scabrifolium* on Mount Heishanmen, above Lankong, to the west of Dapingzi, in early March, 1883, and in Volume 33 of the *Bulletin de la Société Botanique de France,* published in 1886; *R. spiciferum* in mid February, 1891, on the Kin Lin Hills, near Yunnansen, and in Volume 9 of the *Journal de Botanique,* in 1895.

Chinese botanists continue to maintain the two taxa as specific species, as did H. H. Davidian in the lepidote tome of *The Rhododendron Species,* published in 1982, but the intergrading natural distribution convinced James Cullen and David Chamberlain to opt for varietal status in their 1978 *Preliminary Synopsis* paper (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36).

By including *R. pubescens* in the mix herein, albeit at subspecies rather than varietal ranking, a three-tiered layer cake emerges: *R. scabrifolium* var. *scabrifolium* endemic across the middle of northern Yunnan; *R. scabrifolium* var. *spiciferum* forming the base of the gateau in central and southern Yunnan; and *R. scabrifolium* ssp. *pubescens* the topmost layer in southwest Sichuan. Completing the confection, the jam in-between the sections of pure species sponge is a *scabrifolium-pubescens* cline in the north, and a *scabrifolium-spiciferum* progression in the south, both intermediate groups identified in field study reporting. A third taxon, *R. scabrifolium* var. *pauciflorum,* was reinstated from synonymy by Cullen-Chamberlain to hold plants with corollas nearer in shape to those that adorn *R. spinuliferum* (this detailed in Doctor Cullen's full Subgenus *Rhododendron* revision text that was published in *Notes,* Volume 39, Number 1, 1980). However, more recent field reporting, plus detailed molecular examination, has confirmed that these plants are natural hybrids, crosses between var. *spiciferum* and *R. spinuliferum*.

The leaves of both var. *scabrifolium* and var. *spiciferum* have a papery rather than leathery texture, their surface rough to the touch - so in botanic-speak, they are scabrid, hence the epithet - and bullate. On the former, they are broad and large, to 9.5cm long by a maxima of 2.8cm wide; on the latter, narrow and small, at most 4cm by 1.3cm. Var. *scabrifolium* is also taller growing, and despite the more northerly distribution, a touch less hardy than var. *spiciferum,* the best deep-pink-flowering clones of which easily eclipse the usually smaller, white blooms of their sister species (at least in cultivation).

Splitting the two from all the other members of the subsection relies on the non-glaucous abaxial leaf surface and a combination of both the hairs and the bristles on the foliage, whereas *R. scabrifolium* ssp. *pubescens* is graced with a very narrow leaf that has strongly revolute margins, and foliage that is distinctly coriaceous.

Keying a specimen of *R. spinuliferum* from either variety when in bloom is a cinch thanks to the trusses of erect tubular corollas, pinched at both ends, but when the plants are out of flower, reliance has to be placed on the lack of bristles on the upper leaf surface, the distinctly raised veins on the underside, and a more rigidly upright habit.

The Jardin des Plantes in Paris, part of the Muséum National d'Histoire Naturelle where Franchet was employed, sent live specimens of var. *scabrifolium* grown from Delavay seed to Kew in 1888, and in April 1890, these flowered for the first time. Forrest, Kingdon-Ward and Rock all secured seed in the first half of the following century, with modern day collectors reintroducing the species in the 1990s, though only three such lots have been returned to date. The reverse holds true for var. *spiciferum,* with UK gardeners having to wait until McLaren AA12 arrived in the mid 1930s before the species could beautify their plots. Dried material from Forrest's first expedition to Yunnan, begun in 1904, is certainly available under the field number F 512, but the records are murky on whether any seed arrived back and of course, if it did, germination would have been down to A. K. Bulley's nursery staff at Bees Ltd, whose record vis-à-vis such could hardly be described as stellar. There is also no indication that any seedlings of var. *spiciferum* were received from Paris in the wealth of documentation now available online, while a 1921 collection by Frank Kingdon-Ward under the field number KW 3952a - quoted by H. H. Davidian as the first UK introduction in Volume 1 of his aforementioned opus, has now been designated a gathering of *R. pubescens* (matching KW 3952b and KW 3953). But in 1981, the team who comprised the Sino-British Expedition to the Cangshan - the new name for the Tali Range - kicked off the re-introduction process, after which another fourteen lots arrived up until 1996.

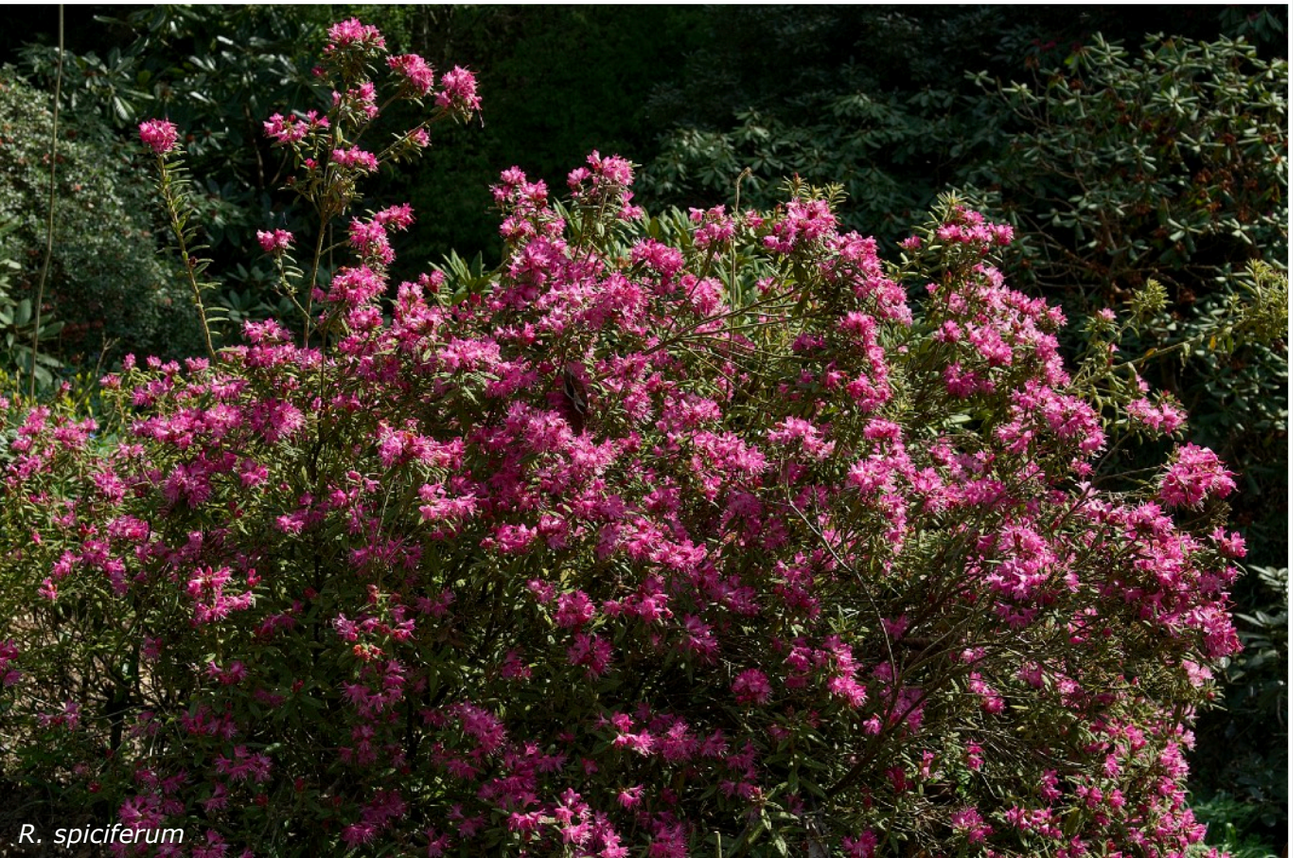
A lack of hardiness restricts cultivation of the two *R. scabrifolium* varieties to the UK's more milder gardens, with those located along east coast, as well as sites inland, needing a well-sheltered spot for either to succeed. The plants are free-flowering from quite a young age, but most forms are not as heavily burdened with bloom as the best clones of *R. racemosum,* though the finest can be as equally spectacular.



R. scabrifolium



R. scabrifolium



R. spiciferum



R. spiciferum

R. racemosum

R. racemosum

Hardiness:
H4-6.
Flowering Period:
March-May.
Distribution in the wild:
SW Sichuan, NW Guizhou, & N Yunnan, China.
Growing in thickets, at forest margins, in scrub, on grassy plains and on rocky slopes, at elevations of 800-4,300m.

Identification:
Shrub, low and compact through tall and leggy, 0.15 to 4.6m high;
branchlets glabrous or variably pubescent.
Leaves sometimes aromatic,
broadly obovate through oblong-elliptic to oblong-lanceolate,
1 to 5.4cm long by 0.4 to 3cm wide;
upper surface lepidote or not, glabrous,
the midrib glabrous or sparsely pubescent at the base,
the margins revolute, glabrous;
lower surface white-papillose, shiny, glabrous,
densely lepidote, the scales medium-sized or small, pale through dark brown,
half to slightly less than their own diameter apart,
or sometimes up to twice their own diameter apart,
the midrib glabrous or minutely puberulent.
Petiole 2-6mm long, glabrous or pubescent.
Inflorescence axillary, 1-4-flowered.
Pedicel 4-17mm long, glabrous or pubescent.
Corolla 0.7 to 2.3cm long, widely funnel-shaped,
pale through deep pink, pale or deep rose,
purplish-pink, white tinged pink, or pure white (rarely),
with or without crimson spotting.
Stamens 10;
filaments sparsely pubescent towards the base, sometimes glabrous.
Ovary glabrous, sometimes sparsely pubescent at the base.
Style declinate, glabrous.
Capsule 4-10mm long, glabrous.

Seed Collections:

W 3428	1906/1909	Yu 10993	1937	AC 719	1993
F 5882	1910	Yu 13680	1937	AC 726	1993
F 10086	1912/1914	Yu 13880	1937	KR 2725	1993
F 13798	1917/1919	Yu 13893	1937	KR 2780	1993
F 13803	1917/1919	Yu 14405	1937	AGS 1637	1994
F 13804	1917/1919	Yu 15011	1937	CNW 35	1994
F 15206	1917/1919	Yu 15012	1937	CNW 434	1994
F 15266	1917/1919	SBEC 474	1981	CNW 473	1994
F 15462	1917/1919	SBEC 806	1981	CNW 618	1994
KW 3952	1921	CHM 2606	1986	CNW 909	1994
KW 4583a	1921	SBLE 71	1987	P&M 46	1994
F 19404	1921/1922	SBLE 433	1987	P&M 68	1994
F 20484	1921/1922	CLD 144	1990	P&M 88	1994
F 21252	1921/1922	CLD 558	1990	C&H 7010	1995
F 21306	1921/1922	CLD 1541	1990	C&H 7037	1995
F 21321	1921/1922	Cox 5005	1990	FED 61	1995
F 21351	1921/1922	Cox 5099	1990	AC 1394	1996
F 21488	1921/1922	EGM 152	1990	AC 1395	1996
F 21549	1921/1922	H&M 1386	1990	AC 1486	1996
F 21560	1921/1922	H&M 1509	1990	AC 2047	1996
F 21955	1921/1922	H&M 1541	1990	KR 4084	1996
F 21959	1921/1922	SICH 949	1992	KR 4104	1996
F 21965	1921/1922	SICH 1012	1992	AC 3758	1998
R 6827	1923/1924	SICH 1041	1992	AC 4188	1998
R 11264	1923/1924	SICH 1187	1992	ZH-G 065	2006
R 11265	1923/1924	SICH 1188	1992	C&N 5766	2007
R 11403	1923/1924	SSNY 10	1992	C&N 6065	2007
R 11415	1923/1924	SSNY 47	1992	NN 0901	2009
R 11424	1923/1924	AC 654	1993	JN 11043	2011
R 11476	1923/1924	AC 660	1993	CNC 12003	2012
R 18275	1929	AC 696	1993	CNC 12064	2012
F 28295	1930/1931	AC 716	1993	JN 12110	2012
Yu 10925	1937			MH 369-61	2018

R. racemosum is the undoubted star of Subsection *Scabrifolia,* grown in virtually every open-to-the-public rhododendron collection across the country as well as being resident in innumerable private gardens. In the wild, it is endemic to the northern half of Yunnan, with the distribution crossing the border into southwestern Sichuan, as well as heading eastwards into northwestern Guizhou. George Forrest's field notes detail large tracts of this species covering the high grassy plains of Yunnan, such as those of the Chung-tien Plateau - known today as Zhongdian - while being equally abundant in open pine woodland. Frank Kingdon-Ward on the other hand wrote of a dwarf form, growing as a matted carpet around 0.3m high, this spread across the steep rocky slopes of the valleys east of the Yangtze Bend. Yet it was another master collector who discovered and first introduced the species: Jean-Marie Delavay.

A French priest sent to China by the Paris Foreign Missions Society - the Société des Missions Étrangères de Paris, which was established by the Vatican in the late 1650s to convert the heathen of foreign lands to Catholicism - Abbé Delavay was also an amateur botanist who, from 1867 until his death from bubonic plague almost three decades later, despatched over 200,000 herbarium specimens back to the Muséum National d'Histoire Naturelle, so an ostensible hobby may well have taken precedence over servitude to a will-o'-the-wisp. Many of those collections included viable seed, though few were successfully germinated and grown-on to maturity. *R. racemosum* however, found on Mount Tsang Chan, a mountain above the village of Dali in Yunnan on the last day of March 1883, was one of those that was established in cultivation. Adrien Franchet, the most highly regarded botanist working in the museum's vast herbarium, described the species in 1886, writing in Volume 33 of the *Bulletin de la Société Botanique de France,* and plants from a second Delavay gathering made in April 1884 - on Mount He-chan, above Lan Kong, under the field number 838 - were raised by the staff at the nearby Jardin des Plantes, with some juvenile specimens passed on to the Royal Botanic Garden at Kew, in November of 1889.

Within Subsection *Scabrifolia, R. racemosum* is one of only two species to exhibit a glaucous underside to its foliage, the leaf abaxial surface white-papillose and very shiny. A hairless adaxial surface, as well as glabrous stems, flower stalks and seed pods, are the morphological characteristics that together, will key the species from *R. hemitrichotum,* that otherwise near-twin. The shape of the leaves also varies between the two taxa, with the *R. racemosum* outline broadly obovate through oblong-elliptic to oblong-lanceolate, while the foliage on *R. hemitrichotum* is sleeker, narrowly elliptic through lanceolate.

Across the plotted distribution, three forms of *R. racemosum* intergrade, often within the same area, so negating formal recognition at even varietal ranking: dwarf compact plants, multi-branched, with small, rounded leaves, short pedicels and small corollas; low-growing plants no more than 0.6m in height, these having larger, broad and rounded leaves, short pedicels, plus large corollas; and tall-growing clones to 3m or more, upright but lax in habit, with narrower, longer and more pointed foliage, the longest pedicles, but only medium-sized corollas. All have been introduced into UK gardens and offer a wide range of corolla colours within their individual gamut, the March-May display augmented by the axillary nature of the flower buds, these emerging from the leaf nodes along the upper 25cm of each stem, in a raceme of bloom in the best specimens. Which of course, prompted the Latin epithet.

Cultivation is usually without problem, though individual hardiness is variable, as would be expected given the altitudinal range of the wild distribution, but the toughest clones are easily able to cope with the rigours of the coldest UK gardens. A propensity, though not exclusivity, for drier sites in its natural environs allows specimens to succeed in areas where rainfall is far less plentiful than along the western seaboard. However, where those yearly totals are measured in metres rather than centimetres, a planting position with good drainage should be chosen, despite some forms of the species showing a preference for peaty, boggy ground. Equally, as some clones often begin flowering in early March, protection from spring frosts will be needed if the corollas are to come through a cold snap in an unblemished state.



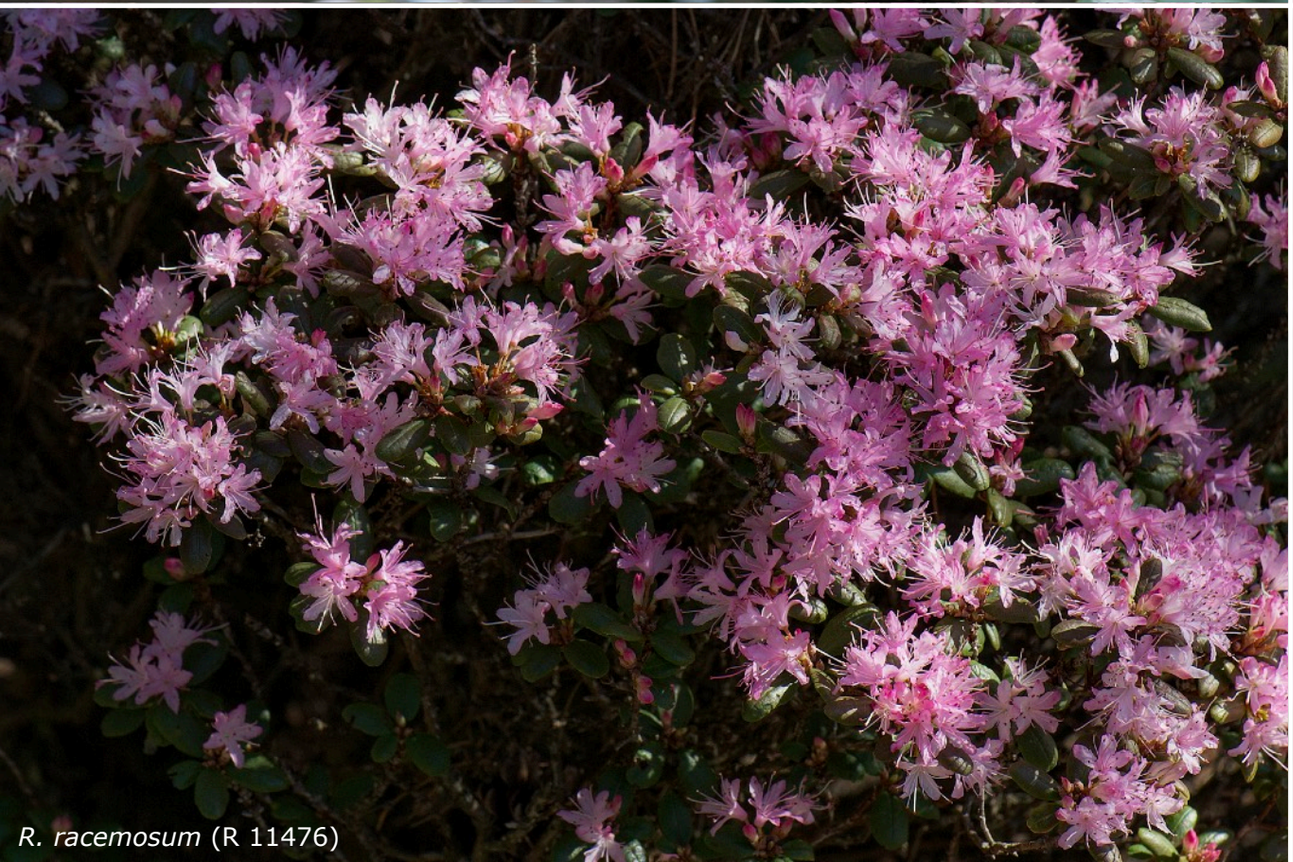
R. racemosum (P&M 68)



R. racemosum (CNW 35)



R. racemosum (CH&M 2606)



R. racemosum (R 11476)



R. racemosum (Yu 10993)



R. spinuliferum

R. spinuliferum
Hardiness:
H3-4.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan, Guizhou, & NE, C, S & W Yunnan, China.
Growing in coniferous and mixed forests, and in shady thickets,
at elevations of 800-2,600m.

Identification:
Shrub, upright but straggly, rarely a small tree, 0.5 to 4.5m high;
branchlets densely pubescent,
moderately through densely bristly, the setae with swollen bases.
Leaves papery but tough, lanceolate through elliptic,
2.4 to 10.5cm long by 0.6 to 4.5cm wide;
upper surface bullate, rarely scabrid, sparsely through moderately lepidote,
pubescent at first, persisting only along the midrib, rarely bristly,
the margins flat or revolute, usually pubescent, usually bristly;
lower surface pale green, densely pubescent,
bristly at first, the setae with swollen bases sometimes persisting on the midrib,
lepidote, the scales medium-sized, brown or pale brown,
between half and three times their own diameter apart,
the veins conspicuously raised.
Petiole 3-10mm long, densely pubescent, bristly.
Inflorescence terminal or axillary, 1-2-5-flowered.
Pedicel 2-12mm long, rarely bristly.
Corolla 1.4 to 2.5cm long,
tubular, and contracted at the apex and the base, erect, filled with watery nectar,
or very narrowly funnel-shaped,
crimson, brick-red, orange, pink or yellowish.
Stamens 10, exserted;
filaments glabrous, sometimes pubescent towards the base.
Ovary densely tomentose.
Style declinate, exserted, glabrous, rarely pubescent at the base.
Capsule 7-17mm long, densely tomentose.

Seed Collections:

R 25237	1932	SBEC K059	1981	CNW 1084	1994	C&N 5965	2007
McLaren AA 01	1932	SBEC K068	1981	CNW 1114	1994	C&N 5967	2007
McLaren AA 27	1932	H&M 1420	1990	CNW 1326	1994	C&N 5971	2007
McLaren AA 52	1932	SICH 1177	1992	AC 2008	1996	NN 0945	2009
McLaren S 33	1932	AC 768	1993	AC 2043	1996	CDHM 14530	2010
McLaren S 38	1932	AC 775	1993	AC 2091	1996	JN 12343	2012
McLaren V 11	1932	CNW 1075	1994	KR 3902	1996	JN 12395	2012
SBEC K058	1981	CNW 1083	1994	CCHH 8000	1997	FB1-2018	2018

R. spinuliferum is another of Abbé Delavay's discoveries described by Franchet: the location of the find, a woodland site above Tong Hay, in Tonghai County, central Yunnan, the material gathered under field number 4884; the date, mid February, 1891; with the botanic details appearing in Volume 9 of the *Journal de Botanique,* published during 1895 (on the page immediately before that delineating *R spiciferum*). If seed was sent, it either failed to germinate or the seedlings were subsequently lost, for the first introduction into cultivation is documented as occurring in 1907, this gathering made by another of the MEP priest-botanists, François Ducloux. Maurice de Vilmorin, the eminent botanist, dendrologist and President of the Société Botanique de France, was responsible for successfully raising the plants, some of which were sent to Kew in 1910, the same year they flowered for the first time in cultivation at Les Barres, Vilmorin's garden at Nogent-sur-Vernisson, which is now a national arboretum. And of course, the blooms were immediately seen to be unique within the genus.

In the main, they open from terminal flower buds, although sometimes, the inflorescences may also be axillary, in the uppermost leaf axils. Each holds between one and five corollas, which are usually crimson-red in colour, tubular in shape, narrowing slightly at the top and at the bottom, with the stamens and style tightly clustered together and exserted at the apex. Large racemes are often formed from multiple buds. Yet unlike the urn-shaped flowers of the Subsection *Menziesia* plants or the tubular clusters of *R. keysii,* here, the corollas are held erect, pointing upwards, and so consequently, often filled to the brim with watery nectar.

Out of flower, the species is almost a mirror of *R. scabrifolium* ssp. *scabrifolium* var. *scabrifolium,* yet able to be identified from that taxon, as well as from var. *spiciferum,* by the non-scabrid upper leaf surface. This also lacks any bristles, and on the underside, has conspicuously raised veins. Mature specimens will be seen to have a more rigid and upright branch structure than either of the *R. scabrifolium* varieties.

Although presented here as a specific species, the *R. spinuliferum* taxon has been divided into two varieties by Chinese botanists: var. *glabrescens,* with a near glabrous pedicel, calyx and ovary, plus leaves that are only sparsely hairy along the veins; and var. *spinuliferum,* where these features are densely pubescent. The new entity was described in 1982 from a population of plants found at Yiliang, in northeast Yunnan.

However, within Genus *Rhododendron,* the new variety's chosen epithet falls foul of the nomenclature rules, because the 'glabrescens' epithet has been used previously - by Takenoshin Nakai and Hiroshi Hara in 1935, within the *Journal of Japanese Botany,* Volume 11, Part 12 - to describe a variety of *R. reticulatum*. It cannot therefore be used again.

Joseph Rock reintroduced the hairy version of the species in 1932, with half a dozen lots also arriving that year via Forrest's native collectors, who were then in the employ of Henry McLaren of Bodnant, North Wales. Almost half a century passed before the next batch of seed was secured, three lots in fact, gathered by the Sino-British joint expedition to the Cangshan in 1981, and since then, capsules have followed in a steady trickle. Alan Clark and Shelagh Newman (the latter, at the time, custodian of the national hydrangea collection at Holehird in the Lake District) introduced a single gathering of the glabrous form under the field number C&N 5967 during 2007, their capsules sourced from a population of plants established at an altitude of 2,500m, growing near Shizshan, in Yunnan Province.

R. spinuliferum is widely grown today despite the seemingly low, H3-4 hardiness rating, thriving in east coast gardens provided a well-sheltered planting site is selected at the get-go, but succumbing if subjected to repeated heavy frosts.

The epithet translates as 'bearing spines'.


R. spinuliferum


R. spinuliferum


R. spinuliferum


R. spinuliferum


R. spinuliferum

R. mollicomum

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan & N Yunnan, China.
Growing in thickets, at forest margins, on dry bouldery hillsides and in scrub, at elevations of 2,400-3,800m.

Identification:
Shrub, broadly upright, compact through straggly, 0.3 to 3.6m high;
branchlets densely pubescent,
with or without bristles.
Leaves thickly coriaceous,
lanceolate through oblong (rarely),
1.2 to 4.5cm long by 0.3 to 1.5cm wide;
upper surface lepidote, densely pubescent, usually without bristles,
the midrib impressed,
the margins revolute, pubescent;
lower surface pale green, matt, densely pubescent,
densely lepidote, the scales medium-sized, brown or pale brown,
between one and three times their own diameter apart,
the midrib raised, with or without bristles.
Petiole 3-5mm long, densely pubescent, bristly or not.
Inflorescence axillary, 1-3-flowered.
Pedicel 5-14mm long.
Corolla 1.7 to 3.4cm long, narrowly funnel-shaped, oblique,
pale through deep pink, reddish-purple, reddish or pale rose,
without spots.
Stamens 10, rarely 8;
filaments glabrous at the base, pubescent along the middle.
Ovary pubescent.
Style straight,
often sparsely pilose at the base or along the lower third.
Capsule 6-12mm long, variably pubescent.

Seed Collections:

F 10347	1912/1914
F 15203	1917/1919
F 20525	1921/1922

R. mollicomum was discovered on the mountains to the northeast of the Yangtze Bend in Yunnan during July 1913 and introduced into British gardens that same year by George Forrest, who remains the only collector to have returned seed to the UK, although Alan Clark did introduce an affinity form under AC 1894 in the autumn of 1996. A re-examination of herbarium sheets and live plants undertaken during work on the Edinburgh Revision, reduced the previous total of authenticated gatherings, one of those casualties being the Scotsman's F 30940 gathering, which was transferred to *R. hemitrichotum.* So today, plants from only three sets of capsules will be found bearing the species epithet on garden labels: F 10347, the original find; F 15203 from the 1917-19 expedition; and F 20525, from Forrest's fifth trip to China between 1921 and 1922.

Joseph Rock discovered and sent back herbarium material of a form of *R. mollicomum* from the Lichiang Snow Range in Yunnan, under the field number R 8551, during April 1923, which was given varietal status and named for its collector. Yet despite its larger corolla, longer stamens and longer gynoecium - the ovary and the style combined - *R. mollicomum* var. *rockii* was made synonymous with the specific species in the first part of the Cullen-Chamberlain-authored *Preliminary Synopsis* paper that was published in Volume 36 of *Notes from the Royal Botanic Garden, Edinburgh,* during 1978.

The species is therefore a rare find in British gardens, absent from many of the major public collections, including that at Edinburgh Botanic, along with its three outstations at Benmore, Dawyck and Logan.

The taxon is most closely allied to *R. hemitrichotum,* differing in having a leaf lower surface that is pale green and densely pubescent, rather than being glaucous and glabrous. A lack of any bristles on the leaves distinguishes the species from all three forms of *R. scabrifolium* - ssp. *pubescens,* var. *scabrifolium* and var. *spiciferum*.

After studying the dried material in the herbarium at Edinburgh, Peter and Kenneth Cox, in their 1997-published *Encyclopedia of Rhododendron Species,* suggested that *R. mollicomum* may in fact be a natural hybrid between *R. racemosum* and *R. scabrifolium* var. *spiciferum,* as the preserved specimens appeared to span the morphologic range between those two taxa, with individuals very close to both. DNA evidence to confirm the validity of this prognosis is still awaited.

R. mollicomum was described by Sir Isaac Bayley Balfour and his deputy, William Wright Smith, in Volume 9 of *Notes,* which was published in 1916. Their epithet translates as 'soft-haired'.



R. hemitrichotum (Yu 14843)

R. hemitrichotum

Hardiness:
H5.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan & NW Yunnan, China.
Growing in forests, in thickets, in dry rocky pasture, in scrub and on open slopes, at elevations of 2,200-4,300m.

Identification:
Shrub, upright, compact through leggy, 0.25 to 2.4m high;
branchlets densely pubescent, rarely bristly.
Leaves thinly coriaceous,
lanceolate through narrowly elliptic,
1.2 to 4.5cm long by 0.3 to 1.3cm wide;
upper surface sparsely through moderately lepidote,
moderately through densely pubescent, rarely bristly,
the margins revolute, without hairs or bristles;
lower surface white-papillose, shiny, glabrous,
lepidote, the scales medium-sized, brown or pale brown,
between half or slightly less than their own diameter apart,
the midrib sometimes sparsely pubescent.
Petiole 1-3mm long, densely pubescent, rarely bristly.
Inflorescence axillary, 1-3-flowered.
Pedicel 2-10mm long.
Corolla 0.9 to 1.5cm long, widely funnel-shaped,
pink, pale rose, purplish-red or white edged with pink,
with or without purple spotting.
Stamens 8-10;
filaments pubescent towards the base, rarely glabrous.
Ovary pubescent or glabrous.
Style declinate, often sparsely pubescent at the base.
Capsule 5-8mm long, sparsely pubescent.

Seed Collections:

F 16250	1918	KW 4994	1921	F 30940	1930/1931
F 20491	1921/1922	R 6450	1923/1924	R 24531	1932
F 21339	1921/1922	R 6451	1923/1924	R 24541	1932
F 22092	1921/1922	F 29248	1930/1931	Yu 14843	1937
KW 4050	1921	F 29273	1930/1931	JN 12248	2012

Discovered on the Muli Mountains of southwest Sichuan by George Forrest in June 1918, *R. hemitrichotum* was described by the collector and Sir Isaac Bayley Balfour in Volume 12 of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1920. Subsequent collections by Forrest, Kingdon-Ward, Rock and Yu extended the known distribution into the northwest of Yunnan Province.

The species is considered most closely related to *R. mollicomum,* but has smaller flowers and a near hairless leaf underside, with only the midrib occasionally found to be home to a scattering of filiform-acicular follicles. The most obvious and prime characteristic used to differentiate the two morphologically however, is the glaucous nature of the leaf abaxial surface: white-papillose and shiny for *R. hemitrichotum;* pale green and matt for *R. mollicomum*. Only one other Subsection *Scabrifolia* species is graced with foliage where the underside is glaucous, *R. racemosum,* but this is easily keyed from *R. hemitrichotum* by the broadly obovate, as opposed to narrowly elliptic leaf shape, and by the fact that those leaves are completely glabrous above. That presence or absence of hairs applies equally to the branchlets, pedicels and seed capsules, *R. hemitrichotum* being distinctly pubescent, while *R. racemosum* is again glabrous.

R. hemitrichotum was first introduced into UK cultivation by Forrest during 1918, yet despite later re-introductions by the Scotsman and his contemporaries, it remains a rare find in British gardens, outshone of course, by the far more floriferous and hardy, *R. racemosum,* though as the H5 rating confirms, the species can be grown successfully in all but the coldest central and northern locales. Specimens are generally problem free, flower from a young age and form upright bushes to around 2m high, though mirroring the majority of its subsection cohorts, the habit tends towards the straggly. Resort to the secateurs every few years can redeem this trait, the Subsection *Scabrifolia* membership amongst the few rhododendron species where pruning after blooming is a recommended practice.

Surprisingly perhaps, even though China reopened its doors to Western botanists and horticulturalists in the early 1980s, only Jens Nielsen has returned home with seed of *R. hemitrichotum* - in 2008 (available through the American Rhododendron Society Seed Exchange of 2009); and four years later in 2012; both of the collections made in southwest Sichuan - despite a cornucopia of expedition teams and individuals being granted visas to wander about the hillsides.

The Latin epithet translates as ‘half-hairy’.



R. hemitrichotum (KW 4050)



R. hemitrichotum

R. pubescens (KW 3953)

R. scabrifolium* ssp. *pubescens

Hardiness:
H4-5.
Flowering Period:
March-April.
Distribution in the wild:
SW Sichuan & N Yunnan, China.
Growing in thickets, at forest margins, in scrub, on dry bouldery and open rocky hillsides, at elevations of 2,400-3,800m.

Identification:
Shrub, compact to sparse and leggy, 1 to 1.3m high;
branchlets densely pubescent.
Leaves thickly coriaceous,
very narrowly elliptic through very narrowly lanceolate,
1.8 to 2.5cm long by 0.3 to 0.6cm wide;
upper surface sparsely lepidote,
densely pubescent, bristly at first, the setae deciduous at maturity,
the midrib impressed,
the margins strongly revolute;
lower surface greyish-green, densely pubescent,
lepidote, the scales medium-sized, pale brown or brown,
between one and two, or rarely three times their own diameter apart,
the midrib raised.
Petiole 1-3mm long,
sparsely densely pubescent, sparsely through moderately bristly.
Inflorescence axillary, 2-3-4-flowered.
Pedicel 6-8mm long, bristly.
Corolla 0.6 to 1.1cm long, funnel-shaped or shortly-tubular with open lobes,
rose-pink or pale red.
Stamens 8-10;
filaments pubescent towards the base, but glabrous at the base.
Ovary pubescent.
Style declinate, usually glabrous.
Capsule 5-6mm long, sparsely pubescent.

Seed Collections:

KW 3952a	1921
KW 3952b	1921
KW 3953	1921
H&M 1417	1990
JN 988	1999
JN 12253	2012

James Cullen and David Chamberlain, the two lead botanists responsible for the 1996 Edinburgh Revision classification of Genus *Rhododendron,* were once more at odds with their colleague, the then recently-retired, yet revered rhododendron expert H. H. Davidian, with regard to the ranking assigned to *R. pubescens*. For their *Preliminary Synopsis* paper of 1978 vintage (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), had gifted-back the specific status first assigned to the taxon by Sir Isaac Bayley Balfour and George Forrest in their 1920 botanic description (*Notes,* Volume 12), and this elevated station was confirmed in Doctor Cullen's finalised taxonomic changes to Subgenus *Rhododendron,* which went to print in 1980 (*Notes,* Volume 39, Part 1). Because Davidian, known to be an arch splitter, had on this occasion, done a complete one-eighty and sunk *R. pubescens* under *R. spiciferum* in the 1964 issue of *The Rhododendron and Camellia Year Book.* And he maintained that position in the first volume of his monumental work, *The Rhododendron Species,* which was rolling off the presses in 1982.

Peter and Kenneth Cox write that *R. pubescens* 'differs from *R. scabrifolium* var. *spiciferum* in its very narrow, recurved leaves, its greater hardiness and its isolated, more northerly distribution' (*The Encyclopedia of Rhododendron Species,* 1997), while Chinese botanists describe the leaf blade as being 'thickly leathery', as opposed to the 'toughly papery' foliage of var. *spiciferum* (*Flora of China,* online). The latter foliage morphology would certainly be the case if specimens of *R. pubescens* under the Frank Kingdon-Ward field number KW 3953 were being examined - including the Award of Merit clone named 'Fine Bristles' - and compared with var. *spiciferum,* or indeed *R. scabrifolium* itself. But field reports indicate a population overlap with *R. scabrifolium* in northern Yunnan. Yet across the border in the southwest of Sichuan, the *R. pubescens* distribution is indeed segregated and disjunct. Peter and Kenneth suggest that varietal ranking under *R. scabrifolium* would be the best status for *R. pubescens,* but a subspecies ranking more accurately reflects the endemicity and moreover, conforms to the accepted rules governing botanical classification with regard to distribution. *R. scabrifolium* ssp. *pubescens* is therefore formalised herein, with *R. scabrifolium* ssp. *scabrifolium* var. *scabrifolium* and *R. scabrifolium* ssp. *scabrifolium* var. *spiciferum* resulting in consequence.

The Muli mountains in southwest Sichuan were where George Forrest or one of his trained band of local collectors first discovered *R. pubescens* during August 1918, returning herbarium material in fruit under the field number F 16812, but not introducing seed. The credit for that went to Frank Kingdon-Ward three years later in 1921, when KW 3952a, KW 3952b and KW 3953 arrived back in Blighty, though the first gathering was initially thought to be *R. racemosum,* the second *R. mollicomum,* and only the last *R. pubescens*. A near seventy year gap then ensued until Charles Howick and William McNamara re-introduced the species from Sichuan in 1990 under H&M 1417, with Jens Nielsen returning a collection from Yunnan in 1999 and one from Muli County in 2012.

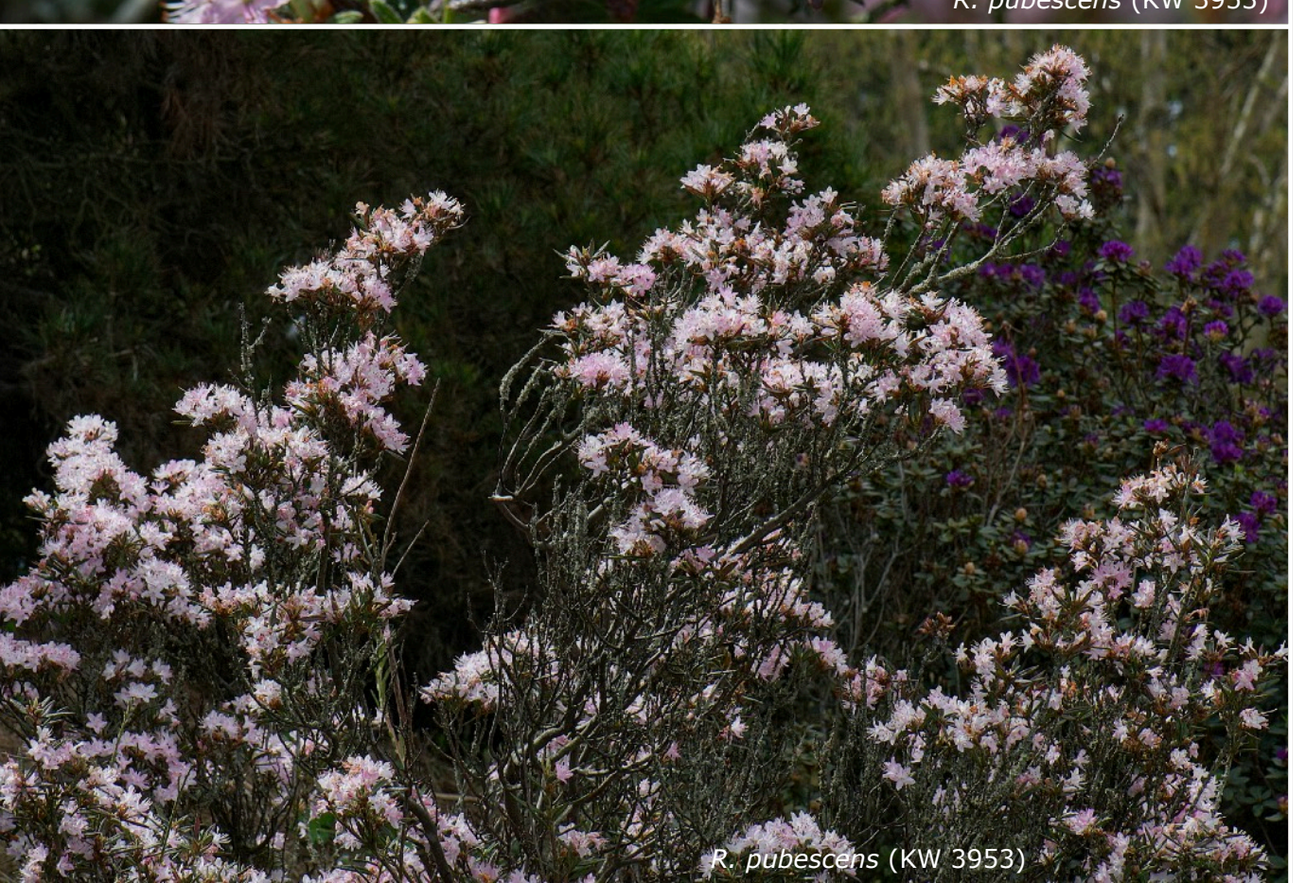
The presence of both hairs and bristles on the upper and lower surfaces of the leaves of ssp. *pubescens* cleaves it from *R. mollicomum,* while the non-glaucous, greyish-green underside of the foliage does the trick for *R. hemitrichotum* and *R. racemosum*. The tubular corollas of *R. spinuliferum* will quickly eliminate any likelihood of a misidentification when they open in April-May, especially as they will do so from mainly terminal, rather than axillary flower buds (if the far larger and longer bullate leaves have not already proved just as decisive).

R. scabrifolium ssp. *pubescens* is hardier than either variety of ssp. *scabrifolium*, but considered by the doyens to be nowhere near as showy in bloom, outclassed apparently by the best deep pink forms of var. *spiciferum,* despite that 1955 award the RHS bestowed on the 'Fine Bristles' clone. Other observers may disagree…

R. pubescens (KW 3953) ‘Fine Bristles’



R. pubescens (KW 3953)



R. pubescens (KW 3953)

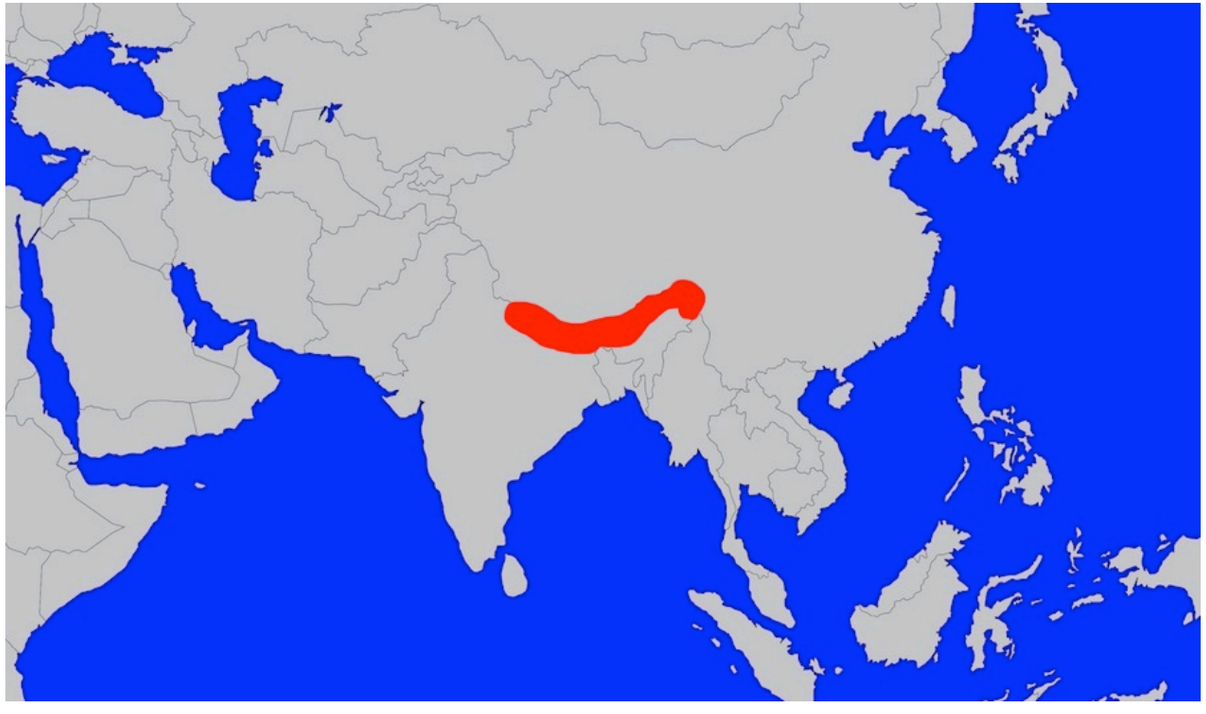


R. pubescens (KW 3953)

Section *Lepipherum* Subsection *Setosa:*



R. setosum (Polunin 106)



Taxa:

R. fragariiflorum
R. setosum

Taxonomic Revision:

The placement of *R. fragariiflorum* in a monotypic subsection was both right and wrong.

Moving the species away from the *Lapponica* or *Saluenensia* rhododendrons,
as the Edinburgh Revision botanists did in Part 1 of their 1978 *Preliminary Synopsis* paper
(*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36),
was correct in that it reflected the fact that one plant
displayed morphologic characteristics that were associated with both species groupings.
Yet the taxon also showed enough inconsistencies not to fit snuggly with either.

The mistake made, was in not also moving *R. setosum* out of Subsection *Lapponica*
and associating the two species together within the same botanic pigeonhole.
For there is a clear relationship between these two rhododendrons,
as Peter and Kenneth Cox make clear when they describe *R. fragariiflorum*
as simply a less hairy, eastern-distributed, version of *R. setosum*
(*The Encyclopedia of Rhododendron Species,* 1997).

The Cox position, reached after on-the-ground fieldwork, is therefore followed herein,
especially as this also dovetails with Wolfgang Spethmann's creation of
Subsection *Setosa* in 1987 (*Plant Systematics and Evolution,* Volume 157, Parts 1-2).

Subsection Morphology:

Shrubs, prostrate, dwarf or upright,
compact and mounding or straggly and open, 0.1 to 1.2m high;
branchlets short or long, moderately through densely lepidote,
densely puberulent at first, and with or without bristles.

Leaf bud scales quickly deciduous.

Leaves evergreen,
oblong-elliptic through oblong-ovate,
0.5 to 1.9cm long by 0.3 to 1cm wide,
apex and base rounded;
upper surface dark or bright green, rough, glossy or matt,
densely lepidote, the vesicular scales large and shiny, golden-yellow or brown,
leaf margins recurved, crenulate, ciliate, bristly or glabrous;
lower surface pale green, lepidote, sometimes dimorphic,
with large vesicular scales, bi-coloured, golden-yellow or dark brown, entire,
and flat, broadly-rimmed, pale or dark brown scales,
between half and six times their own diameter apart,
and with or without bristles.

Leaf anatomy comprises a single-layered upper epidermis;
the cuticle is around half as thick as the cells are deep; water tissue is absent;
the lower epidermis cells are not prolonged into papillae.
Sclereid cells are absent.

Petiole 1-3mm long, lepidote, often bristly.

Inflorescence terminal, 1-8-flowered;
bud scales deciduous.

Rhachis 0.5-3mm long, lepidote or not, puberulous or glabrous.

Pedicel 5-12mm long,
moderately through densely lepidote,
moderately through densely puberulent,
and with or without bristles.

Calyx conspicuous, 5-lobed to the base, 3-8mm long, pink, reddish or purple-coloured, the lobes oblong, ovate or elliptic, and rounded at the apex,
their outer surface sparsely lepidote or without scales, sometimes puberulous,
their margins ciliate or not.

Corolla 1 to 2cm long, 5-lobed,
widely funnel-shaped to near rotate, somewhat zygomorphic,
strawberry-pink, wine-red, purple, plum-purple through purple-crimson,
the outer surface glabrous, sometimes sparsely lepidote along the lobe median,
the inner surface pubescent.

Stamens 8-10, unequal, long-exserted,
slightly shorter or equal in length to the corolla;
filaments pubescent or villous towards the base.

Ovary 5-locular, densely lepidote, glabrous.

Style red,
longer than the stamens,
equal to or slightly longer than the corolla,
glabrous or occasionally puberulous at the base.

Capsule ovoid or conoid, 4-7mm long, lepidote,
sometimes puberulous.

Seeds elongate, without wings or appendages,
or with minute appendages at both ends.



R. fragariiflorum (CC 7580)

R. setosum
Hardiness:
H5.
Flowering Period:
May.
Distribution in the wild:
Nepal; S Tibet; Bhutan; Sikkim, Arunachal Pradesh & W Bengal, India.
Growing on open hillsides and rocky slopes, in thickets and amongst scrub,
at elevations of 2,700-4,900m.

Identification:
Shrub, dwarf to upright, open, 0.1 to 1.2m high;
branchlets densely bristly.
Leaves oblong-elliptic through obovate,
0.6 to 1.9cm long by 0.4 to 0.8cm wide,
apex and base rounded;
upper surface matt, densely lepidote,
the vesicular scales large and shiny, golden-yellow,
leaf margins recurved, ciliate and bristly;
lower surface usually densely bristly,
lepidote, the scales dimorphic and intermixed,
some vesicular, golden-yellow with narrow rims,
others pale or dark brown, flat and broadly rimmed,
between half and four times their own diameter apart.
Petiole 1-3mm long, lepidote, bristly.
Inflorescence 1-8-flowered.
Pedicel 3-10mm long, lepidote, often bristly.
Calyx conspicuous, the lobes 4-8mm long, reddish or crimson-purple,
sometimes puberulous.
Corolla 1.3 to 2cm long, widely funnel-shaped,
wine-red, purple or pinkish.
Stamens 8-10, unequal, long-exserted,
slightly shorter or equal in length to the corolla.
Style longer than the stamens,
occasionally puberulous at the base.

Seed Collections:

Cooper 46	1914	LS&H 17543	1949	McBeath 1173	1981
Cooper 2490	1914	LS&H 18956	1949	S&L 5348	1984
Cooper 2503	1914	Polunin 106	1949	CHM 2049	1985
Cooper 3482	1914	Polunin 178	1949	P&L 20	1986
Cooper 4003	1915	Polunin 359	1949	CHM 3082	1988
L&S 88	1933	Stainton 271	1956	DSE 118	1995
L&S 3221	1937	BLM 217	1971	DSE 123	1995
Yu 10681	1937	Beer 633	1975	Gosainkund 7	1995
Yu 13785	1937	Hruby 10	1975	BE 05-47	2005
Yu 15641	1937	SCH 2048	1975	TDA 1031	2016
LS&H 16157	1949	SCH 2170	1976	TDA 1037	2016
		SCH 2260	1977		


R. setosum (Gosainkund 7)

It is not known who discovered *R. setosum* in the wild, but David Don was able to describe the species in 1821 when writing in Volume 3 of *Memoirs of the Wernerian Natural History Society,* from specimens collected in Nepal and held in the herbarium of the botanist Aylmer Bourke Lambert. Plants were growing in British gardens from around 1825, with documented seed gatherings from Roland Cooper's Bhutan explorations arriving during 1914, these followed by collections from a host of others up to the present day.

That 1821-dated David Don description and epithet relates directly to the choice of subsection name, first proposed by Wolfgang Spethmann in 1987 (*Plant Systematics and Evolution,* Volume 157, Parts 1-2) and endorsed - following field study investigation - by Peter and Kenneth Cox in their 1997 *Encyclopedia of Rhododendron Species*.

Bristles on the young shoots are the obvious feature separating *R. setosum* from the closely related, but more easterly occurring *R. fragariiflorum,* which also tends to be lower growing. Less noticeable is a difference in the abaxial leaf surface scales, for although both plants have domed golden-yellow vesicular scales with narrow rims, a second type will be found fraternising on the *R. setosum* leaf, these flat, broadly-rimmed and coloured pale or dark brown.

R. setosum is not the easiest of rhododendrons to grow in British gardens, though it is less problematic than its subsection compatriot and more often found in specialist collections. Drainage needs to be near perfect and the species dislikes the hot summers of southern England, preferring cooler northern climes. Winter in the wild is most often spent under a covering of snow, which protects the shrub from the worst of the weather and the lowest temperatures, so a sheltered but not shady spot is likely the best home-away-from-home a UK locale can provide. Partial die-back will be a sure indication that the plant's preferences have not been met and that improvements need to be made. Hastily.



R. setosum (Gosainkund 7)



R. setosum (Polunin 106)

R. fragariiflorum

Hardiness:
H5-6.
Flowering Period:
May-June.
Distribution in the wild:
S & SE Tibet; NE Bhutan.
Growing on open hillsides, on and amongst rocks, and in swampy ground,
at elevations of 3,500-5,000m.

Identification:
Shrub, prostrate, mounding or straggly, 0.1 to 0.4m high;
branchlets without bristles.
Leaves oblong-elliptic through oblong-ovate,
0.5 to 1.7cm long by 0.3 to 1cm wide,
apex and base rounded;
upper surface rough, glossy, densely lepidote,
the vesicular scales large and shiny, golden-yellow or brown,
leaf margins recurved, crenulate, ciliate, bristly or glabrous;
lower surface lepidote,
the vesicular scales large, golden-yellow or dark brown, entire,
between one-and-a-half and six times their own diameter apart.
Petiole 1-2mm long, lepidote, rarely bristly.
Inflorescence 2-6-flowered.
Pedicel 5-12mm long, crimson-purple.
Calyx conspicuous, the lobes 3-8mm long, pink, reddish or purple-coloured.
Corolla 1 to 1.8cm long, widely funnel-shaped to near rotate,
strawberry-pink, purple, or plum-purple through purple-crimson.
Stamens 10, unequal, long-exserted,
slightly shorter or equal in length to the corolla.
Style red, longer than the stamens,
equal to or slightly longer than the corolla.

Seed Collections:

KW 5734	1924	CV 9564	1995
L&S 1772	1936	KR 3720	1995
LS&T 4785	1938	CC 7580	1996
LS&E 15074	1946/1947	AC 3262	1997
LS&H 20720	1949	AC 3275	1997
CV 9519	1995	AC 3299	1997

R. fragariiflorum was discovered during June 1924 by Frank Kingdon-Ward while he was exploring ground near the Temo La pass, east of Pome (Bomê), in southern Tibet. The botanic description, written by the plant hunter himself, can be found in Series 3, Volume 86, of *The Gardeners' Chronicle,* which was published in 1929.

It is the presence or absence of bristles on the stems that dictates which of the subsection's two species is to hand: *R. setosum* has them; *R. fragariiflorum* does not. But it should be noted that occasionally a scattering of bristles might be found on the *R. fragariiflorum* leaf margins and petioles. In addition, for those equipped with a low power microscope or a magnifying lens, a second, even more distinct, morphological characteristic can be observed:

The golden-yellow or dark brown scales on both the upper and lower leaf surfaces of *R. fragariiflorum* are vesicular and entire. Looking down on one of these with augmented vision, a narrow outer margin will be seen - the rim - which is without any crenulations or scallops. Next, an inner ring will be observed, this quite broad relatively, and then a large central dome that is almost spherical. Moreover, all the scales present will be found to be of the same type.

On the underside of the *R. setosum* blades, however, two scale types will be found in attendance, and intermingled: vesicular, as described above; and a second kind, these dark brown, broadly rimmed and flat.

Before the mid-1990s, the two forms of *R. fragariiflorum* in UK cultivation were both difficult to grow and to propagate. Consequently, they were consigned to a connoisseur's collection and rarely seen in gardens open to the public. One of these was the original Kingdon-Ward introduction of 1924, the other, a 1947 Frank Ludlow, George Sherriff and Henry Elliott gathering that is now thought to be a natural hybrid. In the wild, the species is free-flowering and can be found carpeting swathes of turfy alpine meadow, so hopes were high that offspring germinated from the three seed collections of 1995, which re-introduced the species, and those that were returned in 1996 and 1997, would find the UK climate more accommodating. In expert hands, a specimen from the Cox & Cox 7580 gathering is certainly flourishing in the garden at Glendoick, to the east of Perth, in Scotland, but sadly, elsewhere, true representatives of *R. fragariiflorum* remain a rarity.

One final point:

A botanical spelling war seems to be ongoing regarding the species name.

The current 1997-published version of the *Rhododendron Handbook,* McQuire and Robinson's 2009 *Pocket Guide to Rhododendron Species,* and the *Flora of China* online website plump for *R. fragariiflorum,* the elucidation followed herein.

H. H. Davidian, in the 1982 lepidote tome of *The Rhododendron Species* opts for one 'i' and *R. fragariflorum,* with Peter and Kenneth Cox's 1997 *Encyclopedia of Rhododendron Species* and James Cullen's 2005 *Hardy Rhododendron Species* following suit.

Experts maintaining the database underlying the online International Plant Names Index, which is staffed and administered by the Royal Botanic Garden, Kew, in association with the Harvard University Herbarium and the Australian National Herbarium, believe that orthographically, the double 'i' is the correct form of address.

R. fragariiflorum (CC 7580)

Section *Lepipherum* Subsection *Tephropepla:*



R. xanthostephanum (KR 3095)



Taxa:

R. auritum
R. hanceanum
R. longistylum
R. tephropeplum
R. xanthostephanum

Taxonomic Revision:

The placement of Subsection *Tephropepla* remains as designated in the 1996 Edinburgh Revision classification.

Two additional members of the subsection, described by Chinese botanists - *R. longistylum* ssp. *decumbens* and *R. tsinlingense* - have yet to be introduced into UK cultivation.

Regrettably, the epithet chosen for the subspecies, falls foul of the nomenclature rules.

Subsection Morphology:

Dwarf, low or medium-tall shrubs,
compact through upright or spreading, 0.3 to 3m high, rarely to 5m;
young shoots lepidote, glabrous, occasionally puberulent;
bark sometimes peeling.

Leaf bud scales deciduous.

Leaves evergreen, coriaceous,
oblong through oblong-lanceolate to lanceolate,
1.6 to 13cm long by 0.6 to 6cm wide,
apex rounded, obtuse or acute, and mucronate,
base obtuse through cuneate to tapering;
upper surface bright green, dark green or brownish-green,
often shiny, glabrous, usually lepidote;
lower surface usually pale green, papillose, glaucous,
lepidote, the scales broad-rimmed, sometimes sunk in pits,
uniform or of two kinds, unequal in size,
overlapping, contiguous, or up to 6 times their own diameter apart.

Leaf anatomy variable, but comprising a 2- or 3-layered upper epidermis,
with the cells in the top layer being smaller than those in the layer below,
except in *R. hanceanum,* where they are near equal in size;
the cuticle is around half as thick as the top cells are deep; water tissue is absent;
the lower epidermis cells may or may not be prolonged into papillae.
Sclereid cells are usually present in the leaf tissue.

Petiole 2-14mm long,
glabrous, occasionally puberulent, variably lepidote.

Inflorescence umbellate, more rarely racemose,
terminal, or terminal and axillary in the uppermost one or two leaves,
3-5-8-15-flowered;
bud scales usually deciduous, occasionally persistent.

Rhachis 1-20mm long,
glabrous, occasionally puberulent, lepidote.

Pedicel 3-30mm long,
glabrous, occasionally puberulent, lepidote.

Calyx 5-lobed, often deeply so and conspicuous, with erect or reflexed lobes,
these ovate, oblong or near orbicular in shape and 2-8mm in length,
their outer surface glabrous, occasionally sparsely puberulent, usually lepidote,
their margins usually lepidote, ciliate or eciliate.

Corolla 5-lobed, 1.3 to 3.2cm long,
campanulate, funnel-campanulate or tubular-campanulate,
white, yellow, pink, or rose,
the outer surface glabrous, occasionally pubescent,
usually lepidote on the tube and the lobes, but sometimes without scales.

Stamens 10, unequal;
filaments usually pubescent along the lower half or at the base.

Ovary conoid or ovoid, 2-4mm long, 5-locular,
glabrous, rarely puberulent at the apex,
usually densely lepidote.

Style long, slender and straight, declinate (beneath the stamens),
tapering or impressed,
glabrous, rarely puberulous at the base,
usually lepidote, but sometimes without scales.

Capsule oblong-oval, 5-11mm long, glabrous, densely lepidote.

Seeds elongate, without wings, but with a minute appendage at each end.



R. xanthostephanum



R. auritum - immature leaf



R. auritum - mature leaf


R. hanceanum

R. hanceanum
Hardiness:
H4-6.
Flowering Period:
April-June.
Distribution in the wild:
C Sichuan, China.
Growing in thickets and on cliffs, at elevations of 1,200-3,000m.

Identification:
Shrub, dwarf and compact, low,
dome-shaped or spreading, or upright and rounded, 0.15 to 2m high;
branchlets lepidote, the stems bronzy-brown when young;
bark bronze, smooth.
Leaves thick and rigid,
ovate-lanceolate through oblong-elliptic to obovate,
2 to 13cm long by 1 to 6cm wide;
lower surface pale green, lepidote,
the scales unequal, flat or slightly sunken, golden-brown,
distant, between one-and-a-half to five times their own diameter apart.
Petiole 4-14mm long, densely lepidote.
Inflorescence terminal, loose or dense,
5-15-flowered.
Rhachis 8-20mm long, glabrous, lepidote.
Pedicel 8-14mm long, glabrous, sparsely lepidote.
Calyx lobes ovate, oblong or oval, each 2-4mm long,
their outer surface lepidote or not,
their margins lepidote, ciliate or eciliate.
Corolla 1.3 to 2.5cm long, funnel-campanulate,
white, creamy-white or pale yellow,
the outer surface glabrous, usually elepidote.
Stamens long-exserted.
Style impressed,
longer than the stamens, shorter than the corolla,
glabrous, rarely puberulous at the base, elepidote.
Capsule ovoid or oblong-oval, 6-10mm long.

Seed Collections:

W 882	1909
W 4255	1910

R. hanceanum is only known from two locations in central Sichuan, the population of plants growing on Mount Omei (Emei Shan) the first to be found. The Reverend Ernest Faber, a German Sinologist, botanist and missionary priest, was the man who made that discovery, most likely during 1886. That date is a tentative guesstimate, however, a work-back from when his herbarium specimens were received at Kew - December 1887: No. 481 being *R. hanceanum;* No. 482 the plant that bears his name, *R. faberi.* William Botting Hemsley was responsible for describing the species, his prose appearing in Volume 26 of the *Journal of the Linnean Society,* published in 1889, with the chosen epithet for the rhododendron an honorific for Henry Fletcher Hance (1827-1886), who had been the British Consul at Canton (now Guangzhou, in Guangdong Province), when in 1873, he published a supplement to George Bentham's 1861 work *Flora Hongkongensis.* At the time of his death, Hance was the Consul at Xiamen (Amoy).

Subsection *Triflora* was the taxonomic pigeonhole into which *R. hanceanum* was first placed, basically on account of a supposed resemblance to *R. afghanicum,* although James Cullen was having none of that, reporting in his Subgenus *Rhododendron* revision text that the similitude was 'limited to the inflorescence, and is superficial' (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Part 1, 1980). H. H. Davidian, who maintained the association in Volume 1 of his tetralogy *The Rhododendron Species,* published in 1982, does at least point out that 'the shape and often the size of the corolla, the sharply bent or deflexed style, the shape of the leaves, the distribution of the scales on the lower surface of the leaves, and the longer rhachis' of *R. afghanicum* are all significant morphological differences between it and the smaller forms of *R. hanceanum* that were considered closest to the outlier. So if you were thinking mirror image…

Regrettably, there is currently no published genetic evidence to support the transfer of *R. hanceanum* to Subsection *Tephropepla,* which Doctor Cullen himself admits is a default placement (*ibid.* p. 127), so Peter Cox may well be spot-on with his suggestion that the species 'might be better on its own' (made in *The Smaller Rhododendrons,* of 1985 vintage). Or better still, associated with its closest relative, *R. longistylum,* which was also transferred-in from Subsection *Triflora.* Ideally in that new pigeonhole.

However, until a cladistic DNA analysis is available to confirm such, the status quo should be maintained, as herein.

Keying *R. hanceanum* from its four cohabitants in the subsection relies on a number of characteristics if the rigid leaf blades, bronze-coloured new growth and distinctive habit (of cultivated plants), are passed over in favour of more precise attributes. The impressed ovary-style junction eliminates *R. auritum* and *R. xanthostephanum* from contention, while the lepidote style and 4-8mm long calyx lobes found on *R. tephropeplum* should remove most forms of that species from the picture, although reference to the scales on the *R. tephropeplum* abaxial leaf surface may have to be made in a few cases (contiguous or no more than their own diameter apart). Finally, as its none-too-subtle epithet suggests, *R. longistylum* will reveal itself by that appendage being longer than the stamens and the corolla from which it emerges. All of which should leave *R. hanceanum* to be admired on its own (but see the final paragraph overleaf).



R. hanceanum

From the approximate date of its discovery, twenty-three years flew by before the species was introduced into cultivation, Ernest Wilson returning seed collected near Moupin (Baoxing) in 1909 under the field number W 882, and from Emei Shan in October 1910, W 4255 the identifying tag. The first batch was sourced from bushy shrubs around 1m high with clear yellow flowers, the second consignment from mature plants 0.3 to 1m high. And it was from this later gathering that the 'Nanum' clone emerged in the seed pans. The name is often used wrongly to describe the lower growing forms of the species that include the 'Canton Consul' Award of Merit plant, but a side-by-side comparison will quickly reveal the error, for the members of *R. hanceanum* Nanum Group are truly dwarf shrubs, with a tight and compact habit, and their dazzling yellow flowers easily outshine the RHS's 1957 selectee. So three forms of the species may be found in British gardens: upright and somewhat rounded bushes hitting 1.4m in height when mature, with leaves up to 13cm long; spreading or dome-shaped plants to around 1m high and wide, with foliage no more than 6cm in length; and the jewel in the *R. hanceanum* crown, pint-sized shrubs the oldest of which are still below 0.5m in height, have a diameter around twice that amount, and display a dense cloak of leaf blades each just 3.5cm long.

It was William Botting Hemsley who, in the original botanic description of 1889, wrote of the 'conspicuous drip tip' at the apex of each and every *R. hanceanum* leaf, but Wilson's introductions - from either site - while certainly mucronate, did not bear such an elongated mucro as the Faber specimens. However, quoting from the Peter and Kenneth Cox authored 1997 *Encyclopedia of Rhododendron Species,* that characteristic 'is evident on the recently introduced taller forms'. A glance at the seed collections list will reveal a lack of such - an affinity form found by Alan Clark and Shelagh Newman in 2007 under their field number C&N 6004, while not shown, is the only 'authenticated' gathering. But the answer to the conundrum, almost certainly lies with the late Edward Needham:

Responsible for several otherwise unacknowledged reintroductions, Needham liked to travel alone in China, and elsewhere, without fanfare or official sanction, simply another backpacking tourist. And by doing so, he managed to secure seed of many rhododendron species that had eluded literally everybody else. Yet very few of his 'expedition' field numbers have been published, so most of those entries included under his name in Volume 1 of this text, have been sourced from the labels attached to specimen plants growing in the grounds of our botanic institutes. One such, *R. hemsleyanum,* also from Mount Omei, was reintroduced in 1989 under EN 2097, so the collectors number for *R. hanceanum* will not be too far distant from this entry in his field notes (if such were ever written).

Returning to *R. hanceanum,* it was in 1919 that Hugh Armytage Moore, owner of the now famous Rowallane Gardens in County Down, Northern Ireland, wrote about the joys of cultivating the species in Volume 1, Part 5, of *The Rhododendron Society Notes:*

> 'In *R. hanceanum* we appear to have a plant that represents a stumbling block to many a gardener, and bears in consequence a somewhat evil reputation. Here it clearly demonstrates its dislike of low-lying sunny positions, and appreciation of a sloping, well-drained bank where little or no sun can reach it, and where its roots penetrate cool ground beneath a neighbouring stone. In such a position the somewhat pendulous growth and extreme freedom of flower is well displayed, and the plant generally receives admiration which it rightly deserves.'

On what would become possibly the first member of Nanum Group, he went on to state that:

> 'From seed of this species there has been raised here a pigmy sport - just a dark-green cushion bursting with creamy-yellow flowers, a mossy Saxifrage on a grand scale. One little matt, nine years of age, though perhaps one foot across, is still beneath two inches in stature, and when covered in bloom represents as pretty a picture as one could hope to find in any rock garden.'

And nothing has changed cultivation-wise in the hundred years since those words were written, although *R. hanceanum* is now known to be more than hardy enough to cope with life along the east coast. Yet all prospective purchasers should note that dislike of a sunny site - even in the rain-swept climes of Northern Ireland - and the requirement for excellent drainage.

John Guille Millais, writing in the 1917-published volume of his *Rhododendron and the Various Hybrids,* reports that the species first flowered in UK cultivation at Leonardslee, in November 1915.

Mystifyingly, all the forms and specimens of *R. hanceanum* photographed in gardens across the length and breadth of the UK display styles that are longer in length - often significantly longer - than the corolla, so are clearly in contravention of the accepted botanic description. Adding to this faux pas are the scores of inaccurately labelled members of Nanum Group that will be encountered in those venues - several botanic institutions not excepted - and a true example of which has so far proved illusive.



R. hanceanum 'Canton Consul'

R. hanceanum

R. xanthostephanum

R. xanthostephanum

Hardiness:
H3-4.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; Arunachal Pradesh, India; NE Upper Myanmar;
NW & C Yunnan, China; N. Vietnam.
Growing in and at the margins of Fir, Pine and Spruce forests,
in scrub and thickets, in rocky pasture, on open alpine slopes and on cliffs,
at elevations of 1,500-4,100m.

Identification:
Shrub, upright, bushy or spreading, 0.3 to 3m high, rarely to 5m;
branchlets densely lepidote, glabrous, the stems green;
bark reddish-brown, smooth, somewhat pruinose.
Leaves oblong through oblong-lanceolate to lanceolate,
3 to 10.5cm long by 1 to 3.4cm wide;
lower surface silvery-brown, glaucous, papillose,
densely lepidote, the scales unequal in size,
the smaller more numerous, brown or dark brown,
between one half to their own diameter apart, sunk in pits and below the leaf surface,
the larger closely or widely scattered, partially or fully detersile.
Petiole 5-13mm long, glabrous, densely lepidote.
Inflorescence terminal, or terminal and axillary in the uppermost one or two leaves,
3-5-8-flowered;
bud scales sometimes persistent.
Rhachis 1-5mm long, glabrous, sparsely lepidote.
Pedicel 3-18mm long, glabrous, densely lepidote.
Calyx lobes erect or spreading, ovate, oblong or near orbicular, and each 2-7mm long,
their outer surface variably lepidote,
their margins lepidote, eciliate, rarely ciliate.
Corolla 1.8 to 2.8cm long, tubular-campanulate,
bright to deep yellow, deep lemon-yellow, creamy-yellow,
or sometimes almost yellow-orange,
the outer surface occasionally pubescent,
moderately through densely lepidote on the tube and the lobes.
Stamens slightly shorter, equal to, or slightly longer than the corolla.
Style tapering into the ovary,
longer than the corolla and the stamens,
glabrous, lepidote at the base.
Capsule oblong-oval, 5-11mm long.

Seed Collections:

F 4135	1906	R 11308	1923/1924	LS&T 3666	1938
F 6767	1910	KW 6751	1926	LS&T 3726	1938
F 20021	1921/1922	R 18409	1929	LS&T 6582	1938
F 20880	1921/1922	KW 9250	1931	R 15	1948/1949
F 21463	1921/1922	KW 9400	1931	AC 707	1993
F 21707	1921/1922	KW 9567	1931	KR 3095	1994
F 21778	1921/1922	R 22007	1932	CCHH 8070	1997
F 22652	1921/1922	R 22014	1932	BASE 9594	2000
F 22653	1921/1922	R 25465	1932	KCSH 0306	2003
KW 5446	1922	KW 11029	1933	C&N 5832	2007
R 11299	1923/1924	Yu 21021	1937	JN 11069	2011
		Yu 20849	1937		



R. xanthostephanum (KR 3095)



R. xanthostephanum



R. xanthostephanum



R. xanthostephanum

In September 1890, the French missionary priest Jean-Marie Delavay became the first Western collector to discover *R. xanthostephanum* when he found a population of the plants growing on Tsang-shan, a mountain near Dali, in Yunnan. Herbarium material was returned to Paris where Adrien Franchet described the species in 1895, writing in Volume 9 of the *Journal de Botanique,* and opting for *R. aureum* as his chosen epithet. Regrettably, for Franchet, the German-Russian botanist Johann Gottlieb Georgi had already applied that very same appellation to another Genus *Rhododendron* species back in 1775, namely, the Section *Ponticum* dwarf elepidote, and as has been repeatedly indicated throughout these volumes, the nomenclature rules do not allow for such duplication. Which meant that in 1941, the American botanist Elmer Drew Merrill, replaced the illegal moniker with a legitimate one - *R. xanthostephanum* - this conception appropriately translating from the Latin as 'yellow garland', with the change formally outlined in Volume 4 of *Brittonia*.

Subsequent to Delavay's initial gathering, the species distribution was found to encompass west, northwest and central Yunnan, southeast Tibet, the northeastern Indian state of Arunachal Pradesh, and the Rong Tö Valley of northeast Upper Myanmar, while most recently, the rhododendron has been discovered growing in northern Vietnam. Yet unlike the very similar *R. auritum* - which has a restricted distribution in the Tsangpo Gorge and favours open sites - *R. xanthostephanum* grows predominantly in and at the margins of woods, thickets and scrub, though it may also be found established in rocky pasture, on open alpine slopes, and on cliffs. Preferences that have directly impacted the evolved hardiness of both species.

It was actually George Forrest who first returned viable seed of *R. xanthostephanum* to the UK in 1906 under the field number F 4135, which if nothing else, conclusively proves that the Scotsman did indeed collect any number of mature rhododendron capsules on that first expedition.

That were successfully returned to A. K. Bulley, the expedition's principal sponsor.

But then lost to cultivation courtesy of the maladroit minions employed by that gentlemen at his Wirral-based Bees Seeds Ltd emporium.

So it is unknown if the contents of those *R. xanthostephanum* capsules, gathered in Yunnan at an altitude between 2,700 and 3,000m, were subject to their usual ham-fisted and woefully inept ministrations, or were germinated by the propagating staff employed at Edinburgh Botanic, the excursion's subordinate Maecenas.

Forrest added a second seed lot in 1910 and seven more batches from his 1921-22 trip, after which his monopoly on the species was broken by the likes of Kingdon-Ward, Rock, Yu, and Ludlow and Sherriff. Alan Clark reintroduced *R. xanthostephanum* from Yunnan in 1993, while it was Keith Rushforth who discovered the species was also endemic to northern Vietnam a year later.

Yet despite the grand total of gatherings topping-out at more than thirty - a count supplemented by a Hans Eiberg 2018 find, and another made by Kristian Theqvist in 2019 (both on Biluo Shan in Yunnan and available via the American Rhododendron Society's Seed Exchange) - *R. xanthostephanum* is a much rarer find in cultivation than the closely related *R. auritum,* despite the latter having just a quartet of authenticated collections to its name. The reason for this has been put down to a lack of hardiness, even though each plant boasts the very same RHS rating.

Until quite recently therefore, *R. xanthostephanum* was only considered to be reliably hardy outdoors in gardens sited along the western seaboard and at the mildest sites in the south. Elsewhere, it needed to be domiciled in a cool greenhouse, and so protected from the ravages of frost, wind and rain. Yet given that the altitudinal endemic range for the species reaches up to 4,000m in the wild, much higher than that for *R. auritum,* this is decidedly strange. Even more perplexing, is the fact that it is those high altitude forms of *R. xanthostephanum* that have now been lost to cultivation - H. H. Davidian, for instance, reporting that plants grown from the F 20880 and R 22014 collections, made at around 3,800m and 4,100m respectively, can no longer be found in British gardens (*The Rhododendron Species,* Volume 1, 1982). The prime culprit for their demise is probably a lack of winter snow cover, with another, the plant's known preference for a more sheltered and protected woodland environment. Luckily however, specimens grown from Keith Rushforth's 1994 Vietnamese collection appear to be bucking the trend, surviving outdoors in a host of gardens along the east coast, and as these are gifted with equally beautiful corollas, finally giving *R. auritum* a run for its money.

R. xanthostephanum is quickly distinguished from three of the other four members of Subsection *Tephropepla* if the ovary-style junction is examined: an abrupt connection, with the style impressed into a shouldered hollow at the top of the ovary, indicating that *R. hanceanum, R. longistylum* or *R. tephropeplum* are to hand; a smoothly tapering transition where the style flows seamlessly into the ovary apex, *R. xanthostephanum* or *R. auritum*. Leaf length, stem colour and the nature of the bark can then be used to key the latter two rhododendrons apart, with the foliage of *R. xanthostephanum* extending up to 10.5cm in length, its branchlets decidedly green in hue, and the mature bark showing no proclivity to peel, while in comparison, the leaves of *R. auritum* will only stretch to 6.6cm, the young stems exhibit a coppery-red hue, and flaking bark will be found on the older branches. The calyx lobes too can cleave the two species apart as those sported by *R. xanthostephanum* are erect or spreading, while on *R. auritum* they are deflexed, so point backwards. Again, a magnifying lens will help resolve another difference, for on the underside of the leaves, the arrangement of the scales is dissimilar:

Both species have small and large scales present on the abaxial epidermis, the bijou type comprising the significant majority. But while individual small scales will be found from half to their own diameter apart on either of the two blades, only on the leaves of *R. auritum* will they also be seen to touch or overlap. The reason for this is that on the foliage of *R. xanthostephanum,* they are deeply sunk into pits, with their heads barely reaching the surface of the leaf, while on *R. auritum* their heads are held level with the leaf surface or slightly above it, because they are not as deeply sunk, which allows them to touch or overlap. The larger sized scales present on the leaves of both species are also sunk in pits, but longer stalks hold their heads on or above the leaf surface. They are also closely or widely scattered - the latter more often the case on the *R. xanthostephanum* blades - and partially detersile - with *R. xanthostephanum* sometimes loosing its entire complement.

Outwith Subsection *Tephropepla,* there is also a clear visual resemblance between *R. xanthostephanum* and the yellow-flowered Subsection *Boothia* species, *R. sulfureum*. The latter, however, has a decidedly deflexed style, the downward bend a clear delineator when the corollas are compared side to side.

In cultivation, *R. xanthostephanum* is usually free-flowering, forming a domed to upright bush, well filled with foliage. Mature specimens attain a height of 1.6 to 1.8m and a slightly wider spread. If the sheltered planting site is taken as a given, dappled shade will provide the best home in the south, while in northern locales along the west coast, a more sunnier placement will ensure maximum flower bud production, maintain the neat habit and allow the new growth to fully ripen. Prospective purchasers should note that those east coast rhodophiles with a specimen of KR 3095 established on their plots, have sited such jewels in spots best safeguarded from an encroaching Icelandic, Scandinavian or European cold front or the sudden-snap vagaries the UK's maritime winter climate can bestow.

R. longistylum

Hardiness:
H4.
Flowering Period:
April-May.
Distribution in the wild:
N & C Sichuan, China.
Growing on cliffs, in scrub on rocky slopes, or in thickets,
at elevations of 900-2,300m.

Identification:
Shrub, dwarf, erect or spreading, or broadly upright, 0.5 to 5m high;
branchlets slender, sparsely lepidote, usually puberulent;
bark greyish, rough.
Leaves lanceolate through oblong-lanceolate to oblong,
1.6 to 8cm long by 0.6 to 3cm wide;
lower surface pale green, papillose,
lepidote, the scales unequal, golden-brown or brown,
with broad rims, distant, between two and six times their own diameter apart.
Petiole 2-6mm long, often puberulent, lepidote.
Inflorescence terminal,
or terminal and axillary in the uppermost one or two leaves,
loose, 1-3-10-flowered.
Rhachis 3-12mm long, puberulent, lepidote.
Pedicel 6-15mm long, puberulent, lepidote.
Calyx lobes narrowly triangular or obtuse, each 2-4mm long,
their outer surface sparsely puberulent, sparsely lepidote,
their margins lepidote, eciliate.
Corolla 1.3 to 3cm long,
narrowly funnel-shaped or funnel-campanulate, zygomorphic,
white, white tinged pink, or pink,
sometimes with red speckles,
the outer surface glabrous, elepidote.
Stamens long-exserted.
Ovary puberulent at the apex.
Style impressed,
much longer than the stamens and the corolla,
glabrous, elepidote.
Capsule oblong, 5-9mm long.

Seed Collections:

W 1204	1908
W 4276	1910

Until the mid 1980s, *R. longistylum* was only known from sites to the west of and around Wen-ch'uan Hsien, in central Sichuan, where Ernest Wilson discovered the species in 1908 and recollected material in 1910. However, Chinese botanists have now found three additional populations resident in northern Sichuan - in Guangyuan, Pingwu and Qingchuan Counties - with the bullet points opposite reflecting the new data set out by Fang Wenpei and other contributors in *Sichuan Rhododendron of China,* this published by Science Press, Beijing, in 1986. The original species description, written by Wilson and Alfred Rehder, can be found in 1913's Volume 1 of *Plantae Wilsonianae*.

R. longistylum ssp. *decumbens* was described by Rhui Cheng Fang in Volume 4, Part 3, of *Acta Botanica Yunnanica,* which was published in 1982. The plant is identical with ssp. *longistylum* apart from its branchlets, petioles and pedicels, which are glabrous, and so without any puberulent hairs. Found on mountain slopes in northeastern Yunnan at an altitude of 1700m, the disjunct distribution rightly requires subspecies ranking, however, as already indicated, the chosen epithet is one that has already been used once before within Genus *Rhododendron* - by David Don, in 1834 - and although that taxon has since been made synonymous under *R. indicum,* its botanic moniker cannot be assigned to another rhododendron. As the new subspecies has yet to be introduced into UK cultivation, herein, *R. longistylum* is treated as a specific species.

As with *R. hanceanum,* rightly or wrongly, *R. longistylum* was transferred across from Subsection *Triflora* and placed into Subsection *Tephropepla* by the botanists responsible for the Edinburgh Revision classification (*A Preliminary Synopsis of the Genus Rhododendron,* James Cullen and David Chamberlain, *Notes from the Royal Botanic Garden, Edinburgh,* Volume 36, 1978), the relocation accepted here as a fait accompli, though genetic evidence may require a reassessment of this switch in the future.

R. longistylum may be identified from the other subsection members by using three characteristics in combination: the impressed style, which cleaves the species from both *R. auritum* and *R. xanthostephanum;* the abaxial leaf surface scales, distant from one another by between two through six times their own width, which distinguish the species from *R. tephropeplum,* where the scales are contiguous - touching - or separated by no more than their own diameter; and the length of the style, significantly longer than the stamens or the corolla, which eliminates *R. hanceanum,* where the style is shorter than the corolla, but longer than the stamens. However, for cultivated forms, the rigid leaves and bronzy new growth of *R. hanceanum* may also have to be considered, as these plants display styles that are longer - sometimes considerably so - than their corollas. The complete lack of scales on the outer surface of the *R. longistylum* corolla and along the lower half of its style may also be used to key the species from *R. tephropeplum,* although the presence of such on some forms of the latter is not consistent.

All the plants of *R. longistylum* currently growing in UK gardens come from the two gatherings of seed made by Wilson in 1908 and 1910, and it is thought that all those specimens with pure white flowers may originate from the same clone. Hardiness is not sufficient for the species to thrive along the east coast unless a well-sheltered site is available and rather than mince words, those few plants that are established in a few of these collections are not crowd-pullers. The same comment could not be applied to the wild plants illustrated in *Sichuan Rhododendron of China,* which hopefully - once, or if, the negative ramifications of the Nagoya Protocol are ever sorted out - may prompt a 'legal' visit to those areas by someone from the capsule-collecting fraternity.


R. longistylum


R. longistylum


R. longistylum

R. tephropeplum

Hardiness:
H4.
Flowering Period:
Late April-May.
Distribution in the wild:
SE Tibet; E Arunachal Pradesh, India; NE Upper Myanmar;
NW Yunnan, China; N Vietnam.
Growing in alpine meadows, on cliffs, scree and rocky slopes,
at elevations of 2,400-4,600m.

Identification:
Shrub upright, bushy, compact, rounded or spreading, 0.3 to 1.8m high, rarely to 2.4m;
branchlets moderately through densely lepidote, glabrous, the stems green;
bark brownish, rough and flaking.
Leaves oblong-obovate through narrowly oblanceolate to narrowly elliptic,
2 to 13cm long by 0.8 to 4cm wide;
lower surface pale glaucous green, or greyish, papillose,
densely lepidote, the scales unequal in size,
the smaller more numerous, brown at first, but quickly becoming dark brown or blackish,
contiguous or between one half to their own diameter apart, slightly sunk in pits,
the larger widely scattered, partially or fully detersile.
Petiole 3-14mm long, glabrous, moderately through densely lepidote.
Inflorescence terminal, or terminal and axillary in the uppermost one or two leaves,
3-9-flowered.
Rhachis 1-4mm long, conspicuous, glabrous, lepidote.
Pedicel 10-30mm long, glabrous, moderately through densely lepidote.
Calyx lobes erect or spreading, leafy, ovate, oblong or near orbicular, each 4-8mm long,
their outer surface sparsely through moderately lepidote at the base,
rarely entirely moderately lepidote,
their margins often lepidote, sparsely ciliate or not.
Corolla 1.5 to 3.2cm long, campanulate through tubular-campanulate,
purple, purplish-red, pale or dark rose, carmine-rose, pink or pale pink, rarely white,
without spots,
the outer surface glabrous,
the lobes sparsely through moderately lepidote, or without scales.
Stamens shorter than the corolla.
Style impressed,
longer than the stamens, almost as long or longer than the corolla,
glabrous,
lepidote along the lower two-thirds or only at the base, rarely without scales.
Capsule oblong-oval, 5-10mm long.

Seed Collections:

F 20230	1921	F 27455	1924/1925	KW 9565	1931
F 20884	1921/1922	F 27611	1924/1925	KW 10401b	1933
F 21706	1921/1922	F 27670	1924/1925	LS&E 13625	1946/1947
R 11228	1923/1924	KW 6303	1924/1925	KW 20844	1953
F 25572	1924/1925	KW 6794	1926	KW 21679	1953
F 25644	1924/1925	KW 6834	1926	AC 702	1993
F 25714	1924/1925	KW 8165	1927/1928	KR 3111	1994
F 25766	1924/1925	R 18408	1929	BASE 9649	2000
F 25775	1924/1925	R 18412	1929	KC 114	2001
F 25820	1924/1925	R 18413	1929	KR 8428	2006
F 26431	1924/1925	F 29655	1930/1931	KR 8455	2006
F 26439	1924/1925	KW 9416	1931	C&N 5839	2007
F 26457	1924/1925			JN 12146	2012



R. tephropeplum (F 25714)

R. tephropeplum experienced its first encounter with a Western plant hunter during May 1920, when Reginald Farrer stumbled upon a population of the plants growing on the Chawchi Pass in northeastern Upper Myanmar. The species botanic description - compiled from Farrer's field notes and Sir Isaac Bayley Balfour's appraisal of the herbarium material that was garnered - appears in Volume 13 of *Notes from the Royal Botanic Garden, Edinburgh,* which was published in 1922. Subsequent gatherings mapped a distribution that extended into southeast Tibet and northwestern Yunnan, as well as into eastern Arunachal Pradesh, while more recently, the plant's endemicity has been documented to encompass the northern provinces of Vietnam. Across that wide range, the morphologic features of *R. tephropeplum* have been found to vary considerably: habit; height; leaf shape and leaf size; corolla size and colour; all fluctuate wildly. Yet one characteristic remains defiantly consistent: the style-ovary junction. Yet this differs from that displayed by the other two original members of the subsection - *R. auritum* and *R. xanthostephanum* - where a seamless, smooth, and tapering transition between the two halves of the gynoecium occurs, for here, the style tube is distinctly impressed into a shouldered depression at the ovary apex. And that difference immediately keys *R. tephropeplum* from its cohorts.

Or did, until the Edinburgh Revision botanists complicated matters by transferring *R. hanceanum* and *R. longistylum* from Subsection *Triflora* into Subsection *Tephropepla* during the course of their ministrations on the genus. Morphologically, they were right to do so, as the fit here, with matching corolla and calyx lobe shape, as well as habit, is better, though at the time Doctor Cullen did write that it was the default option in lieu of a more suitable location (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Part 1 - *Revision of Subgenus Rhododendron*). Regrettably, close to half-a-century on, definitive DNA analysis is still awaited to confirm the viability of that move.

Nevertheless, two attributes enable *R. tephropeplum* to be quickly keyed from the newcomers without resorting to corolla colour or a magnifying lens: the presence of scales on the style, and the length of the calyx lobes. For both *R. hanceanum* and *R. longistylum* have elepidote styles that are totally devoid of scales, whereas *R. tephropeplum* is rarely without such decorating the lower two-thirds of its length, or congregating at its base. On the rare occasions when this is not the case, the length of the calyx lobes can be checked: a measurement of 4mm or less indicating that either *R. hanceanum* or *R. longistylum* are to hand; a value of 4 to 8mm testifying that *R. tephropeplum* is the plant being examined. And if a fail-safe validation is required, the spacing of the smaller scales on the abaxial leaf surface will provide one as the *R. tephropeplum* scales are contiguous, or set no more than their own diameter apart, while those of *R. hanceanum* or *R. longistylum* are separated by a distance of between 1½ to 6 times their own diameter.

Unsurprisingly, given the variability of *R. tephropeplum* across its range, historically, two other finds were initially given specific status:

The first, *R. spodopeplum,* was also collected in Myanmar by Farrer just a few weeks after he discovered *R. tephropeplum* and again, described posthumously by Sir Isaac in Volume 13 of *Notes.* It failed to survive the rigours of John Hutchinson's 1930 reappraisal of the Lepidotes for *The Species of Rhododendron*.

The second charlatan, *R. deleiense,* was a Kingdon-Ward collection of 1928 vintage, gathered in the Delei Valley of eastern Arunachal Pradesh under the field number KW 8165. It managed to bob along under the radar until the Cowan-Davidian review of the then Tephropeplum Subseries of the Boothii Series was published in the 1946 edition of *The Rhododendron Yearbook.* However, the many devotees of the plant's extra wide leaves and its 7-8-flowered inflorescence have doggedly maintained Deleiense Group ever since that synonymy was imposed, rather than resign themselves to the inevitable.

Once again, it was George Forrest who introduced *R. tephropeplum* into cultivation, a 1921 gathering made in southeast Tibet at 4,270m, arriving under F 20230. Thirty lots in total had been secured by the plant hunters at close of play in 1953, after which a forty-year hiatus ensued until Alan Clark reopened the batting with an introduction from Yunnan, followed-on a year later in 1994 by Keith Rushforth discovering the population of the plants in northern Vietnam, with half a dozen additional batches arriving up until 2012.

Sadly, the various forms now growing in British gardens are a mixed bunch, showy at one end of the scale, decidedly average at the other. Hardiness is sufficient to allow specimens to thrive outdoors along the east coast providing a sheltered spot is selected and the diverse selection sporadically available can provide plants of suitable stature for placement in the rock garden, a border, or in a woodland glade. All are free-flowering, though leaf shape and size vary enormously, along with corolla colour and size. Prospective purchasers should also be aware that a few forms sport blooms of a distinctly harsh cast.

The Latin epithet - 'with ash-grey covering' - references the underside of the leaf even though this feature is not universal across the entire extended population (where the colour will more often be a pale glaucous green).



R. tephropeplum (KW 8165)

R. tephropeplum (F 25714)

R. tephropeplum (F 25714)

R. auritum (KW 6278)

R. auritum

Hardiness:
H3-4.
Flowering Period:
April-May.
Distribution in the wild:
Tsangpo Gorge, SE Tibet.
Growing on sheltered cliffs or along open stony river banks,
at elevations of 2,100-2,600m.

Identification:
Shrub, upright or bushy, 1 to 3m high;
branchlets densely lepidote, glabrous, the stems coppery-red;
bark, reddish-brown, smooth and flaking.
Leaves oblong through oblong-lanceolate to lanceolate,
2.5 to 6.6cm long by 1 to 2.7cm wide;
lower surface pale green, glaucous, papillose,
densely lepidote, the scales very unequal in size,
the smaller more numerous, brown or dark brown,
overlapping, contiguous or between one half to their own diameter apart,
sunk in pits but reaching the leaf surface,
the larger closely scattered, partially detersile.
Petiole 5-8mm long, glabrous, densely lepidote.
Inflorescence terminal,
or terminal and axillary in the uppermost one or two leaves,
3-7-flowered.
Rhachis 1-2mm long, glabrous, sparsely lepidote.
Pedicel 5-13mm long, glabrous, densely lepidote.
Calyx lobes reflexed, ovate, oblong or near orbicular, each 3-5mm long,
their outer surface sparsely through moderately lepidote,
their margins lepidote, eciliate.
Corolla 1.8 to 2.5cm long, tubular-campanulate,
sulphur-yellow, pale yellow tinged red, creamy-yellow,
or creamy-white tinged pink on the lobes,
the outer surface glabrous,
moderately through densely lepidote on the tube and the lobes.
Stamens slightly shorter, equal to, or slightly longer than the corolla.
Style tapering into the ovary, equal to or longer than the corolla,
glabrous, lepidote along the lower half or at the base.
Capsule oblong-oval, 8-10mm long.

Seed Collections:

KW 6278	1924
LS&E 12348	1946/1947
LS&E 13570	1946/1947
AC 1374	1996

R. auritum was found growing in the Tsangpo Gorge, near Pemako-chung in the southeast of Tibet, by Frank Kingdon-Ward during November 1924. Herbarium specimens and seed were gathered under the type number, KW 6278, and when the germinated plants flowered in 1930 - first at Bulstrode Park, Sir John Ramsden's garden near Gerrards Cross, then later at Edinburgh Botanic - a full description of the species was completed by Harry Tagg, this appearing in Volume 3, Number 5, of *The Rhododendron Society Notes,* which was published in 1931. Frank Ludlow and George Sherriff also encountered the species in the Tsangpo Gorge on their expedition with Henry Elliot, making two collections of seed during April 1947, the first at Pome, the second at Kongbo.

Not quite fifty years later, in 1993, Alan Clark returned a collection identified in his field notes as *R. auritum* affinity - AC 651 - this gathered in Yunnan, and then, three years later, found *R. auritum* itself, at an altitude of 2,900m in the Cangshan mountains, this secured under the field number AC 1374. However, both have yet to be authenticated and botanic opinion remains of the view that the true species is known only from the Tsangpo Gorge, while the very similar *R. xanthostephanum* is much more widely distributed across Tibet, northeastern Upper Myanmar, Yunnan, and northern Vietnam, growing at elevations up to the 4,000m-contour. Plants grown from Alan's affinity collection come with copper-red stems and peeling bark, and the most delightful yellow corollas, tipped pinkish-red in the bud and when they first open, while seedlings from the 1996 gathering established in the grounds of Muncaster Castle, Cumbria, are more likely natural hybrids.

Within Subsection *Tephropepla, R. auritum* is identified from three of its fellows - *R. hanceanum, R. longistylum* and *R. tephropeplum* itself– by the tapering style, this flowing smoothly into the ovary apex rather than making a butt join in a shouldered depression (the RHS *Rhododendron Handbook 1998* description being erroneous in this regard). From *R. xanthostephanum,* its closest relative, the species differs in having reflexed rather than erect calyx lobes, smaller leaves, and peeling bark. Equally, the young branchlets and stems of *R. auritum* are coloured coppery-red, while those of *R. xanthostephanum* are green. The scales on the leaf underside also aid identification:

Both plants sport two types, these varying in size and quantity. The smaller kind are far more abundant and on *R. auritum,* these are sunk in pits, although their heads lie parallel - in line with - or slightly proud of the leaf surface. This allows them to overlap or touch each other, though they may also reside some distance apart (the extent of this separation inconsistent, but between one half of each scale's diameter or its full width). The scales on the leaves of *R. xanthostephanum* are sunk much deeper in their pits and barely reach the level of the leaf surface, so they can never touch or overlap. On both plants, the larger scales are scattered, closely or widely distant from each other, their stalks in pits, but their heads on the leaf surface. They are also somewhat detersile, with those on *R. xanthostephanum* sometimes lost completely.

Coming from a relatively low altitude in the wild, *R. auritum* requires mild conditions in order to thrive outdoors, cultivation in the UK restricted therefore to gardens bordering the western seaboard and favourable sites in the southern counties, with a very sheltered position required if specimens are to survive longterm along the east coast. The habit is usually upright, though the shrub can become somewhat unkempt and bedraggled, especially if grown in too much shade in northern climes, while placement in full sun in the south should also be avoided. Flower bud production is usually prolific, especially on mature plants.

The species epithet translates from botanic Latin to read 'with long ears', a reference, presumably, to the swept-back calyx lobes.

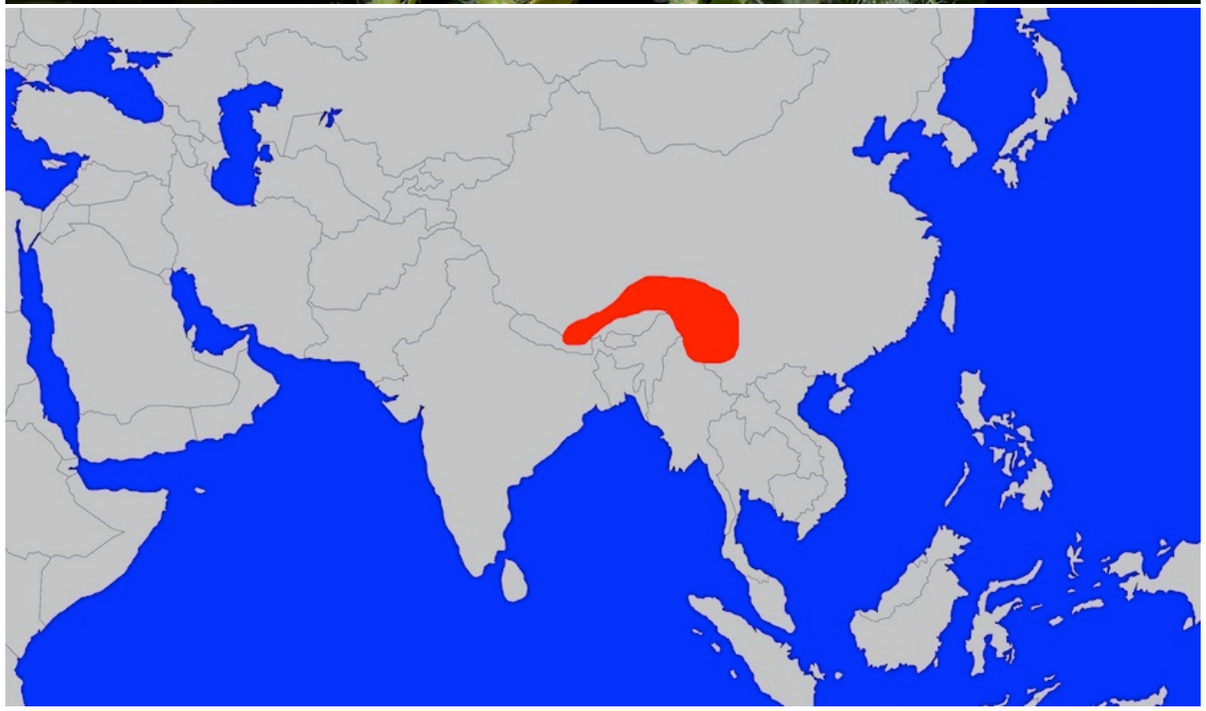
R. auritum

R. auritum

Section *Lepipherum* Subsection *Trichoclada:*



R. lepidostylum (F 24633)



Taxa:

R. caesium
R. lepidostylum
R. trichocladum
R. trichocladum var. *mekongense*
R. trichocladum var. *trichocladum*
R. viridescens

Taxonomic Revision:

The placement of the *Trichoclada* rhododendrons within the genus is still, for some, a contentious issue.

One camp, whose membership includes the Chinese botanists, (or at least, those responsible for the online *Flora of China* publication), follow Hermann Sleumer and place the five species in Subgenus *Pseudazalea* (*Botanische Jahrbücher für Systematik,* Volume 74, 1949, page 525).

Others accept the Cullen-Chamberlain pigeonholing within what was then Section *Rhododendron* of Subgenus *Rhododendron* (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36, 1978, page 115).

The genetic evidence, presented by Loretta Goetsch, Andrew J. Eckert and Benjamin D. Hall in their paper *The Molecular Systematics of Rhododendron (Ericaceae): A Phylogeny Based Upon RPB2 Gene Sequences* (*Systematic Botany,* Volume 30, Number 3, 2005, pages 616-626), confirms that Sleumer's focus on the deciduous nature of the leaves was flawed, and that the creation of Subsection *Trichoclada* was correct.

Field reporting post-publication of the various Edinburgh Revision texts has dictated the treatment of the individual species.

Subsection Morphology:

Shrubs, compact and low, spreading or upright, 0.3 to 1.8m, rarely to 2.5m high; branchlets variably lepidote, and variably setose, sometimes without bristles, rarely puberulous; bark greyish-brown, striate.

Leaf bud scales deciduous, sometimes persistent.

Leaves deciduous, semi-deciduous or evergreen, elliptic, ovate, oblong, oblong-obovate or obovate, 1.5 to 6.7cm long by 0.6 to 3.4cm wide, apex rounded or obtuse, rarely acute, and mucronate, base rounded or obtuse, rarely tapered or cuneate; upper surface often bluish-green and glaucous at first, usually olive-green with age, rarely with a persistent bloom, usually without scales, setose or not, otherwise usually glabrous, the margins usually setose; lower surface setose or not, lepidote, the vesicular scales usually unequal, variably sized, variously coloured, close to distant,

the midrib usually setose.

Leaf anatomy comprises a 1- or 2-layered upper epidermis,
with the cells in the top layer equal in size to those in the layer below
when this is present (*R. caesium* and *R. lepidostylum*);
the cuticle is thin; water tissue is absent;
the lower epidermis cells are prolonged into small papillae.
Sclereid cells are absent.

Petiole 1-5mm long, rarely to 12mm,
lepidote, setose, sometimes puberulent.

Inflorescence terminal, sometimes terminal and axillary,
umbellate or shortly racemose, loose, sometimes precocious,
1-6-flowered;
flower bud scales deciduous, sometimes persistent.

Rhachis 1-3mm long, rarely to 8mm,
lepidote or not, usually without bristles, puberulent or not.

Pedicel 6-35mm long,
lepidote, setose, rarely without bristles.

Calyx rim-like to clearly 5-lobed, when present, these often unequal,
lanceolate, triangular, ovate, oblong or rounded in shape,
and 0.5-5mm long, rarely with one lobe much longer to 7mm,
their outer surface lepidote, rarely without scales, sometimes setose,
their margins usually without scales, setose.

Corolla 1.4 to 3.3cm long, 5-lobed, funnel-campanulate, often zygomorphic,
yellow through greenish-yellow, sometimes tinged with red,
usually greenish spotted on the posterior side,
the outer surface lepidote, glabrous, sometimes setose.

Stamens 10, unequal, exserted;
filaments villous or pubescent towards the base.

Ovary conoid or oblong, 2-4mm long, 5-locular,
densely lepidote, sometimes setose.

Style long, straight or sharply deflexed,
impressed in a depression at the ovary apex.

Capsule oblong or conoid, 5-11mm long,
densely lepidote, sometimes setose.

Seeds elongate, unwinged, each end with a minute appendage.



R. trichocladum (CNW 880)

R. trichocladum* var. *trichocladum

Hardiness:
H4-6.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; NE Upper Myanmar; NW Yunnan, China.
Growing amongst rocks, in scrub or thickets, and at forest margins,
at elevations of 2,000-4,300m.

Identification:
Shrub, loose, rounded or upright, 0.4 to 1.8m high;
branchlets sparsely lepidote,
usually loriform-setose, the bristles twisted or curled, and long.
Leaf bud scales deciduous.
Leaves deciduous, thin,
obovate through obovate-elliptic to oblong-lanceolate,
1.5 to 6cm long by 0.6 to 2.6cm wide;
upper surface dark green, flat,
sometimes puberulent, the hairs short and fine,
usually sparsely lepidote,
persistently but variably loriform-setose, the bristles straight,
the margins loriform-setose;
lower surface greenish,
variably loriform-setose, the bristles twisted and curled,
lepidote, the scales uniform or of differing sizes,
usually golden, pale or dark brown, but sometimes discoloured and purplish,
1 to 7 times their own diameter apart.
Petiole 1-5mm long.
Inflorescence terminal, precocious, 1-5-flowered;
flower bud scales deciduous or persistent.
Rhachis 1-2mm long,
rarely lepidote, without bristles, sometimes pubescent.
Pedicel 6-35mm long,
sparsely through moderately lepidote, densely loriform-setose, the bristles long.
Calyx 5-lobed, these usually unequal,
ovate, oblong, oblong-lanceolate or lanceolate (rarely) and 1-5mm long,
their outer surface sparsely through moderately lepidote, rarely loriform-setose,
their margins loriform-setose.
Corolla 1.4 to 2.4cm long, funnel-campanulate,
yellow through greenish-yellow, sometimes spotted green,
the outer surface lepidote, variably loriform-setose.
Stamens 10.
Ovary sometimes sparsely loriform-setose at the apex.
Style thick, long, sharply deflexed, rarely straight,
sometimes puberulent at the base.
Capsule 5-11mm long,
sometimes with a few persistent setae.

Seed Collections:

F 6755	1910	L&S 2109	1936	CNW 622	1994
F 8905	1912/1914	L&S 2335	1936	CNW 841	1994
F 11630	1912/1914	L&S 2758	1936	CNW 880	1994
F 15658	1917/1919	Yu 19374	1937	CNW 886	1994
F 15776	1917/1919	Yu 20906	1937	AC 1348	1996
F 17501	1917/1919	Yu 22928	1937	AC 1350	1996
F 17750	1917/1919	LS&T 4902	1938	AC 1396	1996
F 18022	1917/1919	LS&T 5844	1938	AC 3285	1997
F 18349	1917/1919	LS&T 6538	1938	AC 3321	1997
Farrer 876	1919	LS&E 13118	1946/1947	AC 3586	1997
KW 3097	1919	LS&E 14244	1946/1947	AC 3607	1997
KW 3305	1919	LS&H 17501	1949	AC 3608	1997
F 20824	1921/1922	KW 20934	1953	AC 3609	1997
R 6274	1923/1924	KW 21072	1953	AC 3621	1997
F 24160	1924/1925	SBEC 351	1981	CCHH 8225	1997
F 24529	1924/1925	SBEC 471	1981	Henriksen 160	1997
F 24575	1924/1925	SBEC 504	1981	NAPE 0048	2003
F 27117	1924/1925	SBEC 750	1981	KR 4963	2004
F 27660	1924/1925	SBEC 805	1981	KR 8496	2006
KW 6806	1926	CLD 1347	1990	ZH-G 078	2006
KW 8259	1927/1928	CLD 1514	1990	C&N 5934	2007
F 28250	1930/1931	CLD 1526	1990	KR 10045	2010
KW 9519	1931	SSNY 372	1992	OJL 10-67	2010
McLaren L 112a	1932/1939	KR 2736	1993	JN 11053	2011
KW 10490	1933	AC 806	1993	BE 12-14	2012
KW 11915	1935	CNW 599	1994	BE 12-51	2012

R. trichocladum* var. *mekongense

Hardiness:
H5-6.
Flowering Period:
May.
Distribution in the wild:
E Nepal; S & SE Tibet; NE Upper Myanmar; NW Yunnan, China.
Growing amongst scrub, on moorland and at forest margins,
at elevations of 2,700-4,500m.

Identification:
as var. *trichocladum* except:
Shrub, broadly upright, 0.3 to 2.5m high;
branchlets sparsely through moderately lepidote.
Leaf upper surface usually without scales,
usually without bristles at maturity;
lower surface slightly glaucous,
densely lepidote, the scales polymorphic in size and colour,
the smaller greyish at first, becoming reddish, purple or black with age,
half the size of the larger, which are pale or dark brown,
all 1 to 4 times their own diameter apart.
Inflorescence terminal, sometimes also axillary, 2-5-flowered;
flower bud scales deciduous.
Rhachis 1-3mm long,
often lepidote, usually pubescent.
Pedicel variably loriform-setose,
the bristles sometimes present only at the base.
Calyx obscure or 5-lobed,
these rounded, triangular, ovate, oblong or lanceolate and 0.5-2.5mm long,
rarely with one lobe much longer up to 7mm long,
their outer surface sometimes without scales,
their margins lepidote or not,
loriform-setose or loriform-ciliate or glabrous.
Corolla sometimes flushed or marked red or reddish-pink,
the outer surface without bristles.
Stamens 10, rarely 8.
Ovary without bristles.
Capsule without bristles.

Seed Collections:

KW 406	1913	LS&T 5243	1938
F 13900	1917/1919	LS&T 5555	1938
F 14160	1917/1919	LS&T 6590	1938
F 15035	1917/1919	LS&E 12505	1946/1947
F 18909	1917/1919	LS&E 15193	1946/1947
F 19912	1921/1922	LS&E 15277	1946/1947
F 19930	1921/1922	R 21	1948/1949
F 20987	1921/1922	R 122	1948/1949
F 21699	1921/1922	R 146	1948/1949
F 21776	1921/1922	KW 21079	1953
KW 5489	1922	SBLE 403	1987
R 10969	1923/1924	SBLE 489	1987
R 11079	1923/1924	Cox 6055	1992
F 25509	1924/1925	Cox 6544	1994
F 25988	1924/1925	KR 3503	1995
KW 5718a	1924/1925	CC 7519	1996
R 18369	1929	AC 3259	1997
R 18388	1929	AC 3276	1997
F 30527	1930/1931	AC 3310	1997
R 22090	1932	DGEY 201	2001
R 23513	1932	DGEY 234	2001
R 23615	1932	DGEY 418	2001
L&S 1890	1936	APA 095	2005
L&S 1896	1936	BE 09-12	2009
Yu 10566	1937	KR 9996	2010
Yu 19046	1937	BE 15-21	2015
Yu 20616	1937	MH 369-30	2018



R. trichocladum

The late Doctor James Cullen (1936-2013), made a start on sorting out the array of species that comprise the *R. mekongense-R. trichocladum* morass in the 1978 paper he co-authored with David Chamberlain - *A Preliminary Synopsis of the Genus Rhododendron* (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), and in his full Subgenus *Rhododendron* text that was published in 1980 (*Notes,* Volume 39, Number 1). The final Edinburgh Revision communiqué - 1996's *The Genus Rhododendron: its classification and synonymy* - went even further, the end result culminating in four taxa - *R. chloranthum, R. melinanthum, R. semilunatum* and *R. trichocladum* ssp. *nepalense* - all being synonymically sunk under *R. mekongense* var. *mekongense,* while *R. mekongense* var. *rubrolineatum* maintained equivalent status. Another five specific ranked species - *R. brachystylum, R. lithophilum, R. lophogynum, R. oulotrichum* and *R. xanthinum* - were made synonymous under *R. trichocladum* var. *trichocladum,* while *R. trichocladum* var. *longipilosum* made a partial comeback from its short sojourn as *R. mekongense* var. *longipilosum.*

But even so, the classification's reworking did not go far enough. As field observations would soon reveal:

In the main, these were made and reported by Peter and Kenneth Cox, the rhododendron doyens and nurserymen who run Glendoick Gardens, just outside Perth in eastern Scotland. Both experts were still troubled by the taxonomic treatment of *R. mekongense* and *R. trichocladum,* despite agreeing with most of the Edinburgh Revision's conclusions. To quote from their 1997-published *Encyclopedia of Rhododendron Species,* they found that:

> 'After examining these two species in the field over a large range of their distribution, it has become quite clear to us that there is virtually no basis for maintaining the two species at all, as their distributions overlap and there are so many intermediate forms'.

With regard to *R. mekongense* var. *rubrolineatum* they write:

> 'There are two distinct taxa grown under this name. One taxon is completely deciduous and has yellow flowers with red or pink markings. This is simply a colour variation of var. *mekongense* and should not have any more than group status. The second taxon is a group of natural hybrids. These are semi-deciduous plants with creamy or pink flowers derived from *R. racemosum* crossed with *R. mekongense* or *R. trichocladum*. We have observed these hybrids in the wild on the Cangshan and near Weixhi, Yunnan, and such hybrids have also appeared as rogues in seed of *R. racemosum*'.

They also considered *R. trichocladum* var. *longipilosum* to be synonymous with the specific species, remarking that:

> 'It appears to more or less match the type description of *R. trichocladum*'.

When the detailed botanic descriptions written by H. H. Davidian are consulted (*The Rhododendron Species,* Volume 1, 1982), while keeping in mind the field study evidence outlined above, *R. trichocladum* will be seen to be no more than a setose expression of *R. mekongense,* the bristles present in greater number on the branchlets, leaf upper and lower surfaces and margins, petioles, pedicels, calyx margins and corolla outer surface, with even the ovary and capsule sometimes persistently loriform-setose at the apex. The leaf abaxial surface scales are unequal in size on both plants, but may be uniform on some forms of *R. trichocladum*. The two shrubs are also precocious, flowering in the wild before the leaves appear, though this is often not the case in cultivation.

Regrettably, despite their matching character sets, their overlapping distributions and the plethora of intermediates found on the ground, the two species were maintained at specific status in *The Encyclopedia of Rhododendron Species,* as well as in subsequent publications such as *The Pocket Guide to Rhododendron Species* authored by John McQuire and Mike Robinson in 2009. However, as the presented evidence makes perfectly clear, varietal status under *R. trichocladum* is the correct ranking, and it is adopted herein.

R. trichocladum var. *trichocladum* was first encountered by a Western plant hunter on June 4th 1883, the location Mount Tsang-chan, near Tali - modern-day Dali - in China's Yunnan Province. Abbé Jean-Marie Delavay was the collector and the specimens were gathered under his field number 273. The date given for the find is two years earlier than is usually credited, but reflects information presented on the original herbarium plates now available online at the Muséum National d'Histoire Naturelle - specimen p00689297. For it was to Paris and Adrien Franchet that Delavay's dried material was sent, and where the institute's leading doyen on all things rhododendron wrote the species botanic description and chose the epithet - 'with hairy twigs' - that appears in Volume 33 of the *Bulletin de la Société Botanique de France,* published in 1886.

R. trichocladum var. *mekongense* was also first found by one of the missionary priests employed by the Société des Missions Étrangères, Abbé Jean-André Soulié, the discovery made on June 28th, 1895, at Sela, in the Mekong valley of eastern Tibet. Again, specimens were returned to Paris, with the near-obligatory Franchet description of the new-to-science species featuring in 1898's Volume 12 of the *Journal de Botanique*.

George Forrest traditionally takes credit for introducing both taxa into UK cultivation, *R. trichocladum* in 1910 under F 6755, and *R. mekongense* in 1917, under F 13900. It should also be noted that both rhododendrons were collected on the Scotsman's first expedition to China between 1904 and 1906, though only herbarium material is officially recorded as being returned under F 698 for *R. mekongense,* and F 4145 for *R. trichocladum* (the presence of any seed in the shipment - thanks to the splendid work of A. K. Bulley and his staff at Bees Seeds Ltd - now regarded as an alternative fact). However, the synonymic retread of the Edinburgh Revision bears on this history as Frank Kingdon-Ward's gathering of *R. melinanthum* under KW 406, which was made in 1913, must now be regarded as the premier introduction of *R. mekongense* into British gardens.

Happily, both varieties are easy to grow, being fairly vigorous, fully hardy and free-flowering from a young age, and while usually unconcerned over their siting in a garden, a sunny position should be chosen - especially in northern locales - to maintain a neat and compact habit, as well as to maximise flower bud set. The two shrubs look best when planted in groups and viewed from afar, rather than studied up-close or grown as lone individuals. To that end, Kingdon-Ward thought they were horrid - 'seedy-looking objects with pallid yellow flowers, often with an unhealthy green flush and a rash of poisonous spots' - or - 'the most starved and twiggy skeletons imaginable' - to paraphrase remarks he published in 1924's *From China to Hkamti Long*.

But once again, others would beg to differ…



R. mekongense



R. trichocladum (CNW 880)





R. trichocladum (Farrer 876)



R. trichocladum (Farrer 876)



R. mekongense (KW 21079)



R. mekongense (KW 21079)



R. mekongense (KW 406)

R. lepidostylum

Hardiness:
H5-6.
Flowering Period:
May-June.
Distribution in the wild:
SW Yunnan, China.
Growing on boulders, cliffs and ledges, and in crevices,
at elevations of 3,000-3,700m.

Identification:
Shrub, compact and spreading, often flat-topped, 0.3 to 0.5m high, rarely to 1.5m;
branchlets lepidote, densely loriform-setose, the bristles long.
Leaf bud scales persistent.
Leaves evergreen, coriaceous, thick,
obovate through oblong-obovate to ovate-elliptic,
2 to 4.5cm long by 1 to 2cm wide;
upper surface with a persistent bluish-green glaucous bloom, especially distinctive at first,
glabrous, without scales, without bristles,
the margins revolute, setose, the bristles straight and long;
lower surface moderately glaucous,
setose, the bristles straight,
lepidote, the scales large, unequal, golden or brown,
1 to 4 times their own diameter apart.
Petiole 4-12mm long.
Inflorescence terminal, 1-3-flowered;
flower bud scales persistent.
Rhachis 1-2mm long, lepidote, glabrous, without bristles.
Pedicel 20-30mm long, lepidote, loriform-setose, the bristles long.
Calyx 5-lobed, these lanceolate, oblong, oval or ovate and 1-7mm long,
their outer surface lepidote and long-setose,
their margins without scales, long-setose.
Corolla 2 to 3.3cm long, funnel-campanulate, zygomorphic,
yellow,
with or without orange or greenish spots on the posterior side,
the outer surface lepidote,
the tube sparsely loriform-setose, the bristles long.
Ovary densely setose.
Style long, slender and straight, equal to or longer than the corolla,
usually glabrous, rarely lepidote at the base.
Capsule 6-10mm long,
loriform-setose towards the apex, the bristles long.

Seed Collections:

F 24633	1924

R. lepidostylum is likely the most widely cultivated Subsection *Trichoclada* species in the UK today, though it is grown not for the flowers, which more often than not are virtually obscured by the new growth, but for its captivating, blue-green and bristly foliage, the leaves perfectly displayed by a flat-topped, wide-spreading habit. Mature plants will rarely be more than 1m tall, but they can be twice this in diameter and are so completely cloaked in short, oblong-shaped leaf blades that the branch structure beneath is barely visible. In the southern counties, where the sun is strongest, light dappled shade will be preferable to an open position, but in the north of England, and especially in Scotland, anything other than a full sun placement will result in drawn-up specimens with a much more open framework. The plant's hardiness is good enough to cope with anything the British climate might throw at it in a garden situation, despite the relatively low altitudes at which it is endemic, though shelter from strong winds is recommended.

When they first appear, the young shoots are outstanding, the glaucous bluish-green bloom of the leaf upper surface eye-catching. And although the intensity diminishes with age, it persists on mature leaves. The underside of the leaf is only moderately glaucous, however, but the foliage is evergreen, remaining on the shrub over winter, and this is one of the keys that identify *R. lepidostylum* from its subsection cohorts. Persistent leaf and flower bud scales are, in combination, another characteristic unique to the species, as is the presence of bristles on the branchlets, petioles, leaf lower surface and margins, pedicels, calyx, ovary and seed capsules, with even the outer surface of the corolla tube boasting a scattering of these loriform-setose hairs, a feat only duplicated on the blooms of *R. trichocladum* var. *trichocladum,* which of course has deciduous foliage.

R. lepidostylum was discovered by George Forrest during June 1919, a population of plants, all around 0.3m tall, with pale yellow flowers, growing on the summit of Jaangtzow Shan in the Shweli-Salween Divide of mid-west Yunnan. The Scotsman returned herbarium specimens under the field number F 18143 and described the new species jointly with Sir Isaac Bayley Balfour in Volume 12 of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1920. Seed capsules were secured during Forrest's sixth expedition to China in 1924, this gathering - under F 24633 - the only documented introduction to date, with no one else, including the Chinese, encountering *R. lepidostylum* out in the sticks across the century that has passed since that meeting.

The chosen Latin epithet clearly alludes to a lepidote style, but such is a misnomer, for only rarely will this appendage bear scales and then, only at the base.

R. lepidostylum



R. lepidostylum



R. lepidostylum (F 24633)

R. lepidostylum

R. lepidostylum

R. viridescens
Hardiness:
H6.
Flowering Period:
May-June.
Distribution in the wild:
SE Tibet.
Growing in boggy pasture, in forests and thickets, and on alpine slopes,
at elevations of 2,850-3,400m.

Identification:
Shrub, compact, rounded or spreading, to broadly upright, 0.3 to 1.5m high;
branchlets sparsely lepidote, moderately through densely setose, sometimes puberulous.
Leaf bud scales deciduous.
Leaves evergreen, coriaceous,
elliptic through obovate to oblong-obovate or ovate,
1.5 to 6.7cm long by 1 to 3cm wide;
upper surface bluish-green, flat,
glaucous at first, olive or bright green at maturity,
glabrous, without scales, usually without bristles,
the midrib occasionally sparse setose at the base, sometimes puberulent,
the margins usually without bristles;
lower surface pale green,
usually without bristles,
lepidote, the scales unequal, medium through large,
brown, pale yellow, reddish or blackish,
1 to 3 times their own diameter apart,
the midrib occasionally sparsely setose at the base, sometimes puberulent.
Petiole 1-4mm long.
Inflorescence terminal, 3-6-flowered;
flower bud scales deciduous.
Rhachis 1-8mm long, lepidote, setose or not, puberulent or not.
Pedicel 12-30mm long, lepidote, setose, rarely without bristles.
Calyx small, 5-lobed, these ovate or rounded and 0.5-2mm long,
their outer surface lepidote,
their margins without scales, setose.
Corolla 1.5 to 2.5cm long, funnel-campanulate, zygomorphic,
yellow, greenish-yellow or reddish-yellow,
spotted greenish on the posterior side,
the outer surface lepidote, glabrous.
Ovary without bristles.
Style long and slender, straight or sharply bent, as long as or longer than the corolla,
rarely puberulent at the base.
Capsule 6-8mm long, without bristles.

Seed Collections:

KW 5829	1924
CV 9522	1995
CC 7503	1996
CC 7520	1996
CC 7531	1996
CC 7557	1996
TARRVS 175	2002
TARRVS 176	2002


R. viridescens (KW 5829)

In 1978, just before China reopened her borders to Western botanists, *R. viridescens* was made synonymous under *R. mekongense* in Part 1 of the Cullen-Chamberlain-authored paper *A Preliminary Synopsis of the Genus Rhododendron,* this published in Volume 36 of *Notes from the Royal Botanic Garden, Edinburgh,* with the sinking confirmed in the full Subgenus *Rhododendron* revision text that followed and occupied the entirety of 1980's *Notes,* Volume 39, Number 1.

R. viridescens had originally been discovered by Frank Kingdon-Ward on June 23rd, 1924, and his field notes describe the population of plants on the Doshong La in Tibet as low-growing undershrubs, about 0.3m high, that formed clumps with *R. calostrotum* ssp. *riparium* in boggy, open pasture. The species botanic description was written by John Hutchinson in 1933 and published in Volume 94 of *The Gardeners' Chronicle,* Kew's resident rhododendron expert basing his outline on dried material gathered from a plant grown at Exbury by Lionel de Rothschild under the KW 5829 type number. Doctor Cullen questioned the authenticity of these specimens when he re-examined the herbarium plates in 1976 and determined that they were *R. mekongense*. He also believed the plant was known only in cultivation (*Notes,* Volume 39, No. 1, page 155). On the other hand, H. H. Davidian regarded a Frank Ludlow, George Sherriff and Henry Elliott gathering made during February 1947 in Tibet's Showa Valley (near Pome), and logged-in under the field number LS&E 12505, not to be *R. trichocladum,* but actually, *R. viridescens* (*The Rhododendron Species,* Volume 1, 1982), although this too is currently authenticated as *R. mekongense*.

Field observations subsequently made in southeast Tibet during 1996 by the father and son team of Peter and Kenneth Cox - on both the Doshong La and the Doker (Showa) La - confirmed the existence of large populations of *R. viridescens* and resulted in the taxon's specific status being returned (*The Encyclopedia of Rhododendron Species,* and *The Rhododendron Handbook 1998,* both published in 1997). *R. mekongense* is present on the ground in both areas, but the two species are easily identified by their foliage and habit, and with different bloom times - May through June for *R. mekongense;* June through August for *R. viridescens* - the two rarely interbreed.

Kenneth Cox and Scott Vergara reintroduced the species from southeast Tibet in 1995, with another four seed lots returned in 1996 under Cox & Cox field numbers, plus two more batches gathered on the Doshong La in 2002 by the three-man team of Tomasz Anisko, Ronald Rabideau and Scott Vergara.

The deciduous vegetative and flower bud scales of *R. viridescens* will key it from the only other evergreen member of the subsection, *R. lepidostylum,* while the usually dense covering of bristles on the branchlets and pedicels will render a similar service in the case of *R. caesium,* on which the young shoots and flower stalks are normally bristle-free. Both of the *R. trichocladum* varieties - var. *mekongense* and var. *trichocladum* - are deciduous shrubs.

In UK cultivation, *R. viridescens* is fully hardy and free-flowering from a young age, though the pale yellow corollas are often hidden away under the new foliage. Mature specimens form upright domes to around 1.6m high and have a bloom time that is later in the season than any other member of the subsection. However, the species is a rare find in British gardens, absent even from those with quite extensive rhododendron collections.

Plants from Rubroluteum Group have creamy-yellow flowers flushed red, but their legitimacy and relationship with *R. viridescens* is open to challenge:

They were apparently grown from KW 5489, a collection made in 1922, although the specific locale and date of the find was not recorded in Kingdon-Ward's field notes. Up until 1975, the shrubs were considered to be *R. melinanthum* (this taxon later correctly made a synonym of *R. mekongense*), but then, writing in Volume 29, Number 3, of the American Rhododendron Society's *Quarterly Bulletin,* which was published during July 1975, H. H. Davidian described Ward's find as *R. rubroluteum*. This status was maintained in Volume 1 of *The Rhododendron Species,* with the leaves recorded as evergreen, the leaf and flower bud scales as deciduous, the branchlets and pedicels as bristly, and the flowering season as late, specifically June into July. The éminence grise of Genus *Rhododendron* makes no association with *R. viridescens* in the write-up, even though these characteristics should at least have prompted consideration of such an alliance. Instead, most likely because of the terminal and axillary flower buds, the linkage with *R. melinanthum* was continued even though *R. rubroluteum* 'differed markedly' from that species.

In *The Genus Rhododendron: its classification and synonymy* - the concluding text of the Edinburgh Revision, published in 1996 - *R. rubroluteum* was made synonymous under *R. viridescens,* but because the sunk plant was deemed to be horticulturally significant by rhodophiles, it's appellation was preserved under the RHS Group system. Yet no mention is now made of the fact that the original description was based on cultivated material - to quote from Davidian's own 1975 *Two New Rhododendrons* article: 'Holotype, cultivated specimen under F. Kingdon-Ward No. 5489 in Herb. Hort. Bot. Edin.' (*JARS,* Volume 29, Number 3). And nor are Kingdon-Ward's own, later-published recollections of the discovery, presented:

> 'At the foot of the first steep pitch we came to an open boggy pasture where grew scattered bushes of a 'Trichocladum' Rhododendron (KW 5489). They are seedy-looking objects, these Trichocladums, with deciduous leaves and pallid yellow flowers, often with an unhealthy green flush and a rash of poisonous spots. The flowers open before the leaves appear, when they look the most starved and twiggy skeletons imaginable. However, some people approve of them'.
> *From China to Hkamti Long,* Frank Kingdon-Ward, 1924, p. 204.

And there is the rub: the likelihood of natural hybridity.

A probability reinforced by the fact that since 1922, *R. rubroluteum* has not been re-encountered in the wild.

Field study reporting from the early 1980s onwards has detailed any number of natural hybrids with vesicular scales that would near-automatically have been pigeonholed in Subsection *Trichoclada* had they been introduced - pairings between *R. mekongense, R. trichocladum* and *R. racemosum*. One of these, *R. x rubrolineatum,* has a similar feature set to the members of Rubroluteum Group - near evergreen leaves, deciduous leaf and flower bud scales, terminal plus axillary inflorescences, flushed rose flowers - although it lacks bristles on the branchlets and pedicels, as well as crimson spots on the corollas, and the bloom time is earlier. But of course, before hybrid swarms containing similar plants were recorded on the Cangshan, and at Weixhi, in Yunnan, and mirror-image duplicates arose as rogue seedlings in trays of *R. racemosum* (*The Encyclopedia of Rhododendron Species,* Peter and Kenneth Cox, 1997), it was gifted specific status by the botanists. So an undirected random pollination is clearly on the cards, which given the above, means a small 'x' should be added to a then rightly resurrected *R.* x *rubroluteum* epithet.

The *R. viridescens* Latin epithet translates as 'becoming green', a reference to the young leaves, which are bluish-green and glaucous when they first expand from the bud, but become olive-green or bright green with age.

R. caesium

Hardiness:
H4.
Flowering Period:
May-June.
Distribution in the wild:
C & SW Yunnan, China.
Growing in valleys on rocky slopes amongst scrub, at elevations of 2,400-3,100m.

Identification:
Shrub, compact and rounded, spreading or upright, 1 to 1.5m high;
branchlets sparsely lepidote, usually without bristles.
Leaf bud scales deciduous.
Leaves semi-evergreen, coriaceous,
oblong through oblong-elliptic to oblong-ovate (rarely),
2.3 to 6cm long by 1.2 to 3.4cm wide;
upper surface pale bluish-green and somewhat glaucous at first,
olive-green or bright green and not glaucous at maturity, flat,
glabrous, without scales, without bristles,
the margins slightly revolute, loriform-setose, the bristles long, straight or slightly curved;
lower surface white papillose, distinctly glaucous,
sparsely loriform-setose, the bristles straight or slightly curved,
lepidote, the scales unequal, large, golden or brown,
2 to 5 times their own diameter apart.
Petiole 2-6mm long.
Inflorescence terminal, 1-3-5-flowered;
flower bud scales deciduous.
Rhachis 2-3mm long, lepidote, glabrous, without bristles.
Pedicel 10-20mm long, sparsely lepidote, usually without bristles.
Calyx obscure to 5-lobed,
these rounded or ovate, rarely oblong, and 1-2mm long, rarely to 4mm,
their outer surface sparsely lepidote,
their margins sparsely lepidote and sparsely loriform-setose.
Corolla 1.5 to 2.5cm long, funnel-campanulate, zygomorphic,
yellow through greenish-yellow,
with greenish spots on the posterior side, the lobe margins sometimes tinged red,
the outer surface lepidote, glabrous.
Ovary without bristles.
Style long, slender and straight, equal to or longer than the corolla,
elepidote, glabrous.
Capsule 5-10mm long, without bristles.

Seed Collections:

F 26798	1925
F 27739	1925
McLaren C 184	1932/1939

Caesium, element number 55 on the periodic table, has a melting point of just 28.5ºC, so is a liquid at temperatures not far above the central heating system setting. It was discovered in 1860 by Robert Bunsen and Gustav Kirchhoff and named for its spectral colours (from the Latin adjective 'caesius', which means greyish-blue, though 'more deadly' is at the top of Google's translation offerings). The markedly glaucous leaf undersides of a rhododendron found and collected by George Forrest in 1925 under his field number F 26798, prompted John Hutchinson to borrow the term and its visible light interpretation in 1933, though here, the hue is never more than a dullish blue. Hutchinson's botanic prose can be found in Volume 94 of *The Gardeners' Chronicle* and like that for *R. viridescens,* it was conceived using specimens of the species gathered from live plants growing at Exbury, Lionel de Rothschild's garden in the New Forest, presumably because the plants Forrest found on the hills close to Lung-fan, in mid-west Yunnan, although in fruit, were little more than a collection of twigs due to their near deciduous nature.

Hutchinson placed *R. caesium* within Subsection *Triflora* - then the Triflorum Series, of course - but the species was an aberrant within this grouping and so H. H. Davidian, in his review of the botanic pigeonhole for the 1963 *Rhododendron and Camellia Year Book,* moved it to the Trichocladum Series, tangentially on account of the plant's habit, foliage and flowers. Central to his argument for the transfer however, were the vesicular scales on the leaf abaxial surface. These differ from the usual 'entire' type of scale - present on all the current Subsection *Triflora* species - in that they are either rimless, or when a rim is present, it is only barely developed, plus their centre is swollen and spherical, like a dome. Such vesicular scales, resident on the leaves of each Subsection *Trichoclada* species, are one of the main diagnostic elements that are used to key them apart from the all other Section *Lepipherum* rhododendrons.

Lower down the classification echelons, within the subsection itself, *R. caesium* can be identified from all of its fellows by the semi-evergreen nature of the foliage (in the wild), the white-papillose and distinctly glaucous underside of its leaves, and the deciduous leaf and flower bud scales. It is most closely allied to *R. viridescens,* which has fully evergreen foliage that is pale green below and not glaucous. Additionally, a check of the branchlets and pedicels will reveal a dense cloak of bristles if *R. viridescens* is to hand, and virtually none on the young shoots and flower stalks of *R. caesium*.

Forrest secured a second batch of *R. caesium* capsules during November 1925, five months after the initial find, the collection made roughly in the same area, and his trained local collectors made a third gathering - the last one to date - when employed by Henry McLaren in the years immediately after the Scotsman's untimely death in 1932.

When grown in British gardens, mature forms of the species will usually be rounded domes to around 1.3m high, these fairly floriferous, with quite deep yellow corollas in open trusses of 3 to 5. Unfortunately, the blooms are often hidden beneath the new leaves, which might account for the scarcity of cultivated specimens. *R. caesium* is also the least hardy member of the subsection, requiring a well-sheltered position if grown along the east coast or inland, with the degree of over-winter leaf retention directly influenced by the milder or colder nature of those residencies.

R. caesium (F 26798)



R. caesium (F 26798)



R. caesium (F 26798)



R. caesium (F 26798)

R. caesium (F 26798)

Section *Lepipherum* Subsection *Triflora:*



R. zaleucum (AC 585)



Taxa:

- *R. aechmophyllum*
- *R. ambiguum*
- *R. amesiae*
- *R. augustinii*
  - *R. augustinii* ssp. *augustinii*
  - *R. augustinii* ssp. *chasmanthum*
  - *R. augustinii* ssp. *hardyi*
  - *R. augustinii* ssp. *rubrum*
- *R. concinnum*
- *R. keiskei*
  - *R. keiskei* var. *keiskei*
  - *R. keiskei* var. *laticostum*
  - *R. keiskei* var. *ozawae*
- *R. lutescens*
- *R. oreotrephes*
- *R. polylepis*
- *R. rigidum*
- *R. searsiae*
- *R. suberosum*
- *R. trichanthum*
- *R. triflorum*
  - *R. triflorum* var. *bauhiniiflorum*
  - *R. triflorum* var. *mahogani*
  - *R. triflorum* var. *triflorum*
- *R. yunnanense*
  - *R. yunnanense* ssp. *davidsonianum*
  - *R. yunnanense* ssp. *hormophorum*
  - *R. yunnanense* ssp. *siderophyllum*
  - *R. yunnanense* ssp. *tatsienense*
  - *R. yunnanense* ssp. *yunnanense*
- *R. zaleucum*
  - *R. zaleucum* var. *flaviflorum*
  - *R. zaleucum* var. *zaleucum*

Taxonomic Revision:

The placement of Subsection *Triflora* is as designated in the 1996 Edinburgh Revision classification, but the treatment of the taxa within has been revised.

These changes mainly reflect Doctor Cullen's assertion that the species of what he describes as the *R. yunnanense* aggregate 'might well be regarded as subspecies of the one species, as they show reticulate variation and, to some extent, geographical replacement' (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Number 1, 1980).

Implementation of such an arrangement mirrors the status reduction applied to other such 'aggregates' elsewhere in the classification, Subsection *Arborea* in Section *Leiorrhodium* being the most obvious example.

However, ploidy must also be taken into consideration in any potential regrouping:
for the species involved are diploids, tetraploids and hexaploids,
with 26, 52 and 78 chromosome chains respectively,
which as Peter Cox reported in advance of the science are
'a limiting factor in hybridization,
as the different chromosome counts are often hard to bridge'
(*The Larger Rhododendron Species,* 1979).

Biochemical analyses relating to flower colour is also relevant.

Equally, consistency of treatment within the subsection has been sought
and recent field reporting, especially with regard to possible natural hybrids,
taken into account.

This has meant that the need to associate the species into two or more official Series
- replacing the illegal 'aggregates' and 'alliances' of some accounts -
was judged to be unnecessary.

As elsewhere across these volumes,
a fully detailed work-through of any change is presented in the individual species entry,
despite the regrettably repetitive nature of this discourse.

Subsection Morphology:

Shrubs, occasionally dwarf, or small trees,
low and mounding, compact and rounded, spreading or sometimes straggly,
laxly upright, umbrella-shaped or broadly upright,
1 to 10.7m high, rarely to just 0.2m high;
branchlets lepidote, pubescent or glabrous, sometimes bristly,
occasionally bronzy-brown at first;
bark brown, greyish-brown or reddish-brown,
rough or smooth, striate, shredding, flaking or peeling.

Leaves evergreen, occasionally semi-evergreen or deciduous,
sometimes coriaceous, more rarely chartaceous,
lanceolate through oblong-lanceolate,
ovate through elliptic to elliptic-obovate or near orbicular (rarely),
1.5 to 12cm long by 0.8 to 4.5cm wide,
apex acute, acuminate or obtuse, and mucronate,
base tapered, rounded or obtuse;
upper surface green, matt or shiny,
variably lepidote, rarely without scales, these unequal and often lost at maturity,
glabrous or pubescent, rarely bristly,
the midrib glabrous or pubescent,
the margins glabrous, sometimes loriform-ciliate, rarely bristly;
lower surface pale green, glaucous green, greyish-green or brown, rarely white,
usually densely lepidote, the scales usually unequal,
small, medium or large, often with two sizes present, mostly yellow through brown,
rimmed or rimless, overlapping, contiguous or distant,
the surface glabrous or pubescent, rarely bristly,
the midrib glabrous or pubescent, rarely bristly.

Leaf anatomy is variable, comprising a 1-, 2- or 3-layered upper epidermis.
When this has multiple lamina,
the cells in the top layer are smaller or equal in size to those in the layer(s) below;
the cuticle is usually quite thin; water tissue is absent;
the lower epidermis cells are either not, or only slightly, prolonged into papillae.
Sclereid cells are usually absent.

Petiole 2-20mm long,
usually lepidote, pubescent or glabrous, rarely bristly.

Inflorescence terminal,
or terminal and axillary in the uppermost one, two, three or four leaves,
rarely in the uppermost seven leaves,
umbellate or shortly racemose, 1-7-10-flowered,
often forming a large compound inflorescence from several flower buds,
rarely precocious.

Rhachis 1-10mm long,
usually lepidote, pubescent or glabrous, rarely bristly.

Pedicel 3-30mm long,
usually lepidote, pubescent or glabrous.

Calyx usually minute, a mere rim or 5-lobed,
these usually triangular or rounded in shape and 0.5-1mm long, rarely to 4 or 6mm long,
their outer surface lepidote or not,
glabrous or pubescent, rarely bristly,
their margins lepidote or not,
glabrous, pubescent, or sometimes ciliate, rarely bristly.

Corolla 1.3 to 4.8cm long, 5-lobed, the lobes longer than the tube,
widely-funnel-shaped, rarely funnel-shaped or narrowly-funnel-shaped,
zygomorphic,
white, pink, yellow, lavender, purple through violet, rose or reddish-crimson,
with or without spots, rarely blotched.
the outer surface usually lepidote,
glabrous or sometimes pubescent, rarely bristly.

Stamens 10, rarely 12, unequal, declinate, exserted or long-exserted;
filaments usually pubescent towards the base.

Ovary oblong or conoid, 2-6mm long, 5-locular,
usually densely lepidote,
glabrous or sometimes pubescent, more often only at the apex, rarely bristly.

Style impressed, declinate, often longer than the corolla, slender,
elepidote,
usually glabrous, rarely pubescent at the base.

Capsule oblong or oblong-oval, 6-20mm long,
usually densely lepidote,
rarely bristly.

Seeds elongate, without wings or appendages.

R. triflorum* var. *triflorum

Hardiness:
H4-5.
Flowering Period:
May-June.
Distribution in the wild:
Nepal; Sikkim, Arunachal Pradesh & W Bengal, India; Bhutan; N Myanmar.
Growing in forests and at forest margins, in thickets, on hillsides, and alongside streams,
at elevations of 2,100-4,000m.

Identification:
Shrub or small tree, lax, broadly upright, 0.5 to 7m high;
branchlets slender, lepidote, glabrous;
bark reddish-brown, smooth, peeling, or greyish-brown and striate.
Leaves evergreen, somewhat aromatic,
oblong-lanceolate, lanceolate through ovate-lanceolate to elliptic or oval,
2.5 to 7.8cm long by 1.3 to 3.3cm wide,
apex acute, acuminate or obtuse, and mucronate,
base rounded, cordate or obtuse;
upper surface bright green or dark green, without scales, glabrous;
lower surface glaucous or pale green,
densely lepidote, the scales equal in size, very small, brown, almost rimless,
half to their own diameter apart.
Petiole 4-13mm long, lepidote.
Inflorescence terminal, shortly racemose, loose, 2-4-flowered.
Rhachis 3-5mm long, lepidote.
Pedicel 6-16mm long, moderately through densely lepidote.
Calyx minute, 5-lobed, these ovate, triangular or rounded, and 0.5-1mm long,
their outer surface moderately through densely lepidote,
their margins either ciliate, puberulous or glabrous (rarely).
Corolla 2 to 3.3cm long by 2 to 3.6cm across, 5-lobed,
funnel-shaped or widely-funnel-shaped,
zygomorphic,
pale yellow, sulphur-yellow, greenish-yellow or yellow,
spotted olive-green or greenish-yellow,
the outer surface densely lepidote, pubescent or glabrous.
Stamens 10, unequal, long-exserted;
filaments villous towards the base.
Ovary conoid or oblong, 3-5mm long, 5-locular,
densely lepidote.
Style long, impressed, declinate, slender,
elepidote, glabrous or puberulous at the base (rarely).
Capsule oblong, 10-13mm long,
densely lepidote.

Seed Collections:

Cooper 3541	1914	LS&H 19849	1949	C&S 1531	1990
Cooper 3831	1915	LS&H 20615	1949	Fox 28	1990
KW 7121	1926	KW 19448	1950	Kinmouth 100	1990
KW 9478	1931	Stainton 187	1956	Kinmouth 101	1990
L&S 15	1933	Stainton 193	1956	AC 5313	2004
L&S 173	1933	Bowes-Lyon 3047	1966	KR 8090	2005
L&S 1262	1936	BLM 239	1971	KR 9840	2010
L&S 1353	1936	SCH 2047	1975	TDA 254	2013
L&S 1675	1936	SCH 2295	1977	TDA 256	2013
L&S 3061	1937	SCH 2330	1979	TDA 388	2013
LS&H 16062	1949	CHM 2003	1985	TDA 390	2013
LS&H 18881	1949	CHM 3036	1988	TDA 475	2013
		EGM 52	1988		



R. triflorum

R. triflorum* var. *bauhiniiflorum

Hardiness:
H4-5.
Flowering Period:
May-June.
Distribution in the wild:
Nagaland & Manipur, India.
Growing in rhododendron thickets and amongst birch on hillsides,
at elevations of 2,400-2,900m.

Identification:
as var. *triflorum* except:
Shrub, 1.5 to 3m high.
Corolla 2.2 to 2.8cm long by 3.8 to 4.3cm across,
saucer-shaped,
pale yellow, greenish-yellow or yellow,
with or without greenish-yellow spots on the posterior side.

Seed Collections:

KW 7731	1928	KW 17405	1948	AC 5569	2004
KW 12588	1935	KW 19101	1949	AC 5572	2004
		AC 5552	2004		


R. bauhiniiflorum

R. triflorum* var. *mahogani

Hardiness:
H5-6.
Flowering Period:
May-June.
Distribution in the wild:
S Tibet; WC Yunnan, China.
Growing in forests and in thickets at elevations of 2,500-3,700m.

Identification:
as var. *triflorum* except:
Shrub, 1 to 4m high;
bark reddish-brown and smooth, but not peeling.
Leaf lower surface pale green, not glaucous.
Corolla cream, pale yellow, greenish-yellow, deep yellow,
or yellow flushed either pink, reddish or bronze (mahogany),
spotted olive-green, greenish-yellow or reddish.

Seed Collections:

KW 5687	1924	LS&E 12014	1946/1947	KR 3604	1995	AC 3529	1997
KW 5687a	1924	LS&E 12374	1946/1947	CC 7502	1996	AC 3557	1997
KW 6263	1924	LS&E 12395	1946/1947	AC 3207	1997	AC 4426	2000
KW 6409	1924/1925	LS&E 12400	1946/1947	AC 3218	1997	AC 4482	2000
L&S 1863	1936	LS&E 12485	1946/1947	AC 3359	1997	AC 4500	2000
LS&T 3795	1938	LS&E 13546	1946/1947	AC 3363	1997	AC 4511	2000
LS&T 4046	1938	LS&E 15004	1946/1947	AC 3384	1997	AC 4664	2000
LS&T 4489	1938	LS&E 15021	1946/1947	AC 3386	1997	KR 6195	2004
LS&T 5032	1938	CV 9575	1995	AC 3409	1997	JN 11085	2011
LS&E 12010	1946/1947	KR 3388	1995	AC 3416	1997		


R. mahogani
(Young leaf abaxial scales)


R. mahogani
(Mature leaf abaxial scales)

R. triflorum

R. triflorum was discovered in Sikkim by Sir Joseph Dalton Hooker during 1849 and described in the second part of his botanical account of the expedition, *The Rhododendrons of Sikkim-Himalaya,* published in March 1851. The species distribution extends west into neighbouring Nepal and east into Bhutan, Arunachal Pradesh, southeastern Tibet and Upper Myanmar, with a niche population tucked away in the Indian states of Nagaland and Manipur, and another isolated cluster of plants in west-central Yunnan. Across that range the features of *R. triflorum* vary considerably, especially in height and leaf shape, peeling or non-peeling bark, the corolla shape, or whether the lower leaf surface is glaucous or not, with some of these characteristics showing a geographical correlation that requires varietal status recognition:

R. triflorum var. *bauhiniiflorum* was discovered at Japvo in Manipur by Sir George Watt on March 9th 1882 while he was assigned to the team carrying out the Government Demarcation Survey of the border between India and Burma. He made some additional herbarium collections of the species in April and May of that year, as well as in 1885, and his field notes were used by John Hutchinson to describe the plant in *The Species of Rhododendron,* published by the Rhododendron Society in 1930. The distribution was later found to extend northeast into Nagaland, but is otherwise isolated. The variety differs from var. *mahogani* and var. *triflorum* in having saucer-shaped near flat corollas that are much wider across than typically found.

R. triflorum var. *mahogani* was a Frank Kingdon-Ward discovery made at Lusha, in southeast Tibet, during May 1924, and described by Hutchinson in Volume 101 of *The Gardeners' Chronicle,* published in 1937. The original diagnosis highlighted the mahogany hues in the flowers, the corollas either blotched, spotted or flushed with this tone, the only noted difference between the specific species and the new variety. Rightly, James Cullen considered such distinctions insignificant in his revision of Subgenus *Rhododendron* (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36, 1978, and Volume 39, Number 1, 1980), so he sunk the variety under the specific species. However, post-publication of that synonymic merger, field study reporting detailed a much more noteworthy variance in the morphological feature set:

> 'Plants in southeast Tibet (including Mahogani Group) have neither peeling bark nor glaucous leaves and are more compact and hardier. The flowers are usually of very mixed colours, varying from pure and unmarked yellow to cream or yellow overlaid and spotted with red. Describing the reddish forms as Mahogani Group is botanical nonsense, as the different colours grow mixed together. These populations should be given varietal status to distinguish them from the eastern Himalaya forms'.
> Peter and Kenneth Cox.
> *The Encyclopedia of Rhododendron Species,* 1997, (paraphrased).

Reinstating var. *mahogani* herein, with an expanded description to cover all forms of *R. triflorum* found in southeast Tibet does just that, and although a new epithet could have been coined for these populations, the appellation would almost certainly have been ruled invalid at varietal ranking under the nomenclature precedence rules.

Regrettably, Chinese botanists have taken a different approach, ignoring the taxon split at varietal ranking and instead formulating *R. triflorum* ssp. *multiflorum* (Rhui Cheng Fang, in *Acta Botanica Yunnanica,* 1982). This text reveals that the inflorescence opens four, five or more corollas, and that the plant population is found exclusively in west central Yunnan, growing in *Rhododendron,* mixed or mossy forests between the 2,500 and 3,000m contours. A Keith Rushforth collection - KR 6195 - made during 2004, introduced the subspecies into British gardens, this followed by a Jens Nielsen gathering in 2011.

The isolated distribution would indeed require subspecies status if sufficient character differences with the redefined var. *mahogani* existed, but the *Flora of China* entry lists the only variance as those additional corollas, which given the author's previously published determinations, is again likely to be a case of hair-splitting (*R. yunnanense* ssp. *tatsienense* var. *nudatum* and *R. zaleucum* var. *pubifolium,* for instance, are carbon-copy examples of such quibbling within just Subsection *Triflora*). Moreover, as the disjunct population of *R. bauhiniiflorum* in Manipur and Nagaland was gifted varietal status by Doctor Cullen in his Edinburgh Revision texts, despite its known autonomous state - a ranking accepted without demur by a host of other authors and expert doyens - that same stratum will be sufficient to accommodate the peripheral population in Yunnan, which is herein placed in synonymy under *R. triflorum* var. *mahogani*.

All three varieties of *R. triflorum* can be keyed from the other members of the subsection by the dense patina of scales resident on their lower leaf surface, which can sometimes make those undersides appear greyish-brown in colour. The scales are equal in size, but very small, individually less than 0.1mm in diameter, and they are set just 0.05 to 0.1mm apart. Extra help with an identification is provided by the basically yellow corollas; by the lack of scales on the upper surface of the leaf, which is also glabrous - as is the midrib; and by the usually reddish-brown and often peeling bark, although this may be greyish-brown and striate on some plants.

R. triflorum var. *triflorum* was introduced from Sikkim by Hooker in 1850, with Roland Cooper reintroducing the species from Bhutan in 1914 and 1915. And because Western collectors were able to visit Nepal, Bhutan and Sikkim throughout the period when the Communist Revolution in China and the military occupation of Tibet bared their entry into those two countries, a steady flow of seed was maintained over the years. More recently, the species has also been found in Arunachal Pradesh.

The flowers and bark of *R. triflorum* var. *triflorum* are very fine, but rarely will both be found to be exceptional on the same specimen. Hardiness too can be lacking, perversely, in those otherwise highly-rated clones, so the species often appears to succeed best in the milder gardens along the western seaboard and in the south where those 'special' plants can thrive. However, as flowering is fairly late in the season, the shrub will rarely be hit by a late frost when in bloom if established in a sheltered nook along the east coast.

R. triflorum var. *bauhiniiflorum* was introduced from Mount Japvo by Kingdon-Ward in 1928, with three further seed lots collected by him arriving in 1935, 1948 and 1949. Alan Clark reintroduced the variety from the same stomping grounds in 2004.

Credit for the 1924 var. *mahogani* introduction also goes to Ward, with Frank Ludlow and George Sherriff, later accompanied by George Taylor and then Henry Elliott, supplying seed through until 1947. Warren Berg secured capsules off the Doshong La and credit for the reintroduction in 1986, making his seed available on the following year's American Rhododendron Society Seed Exchange, while Alan Clark later notched-up fifteen separate gatherings between 1997 and 2000.


R. bauhiniiflorum


R. bauhiniiflorum


R. bauhiniiflorum



R. triflorum (BL&M 239)



R. triflorum (BL&M 239)



R. triflorum



R. mahogani (KW 6409)



R. mahogani

R. mahogani (Ludlow, Sherriff & Elliott Collection)

R. ozawae

R. keiskei* var. *keiskei
Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
Yakushima, Kyushu, Shikoku, S & C Honshu, Japan.
Growing on hills, on rocks, and sometimes as an epiphyte, at elevations of 600-1,850m.

Identification:
Shrub, rounded or laxly upright, 0.5 to 3m high;
branchlets sparsely through moderately lepidote, glabrous or puberulous;
bark brown, striped greyish-brown.
Leaves evergreen,
lanceolate through oblong-lanceolate to narrowly elliptic,
3 to 9cm long by 1.1 to 3.5cm wide,
apex acute, acuminate, rounded or obtuse, and mucronate,
base slightly cordate, tapered, rounded or obtuse;
upper surface dark green, lepidote or not, puberulent towards the base,
sometimes loriform-ciliate at the base,
the midrib moderately through densely puberulous,
the margins occasionally loriform-ciliate;
lower surface green, pale green or glaucous green,
lepidote, the scales near equal in size, large, brown,
half to their own diameter apart.
Petiole 2-12mm long,
moderately through densely lepidote, sparsely loriform-ciliate or not.
Inflorescence terminal, shortly racemose, loose, 2-6-flowered.
Rhachis 2-4mm long, lepidote.
Pedicel 5-14mm long, lepidote.
Calyx minute, a mere rim or 5-lobed,
these ovate, triangular or rounded, and 0.5-2.5mm long,
their outer surface densely lepidote,
their margins sparsely through moderately loriform-ciliate or glabrous.
Corolla 1.4 to 3cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
pale yellow or lemon-yellow,
without spots,
the outer surface lepidote, glabrous.
Stamens 10, unequal, long-exserted;
filaments moderately through densely pubescent towards the base.
Ovary conoid or oblong, 2-4mm long, 5-locular,
densely lepidote.
Style impressed, declinate, slender, longer than the corolla and the stamens,
elepidote, glabrous.
Capsule oblong or narrowly-cylindric, 6-13mm long,
densely lepidote.

R. keiskei* var. *laticostum
Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
South Island, Yeosu, South Korea; C Honshu, Japan.
Growing in scrub and thickets, on rocks and cliffs, at elevations of 600-1,500m.

Identification:
as var. *keiskei* except:
Dwarf shrub, low, 0.3 to 0.5m high.
Leaves elliptic through elliptic-oblong,
2 to 5.5cm long by 1 to 2.5cm wide;
lower surface glaucous.
Corolla pale yellow or white tinged yellow.
Stamens 10-12.

R. keiskei* var. *ozawae
Hardiness:
H6.
Flowering Period:
April-May.
Distribution in the wild:
Yakushima Island, Japan.
Growing on the hills and mountain ridges amongst rocks, at elevations of 1,500-1850m.

Identification:
as var. *keiskei* except:
Dwarf shrub, prostrate or creeping, 0.1 to 0.15m high.
Leaves 1.5 to 2.5cm long by 0.8 to 1.5cm wide.
Corolla yellow.

Seed Collections (var. *keiskei,* var. *laticostum* and var. *ozawae*):

Doleshy 6	1965
Doleshy 39	1967
Doleshy 202	1970
Doleshy 543	1971
Kurashige 889	1987
W&H 797	1987
KQ 414	1989

In addition to the seven authenticated collections,
between 1976 and 2017, members of the Japanese Rhododendron Society contributed
a total of thirty lots to the American Rhododendron Society Seed Exchange.
These, and the listed field numbers above, were returned without varietal differentiation,
but as a whole, encompassed each of the three forms found in UK cultivation.

R. keiskei is the outlier species within Subsection *Triflora.* It is basically known only from Japan, the distribution stretching from central Honshu down through Shikoku and Kyushu to Yakushima Island in the far south, although var. *laticostum* has recently been found on an island off the south coast of Korea. The species was first described by Friedrich Miquel in Volume 2 of *Annales Musei Botanici Lugduno-Batavi,* published in 1866, with the plant named for the Japanese botanist who is believed to have made the discovery, Ito Keisuke (1803-1900). Karl Maximovich is known to have gathered herbarium material from the slopes of Mount Unzen, an active stratovolcano on the Shimabara Peninsula, Nagasaki Prefecture, Kyushu, during 1863, and separately described the species in 1870.

Introduced into UK cultivation during 1908 - when a consignment from the Yokohama Nursery Company arrived at Kew Gardens - William Botting Hemsley reported that *R. keiskei* 'flowered in a pot in an unheated cold frame' during April 1909 (*Curtis's Botanical Magazine,* Volume 136, Tab 8300, 1910), and 'though the plant has not yet wintered in the open air' it would shortly be trialled outdoors. And so tested, proved to be hardiest member of the subsection. Even so, John Guille Millais - for once, out of step with a majority of his fellow rhodophiles - believed it 'not sufficiently attractive to warrant recognition as a garden ornament' (*Rhododendrons and the Various Hybrids,* 1917).

In combination, the species is identified from the other cohorts of Subsection *Triflora* by the yellow flower colour; by the pubescent hairs on the upper leaf surface - along much of the midrib and around the base of the blade; and by the scales on the leaf underside, these near equal in diameter, large in size, and half to five times their own diameter apart. As most plants found in British gardens are clones of the two low-growing varieties, barely topping 0.5m in height when mature and sometimes near prostrate, this feature too can be used to distinguish the species from its much taller growing companions.

The RHS 1997-published edition of *The Rhododendron Handbook* countenanced the division of the taxon into three varieties following field study confirmation of their existence in the wild. Previous to this reporting, James Cullen, the Edinburgh botanist responsible for the Subgenus *Rhododendron* revision, believed that such splitting was made 'on the basis of material in cultivation' (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Number 1, 1980). David Chamberlain's species entries for the *Handbook* list *R. keiskei* var. *keiskei, R. keiskei* var. *hypoglaucum,* and *R. keiskei* var. *ozawae.*

R. keiskei var. *keiskei* covers the non-diminutive members of the tribe, which can reach a leggy 3m in height, especially when grown in too much shade, and while these are the most common forms of the species found in the wild in Japan, they are rare in UK cultivation. Their leaf blades can be 3 to 9cm in length, 1.1 to 3.5cm in width, and the corollas are yellow. The 'Ebino' clone is detailed under this variety in the current edition of the *International Rhododendron Register and Checklist*.

R. keiskei var. *hypoglaucum* has a very restricted distribution in the centre of Honshu, Japan's main island, with reportedly less than 200 individual plants surviving in the wild, though it is also present on the mountains of Yakushima Island, forty miles off the southern tip of Kyushu. The total population count was bolstered in 2015 when four South Korean botanists - Jong-Cheol Yang, Yeong-Han Kwon, Seong-Jin Ji and Chang-Ho Shin - published a report in the *Korean Journal of Plant Taxonomy* that detailed the presence of several hundred plants on the northern slopes and cliffs of Yeosu's South Island.

The var. *hypoglaucum* taxon was originally described in Volume 22 of *Transactions, Natural History Society of Formosa,* this written by two Japanese botanists - Suto and Suzuki - and published in 1932, but it appears to have been overlooked in the Edinburgh Revision texts. Luckily, the epithet was rediscovered in time for Doctor Chamberlain's 1997 *Rhododendron Handbook* account, but regrettably, use of *hypoglaucum* in the combination is illegal under the nomenclature rules, because William Botting Hemsley had already used this appellation in 1889 when describing one of the species that would later be slotted into Subsection *Argyrophylla,* which of course, takes precedence. Therefore to avoid confusion and comply with the ICNAFP, another moniker is needed:

R. laticostum was described by Collingwood Ingram in the 1971 *Rhododendron and Camellia Year Book*. His text details a form of *R. keiskei* that was a low-growing shrub to 0.5 or 0.6m high, with foliage around 4cm in length, but because the outline was based on a cultivated specimen, the epithet was made synonymous in Doctor Cullen's review. It is herein reinstated, replacing *hypoglaucum,* but reduced from specific to varietal ranking.

Aged specimens of *R. keiskei* var. *laticostum,* growing in the most favoured spots across the British Isles, might occasionally hit the 2m-mark, but they are usually dwarf shrubs, around 0.3 to 0.5m in height. Their leaves are between 2 and 5.5cm in length, 1 to 2.5cm in width, and the corollas are pale yellow or white tinged yellow.

In his 1971 Year Book article - titled *Notes on the 'Keiskei' Complex* - Collingwood Ingram reported that one of his var. *laticostum* specimens was collected on Yakushima Island, near the summit of Mount Kuromi, by the same Japanese nurseryman who had despatched two small specimens of *R. degronianum* ssp. *yakushimanum* to Lionel de Rothschild in the 1930s, namely, Koichiro Wada. Ingram had received a plant direct from Wada, but had been unable to keep it alive. Then, at the tail end of 1966, he was told of three 'tiny, almost rootless plants' that had also been despatched to the UK, specifically to the Essex nurseryman and Ericaceae-specialist, Barry Starling (1936-2022).

Starling too had lost one his three, but when Ingram turned up on his doorstep a month or so later, he was persuaded to part with one of the two remaining specimens (*Some Oreads of the Rhododendron World,* Barry Starling, published in *Rhododendrons, Camellias & Magnolias, 2014*). But although both looked the same in 1967; had apparently been collected from the exact same site on Yakushima; and were supposed to have a very prostrate habit: time would prove that one of the pair, was not.

Ingram writes that 'five years spent in an entirely different environment has now completely changed that little plant's appearance'. Gone was the 'conspicuously prostrate habit' and its foliage was no longer 'very small and bluntly oblong in shape' but matched that of var. *laticostum* 'both in size and form'. This 'remarkable metamorphosis' convinced Ingram that the wild distribution of the variety could now be extended to include the lower elevations of Yakushima Island.

Starling's plant however, had remained dwarf. Indeed, forty-five years later, although some 75cm in diameter, it was just 25cm in height - even in the balmy climate of southern England. So it is now accepted that there are two forms of *R. keiskei* present on Yakushima Island, just as there are two forms of *R. degronianum*.

R. keiskei var. *ozawae* covers those truly prostrate shrubs that are just 0.1 to 0.15m high in the wild. Facing environmental challenges at the very top of Yakushima's mountains that include 20 to 25 typhoons every year, these contributing to an annual rainfall total that exceeds 9m - that's nine metres; or for the non-metric generation, twenty-nine feet - the need to shed water swiftly determines where most of the plants on the World Heritage Site will be found: growing on the tops of rocks. And that environmental necessity dictates their habit. Another Japanese botanist, Takashi Yamazaki, formerly described the taxon in 1993 (*Flora of Japan,* Volume 3a), and his text records that the variety has leaves just 1.5 to 2.5cm long by 0.8 to 1.5cm wide, and displays yellow corollas.

Barry Starling's plant secured an Award of Merit in 1970 and he named it 'Yaku Fairy', for in July 1966, Koichiro Wada had written to tell him that 'a new fairy rhododendron has been found on the peak of Mt. Kuromi' on Yakushima Island.

Writing in Volume 26, Number 2, of the American Rhododendron Society's *Quarterly Bulletin,* published in April 1972, the widely acknowledged rhododendron expert, collector and horticulturalist Warren Berg, recalls that:

> 'Finding this lonely little gem, blooming among the rocks, on what seemed the top of the world, with *R. yakushimanum* growing as far as the eye could see, was an experience and sight beyond description'.

He too had obtained a plant of *R. keiskei* from Koichiro Wada 'about six or seven years ago' that had 'remained prostrate in cultivation and was now approximately 40cm in diameter but only 8cm high'. Berg believed that he had received 'the original plant' and that it was therefore identical with Barry Starling's AM clone, so began propagating the shrub both vegetatively, and from selfed seed, as well as using it to breed new hybrids:

> 'I have made quite a few crosses that look very promising, particularly since many of the hybrid seedlings retain the prostrate habit of the parent'.

And they were registered with that parental designation: *R. keiskei* 'Yaku Fairy', which genetically, may, or may not, have been the case.

In their 1997-published *Encyclopedia of Rhododendron Species,* Peter and Kenneth Cox, not wishing to offend either party, delicately state that 'there may be two very similar clones in commerce under this name'.

Another American rhodophile, Frank Doleshy, appears to have been the first collector to introduce wild seed rather than live plants of *R. keiskei* into cultivation, an expedition to Honshu in 1965 securing capsules, followed by three other gatherings made in 1967, 1970 and 1971, from Kyushu, Yakushima and Honshu respectively. And as detailed above, over the years, many members of the Japanese Rhododendron Society have contributed seed of the species to the ARS annual exchange, much to the benefit of all, and an even greater blessing in the post Nagoya Protocol world.

In cultivation, var. *ozawae* is hardier than var. *laticostum,* which is itself hardier than the taller-growing var. *keiskei*. The latter variety will require a sheltered nook in gardens along the northeast coast and inland, though too much shade will exacerbate the tendency towards legginess. The former two varieties are perfect rock garden plants able to shrug off anything and everything the British maritime climate might throw at them, and many of the clones have very attractive dark bronzy new foliage, while a few, have leaves that turn almost black in the coldest and wettest winters.



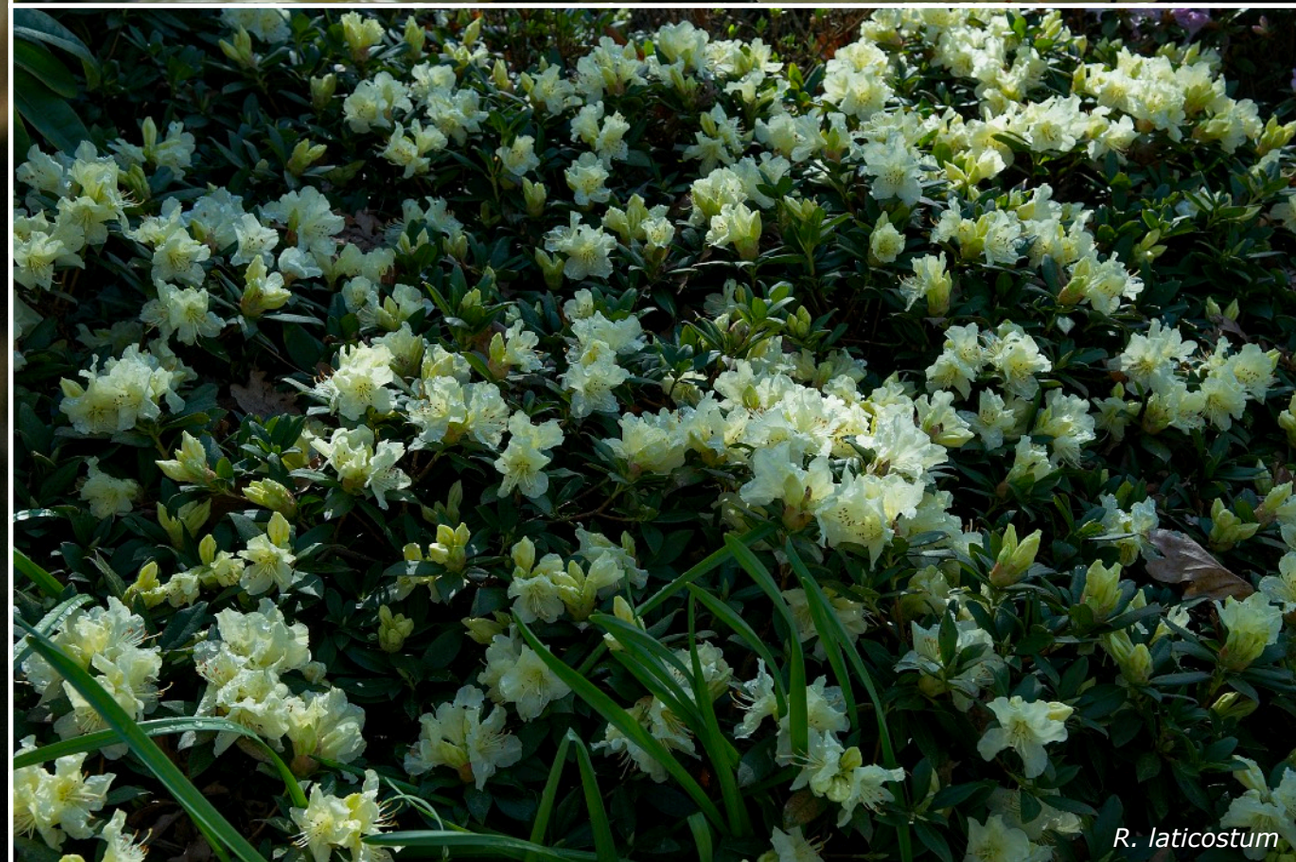
R. ozawae 'Yaku Fairy'



R. keiskei


R. keiskei


R. laticostum


R. laticostum

R. lutescens (C&H 7124)

R. lutescens

Hardiness:
H4-5.
Flowering Period:
February-April.
Distribution in the wild:
W Sichuan, NE Yunnan, Guizhou & Hubei, China.
Growing in mixed forests (often in damp areas),
at forest margins and in thickets on open slopes, at elevations of 550-3,200m.

Identification:
Shrub, broadly upright, straggly or willowy, 1 to 6m high;
branchlets lepidote, glabrous, young growth bronzy-brown;
bark brown or greyish, smooth, flaking.
Leaves evergreen, occasionally semi-evergreen, papery,
lanceolate through ovate-lanceolate to oblong-lanceolate,
4 to 9.3cm long by 1.3 to 3.7cm wide,
apex acutely acuminate, and mucronate,
base rounded or obtuse;
upper surface bright green or olive-green,
sparsely through moderately lepidote, glabrous,
the midrib glabrous, rarely puberulous;
lower surface lepidote, the scales unequal, large-sized, brown or yellowish,
broadly rimmed, half to six times their own diameter apart.
Petiole 5-12mm long, lepidote.
Inflorescence terminal and axillary in the uppermost few leaves
(mostly axillary and often without a terminal inflorescence),
umbellate or shortly racemose, loose, 1-3-flowered.
Rhachis 1-2mm long, lepidote.
Pedicel 4-15mm long, moderately through densely lepidote,
glabrous, rarely puberulent at the base.
Calyx minute, a mere rim or 5-lobed,
these triangular or rounded, and 0.5-1mm long,
their outer surface densely lepidote,
their margins loriform-ciliate or not.
Corolla 1.3 to 2.6cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
pale yellow, primrose-yellow or lemon-yellow, occasionally white,
spotted green,
the outer surface lepidote or not,
variably pubescent, the hairs retorse (bent backwards or downwards).
Stamens 10, unequal, long-exserted, the longest longer than the corolla;
the shorter filaments densely villous towards the base,
the longer filaments less so or sometimes glabrous.
Ovary conoid or oblong, 2-4mm long, 5-locular,
densely lepidote, glabrous or pubescent at the apex.
Style long, impressed, declinate, slender, longer than the corolla,
elepidote, glabrous or pubescent at the base.
Capsule oblong, 8-11mm long, densely lepidote.

Seed Collections:

W 1875	1904	EGM 153	1990
W 1195	1906/1909	CEE 501	1991
W 1197a	1906/1909	SICH 928	1992
W 1199	1906/1909	SICH 1610	1994
W 1345	1906/1909	AC 1058	1995
W 4277	1910/1911	AC 1079	1995
SICH 239	1988	AC 1184	1995
SICH 265	1988	C&H 7124	1995
CCH 3922	1989	EFH&M S 1610	1995
Cox 5008	1990	C&N 6015	2007
Cox 5022	1990	NN 0932	2009
Cox 5092	1990	NN 0935	2009
Cox 5100	1990	CNC 12105	2012



R. lutescens (W 4277)

Jean-Pierre Armand David, a French Vincentian (Lazarist) priest, was appointed to the Peking (Beijing) legation of the Roman Catholic Congregation of the Mission in 1862. He soon began exploring around the city's outskirts and then travelling further afield, even reaching Chengde, a town in Hebei, some 160 miles to the northeast of the Chinese capital where the Qing emperors of the time had their sumptuous summer palaces and imperial gardens. Throughout this period, Armand David was exchanging letters with the scientists at the Muséum National d'Histoire Naturelle in Paris, as well as sending them the material he had collected on those trips - animals, plants, rocks and fossils - and they, decidedly impressed - 'we found in Father Armand David a correspondent no less active than illuminated', Professor Henri Milne Edwards of MNHN wrote in September 1864 - persuaded the Superior General of the Lazarists to allow the priest to make even more extensive expeditions funded by the on-off secular French state, which clearly had its priorities set straight: botanic investigations of primary concern; bringing hordes of unwashed heathens into the light of the Lord, way down the weightings list.

So in 1866, the priest set off on a seven-month journey heading west from Peking that took him several hundred miles into southern Mongolia, while between 1872 and 1874 he travelled extensively through Shaanxi, Hubei and Jiangxi, and explored the Yandang Mountains of Zhejiang Province. But it was on his second expedition, from 1868 to 1870, through what were then the central provinces of China, that he entered Sichuan, reached Moupin (Baoxing), and made some of his greatest discoveries.

For during his stay at the Dengchigou mission station, post his arrival in a sedan chair, Père David introduced the world to *Ailuropoda melanoleuca,* otherwise known as the giant panda; to *Davidia involucrata,* the dove tree or the ghost tree, but most notably known as the handkerchief tree; and to *Rhinopithecus roxellana,* the out-and-out most amazingly cute-looking golden snub-nosed monkey. Oh, and he also stumbled upon seven new-to-science species from Genus *Rhododendron,* one of which - first encountered during March 1869 - was *R. lutescens*.

Henri Ernest Baillon described *Davidia involucrata* in 1871, but the dried specimens of *R. lutescens* appear to have been overlooked after arriving at the MNHN herbarium - at least, until Adrien Franchet blew the dust off the sheets in 1886, when he published the taxon's botanic description within Volume 33 of the *Bulletin de la Société Botanique de France.* Subsequent herbarium collections show that *R. lutescens* has a wide, but scattered endemic distribution, stretching from Yunnan to Hubei via Guizhou and Sichuan, this graced with an altitudinal range of more than 2,600m, from a base of 550m (recorded for a set of specimens gathered in Yunnan during May 1912 by Edouard-Ernest Maire). But until 1988, only one plant hunter had introduced seed of the species into cultivation: Ernest Wilson.

The second of his Veitch-sponsored expeditions, between 1903 and 1905, resulted in the premier introduction under Wilson 1875, the gathering made during 1904, with a four lot follow-up arriving from his first Arnold Arboretum venture between 1906 and 1909, and the last batch from his next trip, which concluded in 1911. The team of Simmons, Erskine, Howick and McNamara - John, Charles, Lord Charles, and William, respectively - taking part in the first of a series of expeditions to - and named for - Sichuan, set the ball rolling on the re-introductions during 1988 in the second golden age of plant hunting, which up to its Nagoya Protocol termination in around 2012, yielded just one short of a score of individual capsule batches.

In cultivation, the species often has a willowy upright habit to around 3 or 4m in height, with quite long branches and new growth coloured bronzy-brown, this hue often persisting through until early autumn. The bark is equally ornamental - smooth; brown or greyish; and peeling - though unfortunately not quite in the same league as some forms of *R. triflorum*. The flowers open early, during February or March, although a few clones hold back until April, but all are likely to suffer regular frost damage wherever the shrubs have been planted. Bark split is a problem for the coldest sites and even fairly sheltered east coast gardens will likely prove unsuitable for the two award clones, which are the most tender forms available. Both were the product of selective breeding programmes, Lionel de Rothschild's 'Exbury' - an FCC winner in 1938 - having the largest blooms, these flushed in shades of lemon-yellow, while John Barr Stevenson's 1953 Award of Merit creation - named 'Bagshot Sands' and exhibited after his death by his wife, Roza - has slightly smaller, primrose-yellow corollas, but is the hardier of the two. Virtually every other available clone has smaller flowers, some of which are decidedly poor, but in compensation, those plants are much tougher.

R. lutescens is one of the easier Subsection *Triflora* species to identify, informally by the red-tinted new growth and conspicuously long drip-tip at the apex of each leaf, more exactingly, by the glabrous adaxial midrib, terminal and axillary flowers - the latter in a clear majority, with the former often absent - and those pale yellow corollas pubescent on the outside. A final check for the diehards will reveal the leaf lower surface scales to be brown or yellowish in hue, large but slightly unequal in size, and between half to six times their own diameter apart.

The epithet translates as 'becoming yellow'.



R. lutescens (AC 1184)

R. lutescens

R. polylepis

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
S Gansu, S Shaanxi, and N to SW Sichuan, China.
Growing in forests, in thickets and on cliffs, at elevations of 1,500-3,300m.

Identification:
Shrub or small tree, broadly upright, 1 to 6m high;
branchlets densely lepidote, the scales flaky, glabrous;
bark greyish-brown, striate.
Leaves evergreen, coriaceous,
oblong-lanceolate through oblanceolate to lanceolate,
4.5 to 11cm long by 1.2 to 3.7cm wide,
apex acute or shortly acuminate, and mucronate,
base tapered or cuneate;
upper surface dark green,
variably lepidote at first, usually without scales when mature, glabrous,
the midrib glabrous;
lower surface densely lepidote, the scales unequal, large,
brown, flat, flaky and dry,
overlapping or contiguous, or rarely up to half their own diameter apart,
usually with even larger flaky scattered scales.
Petiole 5-10mm long, densely lepidote.
Inflorescence terminal,
rarely terminal and axillary in the uppermost one or two leaves,
shortly racemose, loose, 3-5-flowered.
Rhachis 2-6mm long, lepidote, glabrous, rarely puberulous.
Pedicel 6-20mm long, reddish, moderately through densely lepidote.
Calyx minute, 5-lobed, these triangular or rounded, and 0.5-1mm long,
their outer surface densely lepidote,
their margins densely lepidote, glabrous or rarely filiform-acicular-ciliate.
Corolla 2 to 3.5cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
pale through deep purple, purplish-violet or purplish-red,
with or without yellowish spots on the posterior side,
the outer surface variably lepidote, glabrous.
Stamens 10, unequal, exserted, longer than the corolla;
filaments densely villous towards the base.
Ovary conoid or oblong, 3-4mm long, 5-locular,
densely lepidote, glabrous or puberulous at the apex.
Style long, impressed, declinate, slender, longer than the corolla,
elepidote, glabrous or puberulous at the base.
Capsule oblong, 8-17mm long, densely lepidote.

Seed Collections:

W 1857	1904	CHM 2500	1986	EGM 288	1995
W 3942a	1904/1905	SICH 40	1988	EGM 303	1995
W 1205	1908	SICH 246	1988	AC 3810	1998
W 1207a	1908	SICH 300	1988	AC 4182	1998
W 1221	1908	Cox 5025	1990	AC 4963	2001
W 4278	1911	EGM 117	1990	SICH 2170	2001
McLaren 39/279	1932/1939	CEE 284	1991	CNC 12088	2012
McLaren AG 396	1932/1939	SICH 756	1991	CNC 12124	2012
		SICH 1230	1992		



R. polylepis (CEE 284)

R. polylepis was another of the new rhododendron species found by Armand David on his pilgrimage to Sichuan, with dried herbarium material collected in both March and May of 1869. However, just like *R. lutescens,* it was not described until 1886, when the plates were rediscovered by Adrien Franchet, whose text again appears in Volume 33 of the *Bulletin de la Société Botanique de France*.

Within the subsection, *R. polylepis* is most often allied with either *R. concinnum* or *R. searsiae,* but its abaxial leaf surface scales will quickly distinguish a specimen from either of those close relations, indeed, from all the other *Triflora* rhododendrons, although unlike those present on the *R. oreotrephes* leaf, they are not unique within the genus. But they do overlap each other, which is an exclusive characteristic amongst its pigeonholed cohorts. The scales may also be contiguous - touching - or more rarely, set up to half of their own diameter apart, plus they are large, brown in tone, and flaky. Moreover, even larger scales will be found scattered amongst them across the underside of the leaf, these of a slightly darker brown hue, but also dry and flaky, and widely distant from one another.

Other attributes also aid an identification:

The lanceolate leaf shape immediately distinguishes *R. polylepis* from *R. concinnum,* which has ovate-elliptic leaves, but in addition - though less easily attested to in the field or the garden - is the leaf anatomy: *R. polylepis* having a two-layered upper epidermis; that of *R. concinnum,* being single-celled. Furthermore, the two plants have different tallies of chromosomes: 26 being resident in each of the cells of *R. polylepis,* which make it a bog-standard diploid, while 52 are housed in the nuclei of *R. concinnum,* thereby transforming it into a tetraploid.

R. searsiae will be found to have a bluish-glaucous-green or silvery-grey abaxial leaf surface rather than one with a brown hue, and three sizes of scale are present and correct on those blades - small, medium and large, none of which touch or overlap each other - which will prove equally distinctive.

A glabrous abaxial midrib distinguishes *R. polylepis* from the four subspecies of *R. augustinii,* where such is hairy for one-third, two thirds or its entire length.

In his revision of Subgenus *Rhododendron,* Doctor James Cullen pointed out that:

> 'In specimens of *R. polylepis* collected in the wild, the scales on the leaf undersurfaces appear to fray out at the edges into cobwebby material; this is consistent on all the specimens, and does not appear to be due to fungal infection. It is not found on cultivated material, and its significance is obscure.'
> (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Number 1, 1980).

Four decades on, and that still remains the case.

R. polylepis was first introduced into British gardens by Ernest Wilson in 1904, with seed also returned on his two subsequent trips to China for the Arnold Arboretum. George Forrest's trained native collectors found the species when in the employ of Henry McLaren, gathering two batches of capsules in the 1930s, while Peter Cox, Peter Hutchison and Donald Maxwell-McDonald reintroduced the taxon from western Sichuan in 1986. Fifteen additional collections were made through until 2012.

Regrettably, the species is probably the least-often grown member of Subsection *Triflora* in UK cultivation. It is usually an upright shrub with long branches, though it can also be lax and straggly. Some clones are free-flowering, others are not, with expert horticultural opinion suggesting that only those plants with darker purple flowers really justify their place in a species collection, a pronouncement some of the more recent introductions could easily contest. Of note: the last set of hard winters in the UK inflicted bud damage on many specimens outwith the protection of a west coast locale.





The larger, widely-scattered, flaky brown scales, clearly visible above a patina of smaller scales.

R. polylepis (SICH 300)



R. polylepis (CEE 284)

R. yunnanense

R. yunnanense* ssp. *yunnanense

Hardiness:
H4-5.
Flowering Period:
May.
Distribution in the wild:
SE Tibet; SW Sichuan, NW & NE Yunnan, W Guizhou & S Shaanxi, China; N Myanmar.
Growing in and at the margins of forests on hillsides,
in thickets, alongside streams, amongst scrub and on open moorland and cliffs,
and forming single-species rhododendron forest,
at elevations of 900-4,300m.

Identification:
Shrub or small tree (rarely), spreading, laxly or broadly upright, 0.3 to 4m high;
branchlets sparsely through moderately lepidote,
bristly or not, the loriform-setose hairs usually quickly deciduous,
the presence of bristles variable on different branches of the same plant,
puberulous or glabrous (rarely);
bark brown, striate.
Leaves evergreen or semi-deciduous,
oblong-lanceolate through oblanceolate to lanceolate,
variable on the same plant,
2.5 to 10.4cm long by 0.8 to 2.8cm wide,
apex acute, shortly acuminate or obtuse, and mucronate,
base tapered or obtuse;
upper surface green, sparsely through moderately lepidote or without scales,
sparsely through moderately bristly or without bristles,
the loriform-setose hairs usually quickly deciduous,
glabrous or sometimes puberulous,
the midrib puberulous, rarely glabrous,
the margins sparsely bristly or without bristles,
the loriform-setose hairs usually quickly deciduous;
lower surface pale glaucous green or green,
lepidote, the scales unequal, medium-sized, brown, flat,
between two and six times their own diameter apart, rarely their own diameter apart.
Petiole 3-11mm long, variably lepidote,
bristly or not, the loriform-setose hairs usually quickly deciduous,
puberulous or glabrous (rarely).
Inflorescence terminal, or terminal and axillary in the uppermost one to three leaves,
shortly racemose, loose, 3-5-flowered.
Rhachis 2-3mm long, lepidote, puberulous or glabrous.
Pedicel 5-30mm long, sparsely through moderately lepidote or without scales.
Calyx minute, a mere rim or 5-lobed, these triangular or rounded, and 0.5-1mm long,
their outer surface lepidote or not,
their margins lepidote or not (rarely), ciliate or puberulous or glabrous.
Corolla 1.8 to 3.5cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
white, pink, pinkish-lavender, purplish-pink, rose, rose-lavender, lavender, lavender-violet,
with or rarely without crimson, rose, olive-brown or green spots,
the outer surface lepidote or not,
or moderately lepidote on just the lobes, glabrous.
Stamens 10, unequal, exserted;
filaments moderately through densely pubescent towards the base.
Ovary oblong, 3-5mm long, 5-locular,
densely lepidote, glabrous, rarely puberulous at the apex.
Style long, impressed, declinate, slender, longer than the corolla, elepidote.
Capsule oblong, 6-20mm long, densely lepidote.

Seed Collections:

F 5889	1910	CHM 2604	1986	CNW 845	1994
F 15002	1917/1919	CLD 928	1990	CNW 910	1994
KW 4322	1921	CLD 1512	1990	P&M 172	1994
KW 4974	1921	H&M 1539	1990	P&M 195	1994
F 20430	1921/1922	SICH 922	1992	P&M 198	1994
F 20434	1921/1922	SICH 947	1992	SICH 1436	1994
F 20793	1921/1922	SICH 1151	1992	AC 1109	1995
F 21358	1921/1922	SICH 1207	1992	C&H 7145	1995
R 6002	1923/1924	AC 658	1993	FED 205	1995
R 6031	1923/1924	AC 723	1993	AC 1332	1996
R 6826	1923/1924	AC 745	1993	AC 1417	1996
R 11280	1923/1924	AC 747	1993	AC 1430	1996
R 11418	1923/1924	AC 748	1993	AC 1470	1996
F 27745	1924/1925	AC 751	1993	AC 1523	1996
F 29323	1930/1931	AC 772	1993	AC 1622	1996
F 29687	1930/1931	KGB 245	1993	AC 2046	1996
R 24421	1932	KGB 559	1993	KR 4164	1996
R 24602	1932	KR 2805	1993	KR 4217	1996
Yu 10698	1937	AGS 2097	1994	AC 4318	1999
SBEC 60	1981	CNW 100	1994	JN 885	1999
SBEC 194	1981	CNW 354	1994	C&N 5881	2007
SBEC 218	1981	CNW 628	1994	C&N 5888	2007
SBEC 331	1981	CNW 651	1994	JN 12246	2012
SBEC 565	1981	CNW 667	1994	JN 12250	2012
SBEC 664	1981	CNW 799	1994	JN 12261	2012
SBEC 1058	1981			JN 12349	2012



R. yunnanense

R. yunnanense

What constitutes the *R. yunnanense* taxon?

Following the publication of H. H. Davidian's comprehensive *Revision of the Triflorum Series of Rhododendron* update in *The Rhododendron and Camellia Year Book 1963,* six previously specific species lost their ranking status and were made synonymous under *R. yunnanense,* namely, *R. aechmophyllum, R. chartophyllum, R. pleistanthum, R. seguini, R. strictum* and *R. suberosum*. In their 1978 *Preliminary Synopsis* paper (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), James Cullen and David Chamberlain also sunk *R. hormophorum* into the morass, but 'rather inexplicably' - to quote hands-on doyens Peter and Kenneth Cox (*The Encyclopedia of Rhododendron Species,* 1997) - chose to resurrect *R. pleistanthum.* They also incorporated the non-bristly forms of *R. hormophorum* into the ranks of *R. pleistanthum,* while *R. yunnanense* housed those with loriform-setose hairs*,* although the detail of this was only fully elucidated in Doctor Cullen's comprehensive Subgenus *Rhododendron* revision of 1980 vintage (*Notes,* Volume 39, Number 1).

Another quote from the Cox *Encyclopedia:*

> 'Recent field work has indicated that the presence and absence of bristles can even be found on different branches on the same plant and that there is very little basis for maintaining *R. pleistanthum* at specific status, although it is said to have a more northern and western distribution than typical *R. yunnanense*'.

That advice is followed herein, with *R. pleistanthum* re-sunk under *R. yunnanense*.

1982 saw the publication of the first volume of Davidian's swansong tetralogy *The Rhododendron Species,* which returned specific status to *R. suberosum,* reversing the author's previous synonymous stance. Parking his maintenance of *R. hormophorum* at the same ranking for just a moment, *R. suberosum* was known to be a diploid with 26 chromosomes, while *R. yunnanense* was recorded as a hexaploid with 78. This information was listed in an article titled *Chromosome Numbers In Species Of Rhododendron.* It was authored by E. K. Janaki Ammal, D.Sc., I. C. Enoch, B.Sc., and Margery Bridgwater, and published by the Royal Horticultural Society in *The Rhododendron Year Book 1950.* The actual testing was carried out in the late 1940s, so *R. yunnanense* itself would have been examined under a microscope, rather than one of its soon-to-be synonyms.

> 'In contrast to the gradual evolutionary process whereby new species evolve from isolated populations, new species of plants can arise abruptly. The most common mechanism for abrupt speciation is through the formation of natural polyploids. Once a tetraploid arises in a population, it can generally hybridize with other tetraploids. However these tetraploids are reproductively isolated from their parental species. Tetraploids that cross with diploids of the parental species will result in triploids that are typically sterile. This phenomenon provides a "reproductive barrier" between polyploids and the parental species - a driving force for speciation'.
> *Understanding Polyploidy: Insights into the Evolution and Breeding of Azaleas,*
> Thomas G. Ranney and Jeff R. Jones,
> *The Azalean,* Winter 2008.

The authors of the quoted text above are scientists working at North Carolina State University and the "reproductive barrier" they discuss also holds true for pairings between diploids and hexaploids when the constituent chromosomes are one and the same, with the hexaploid simply having six sets of the same genetic information instead of the two sets present in the diploid. *R. suberosum* cannot therefore be made synonymous under *R. yunnanense,* as per the Edinburgh Revision texts, because the two plants are unable to successfully breed with each other. The Davidian position re-establishing specific status is therefore followed herein, even though the morphology took precedence over the genetics, as the entry for *R. rigidum* in *The Rhododendron Species* (Volume 1), confirms:

> '*R. yunnanense* is a hexaploid with 78 chromosomes or sometimes a tetraploid with 52 chromosomes'.

That this statement flies in the face of the science is obvious now, but such was not at all clear cut when Davidian wrote Volume 1 or Cullen revised Subgenus *Rhododendron,* though for the record, *R. yunnanense* can be one, or the other, but not both.

Another taxon made synonymous under *R. yunnanense* is equally problematical, namely, *R. aechmophyllum*.

Ammal, Enoch and Bridgwater list it as a tetraploid with 52 chromosomes, yet despite this, both H. H. Davidian and James Cullen maintained synonymy.

David Chamberlain examined material from a cultivated plant of *R. aechmophyllum* at Edinburgh Botanic in October 2004. This was grown from Forrest 16790, the type number, and has an RBGE Accession Number of 19190018A. He determined that the plant was not *R. yunnanense,* but an affinity form of that species. This is still less than required given the chromosome counts, so *R. aechmophyllum* has also, herein, correctly been restored to specific status.

Returning to *R. hormophorum:*

H. H. Davidian considered the completely deciduous-leaved shrub a specific species, while James Cullen regarded it as a synonym of *R. yunnanense.* A better option, consistent with the treatment Doctor Cullen adopted for the equally deciduous *R. hardyi* - namely, *R. augustinii* ssp. *hardyi* - would be subspecies ranking under *R. yunnanense,* and this too is adopted herein. Unfortunately, a chromosome count for *R. hormophorum* is unavailable, so this could mean the new combination being broken apart at some future date.

The status of *R. davidsonianum, R. siderophyllum* and *R. tatsienense* must also now be examined:

In Cullen's own words, from the Subgenus *Rhododendron* revision: 'these might well be regarded as subspecies of the one species, as they show reticulate variation and, to some extent, geographical replacement'. Critically moreover, the three are also hexaploids with 78 chromosomes.

In consequence, five new combinations - *R. yunnanense* ssp. *davidsonianum; R. yunnanense* ssp. *hormophorum; R. yunnanense* ssp. *siderophyllum; R. yunnanense* ssp. *tatsienense;* and *R. yunnanense* ssp. *yunnanense* - are adopted herein. A fringe benefit of this arrangement is that it replaces the illegal 'aggregates' and 'alliances' groupings without recourse to a Series pigeonhole.

R. rigidum is not included in this subspecies arrangement as despite the taxon's clear morphological character similarities with *R. yunnanense,* it has been examined and found to be a diploid with 26 chromosomes.

All of the rhododendrons detailed above are closely related, so it is highly likely that one of the diploids - *R. rigidum* or *R. suberosum* - gave rise to the tetraploid - *R. aechmophyllum* - and that this taxon then managed to breed with its parent or another diploid to create a triploid, which is either undiscovered or extinct. It was this triploid - with 39 chromosomes - that suffered an 'abrupt speciation' event during meiosis - when the chromosomes from the egg and the sperm pair up - and so created one of the five hexaploids or their ancestral parent. Because the union of two unreduced gametes would of course double the chromosome count to 78.

A plant gamete - the egg or the sperm - will usually have 13 chromosomes, so when the two are brought together at the moment of conception, the fertilised embryo - the seed

in this case - will have the full compliment of 26. Hence the formula 2*n* = 26, the accepted expression for a diploid plant with thirteen pairs of chromosomes.

An unreduced gamete in the case of a diploid, would see both egg and sperm contain 26 chromosomes, with the plant resulting from that pairing being a tetraploid, where 2*n* = 52. And as Doctors Ranney and Jones state, it can only breed successfully with another tetraploid or self-pollinate.

If chance paired that tetraploid with its own parent, a sterile mule would usually result, this a triploid where 2*n* = 39. No new genetic material was introduced into the egg cell by the sperm during the process and so those thirteen additional chromosomes would actually obstruct meiosis and make the new plant infertile.

However, if the cross involved a diploid that was not the tetraploid's parent, the triploid produced would carry additional genetic information - 26 chromosomes from the tetraploid gamete, plus 13 different chromosomes from the diploid gamete - and this would actually increase the chances that the new plant would be fertile. Furthermore, a likelihood that it would produce unreduced gametes when mature is also increased, because 39 is not happily divided by 2, as a chromosome cannot be cut in half. So self-pollination, induced when a nectar-seeking visitor brushed pollen against the style as it sought its sugary reward at the base of the corolla, would result in a fertile hexaploid where 2*n* = 78.

Hypothetically then, if the diploid *R. rigidum* suffered a genetic hiccup and produced the tetraploid *R. aechmophyllum,* and *R. aechmophyllum* then bred with *R. suberosum,* the resulting *suberosum-aechmophyllum* triploid could easily have produced the hexaploid rhododendron that self-pollination and evolution eventually transformed into the quintet of *R. yunnanense* subspecies that are found on the mountains of southeast China today.

A thorough examination and comparison of all the DNA strands should reveal each of the genetic twists and turns that occurred across the evolutionary development of these eight interconnected rhododendrons, but while such reporting is awaited with bated breath, holding such in anticipation will likely prove baneful, circumstances pertaining.

R. yunnanense itself was first found by Jean-Marie Delavay on April 27th, 1883, at Houang-li-pin in western Yunnan. As usual, dried material was sent back to the Muséum National d'Histoire Naturelle in Paris, the specimens arriving under the field number 293, and Adrien Franchet again wrote the botanic description, his text appearing in Volume 33 of the *Bulletin de la Société Botanique de France,* which was published in 1886. Subsequent collections show the species is widely distributed across the top half of Yunnan Province, where it is very common, often forming single-species rhododendron forest on the hillsides. *R. yunnanense* has also spread into southeast Tibet and Upper Myanmar, as well as southwest Sichuan and Guizhou, and is found as far north as southern Shaanxi. Within this endemic distribution it has a very wide altitudinal range, with populations established at elevations as low as 900m, and from that contour, journeying all the way up to 4,300m, or in pre-metric measurements, 3,000 through 14,000 feet.

As a result, the feature set will vary widely, conforming to the various environmental challenges faced at each locale. Thus, the shrub might be a small, laxly upright tree around 4m in height or a dwarf and tightly compact dome to no more than 0.3m high. Its leaves could be 10cm long by 3cm wide or just 2.5cm in length and 0.8cm broad. And its corollas, 3.5cm in length or merely 1.8cm, with the range of hues flushing those funnels running from white through pink to purple, rose and lavender-blue, though yellow is bypassed.

This variation is all down to the ssp. *yunnanense* hexaploid chromosome count, for these provide the plant with a gamut of additional adaptive, growth and performance skills. Basically, at any given location along one of those DNA stands - known as a locus - a polyploid has more genetic information to exploit. Technically, it is said to be heterozygous. This means that it has a greater degree of biochemical flexibility - it can produce a greater range of enzymes than any of its parents, for instance - and that effectively expands the potential range of differing environments it can exploit.

R. yunnanense ssp. *yunnanense* has evergreen or semi-evergreen leaves. These key it from the completely deciduous-leaved member of the quintet, *R. yunnanense* ssp. *hormophorum*. The abaxial leaf surface scales are distant from one another, between two to six times their own diameter apart, or more rarely, just their own diameter apart. But they are never contiguous. And while still unequal, they are all medium-sized. So as the three other subspecies - *davidsonianum, siderophyllum* and *tatsienense* - all have multiple-sized, unequal scales on their leaf undersides, which are contiguous or almost so, to no more than one, one-and-a-half or more rarely two times their own diameters apart, keying ssp. *yunnanense* from the trio is a practical, if somewhat finicky exercise. Except for one spoke in the wheel: the first of the three taxa listed, ssp. *davidsonianum.* Which may sometimes display abaxial scales up to four times their own diameter apart, but if the medium or large-sized scales present on the leaf also prove an inadequate distinction, the foliage as a whole should come to the rescue, as the leaves usually exhibit a V-shaped profile in cross-section.

Seed sent to Paris by Delavay with the consignment of dried specimens was actually the first introduction of *R. yunnanense* ssp. *yunnanense* into Western gardens, and the Veitch Nursery's entrepreneurial magic and extensive contacts allowed them to pass on a seedling to Kew in 1894, which flowered for the first time during April 1897, this illustrated the following year in *Curtis's Botanical Magazine* (Volume 124, tab 7614, 1898). George Forrest, Frank Kingdon-Ward, Joseph Rock and Te-Tsun Yu, all reintroduced the subspecies on numerous occasions from 1910 through until 1937, with F 4163 and F 5063 potentially arriving at a certain notoriously ineffectual Wirral-based nursery from Forrest's 1904-1906 expedition, while the Sino-British Expedition to the Cangshan terminated a forty-four-year interlude in 1981 with the return of seven separate gatherings. After which the floodgates opened wide and over fifty individual lots poured in until the waters receded in 2012.

Unlike most rhododendron species that have been introduced into British gardens, *R. yunnanense* actually grows taller in cultivation than it does in the wild, often attaining small tree status. However, if stuck in the wrong place, a specimen will become sparse, straggly and be plagued with far more 'water sprout' growths than usual. A short back and sides from a pair of secateurs, or a more drastic assault with a chainsaw, will usually remedy matters, new shoots sprouting from the base or the remaining framework of decapitated branches the following season, but a sunny site, out of the wind, will avoid such draconian practices and produce the best-shaped plants. If enough space is available, expert advice would be to establish multiple youngsters and allow them to develop into a thicket, for as is evident, a mature tree or clump will literally be festooned from head to foot with bloom during May, those forms with crimson-spotted white flowers being simply breathtaking in their majesty and fecundity.

Owners of colder gardens should opt for clones with a high elevation provenance, while rhodophiles domiciled in the drier southern counties of England should seek out the best low altitude forms. As youngsters, all the various types will need that extra bit of mollycoddling to get them through any really bad cold snaps, with even mature specimens likely to suffer bark split if the rising sap is hit by a late spring frost. Otherwise, the plants are vigorous and basically problem free.



R. yunnanense (AC 1109)



R. yunnanense (AC 1332)



R. yunnanense (CH&M 2604)

R. yunnanense (CNW 667)

R. yunnanense (KW 4974)

R. yunnanense (SBEC 60)

R. rigidum

Hardiness:
H4-5.
Flowering Period:
March-May.
Distribution in the wild:
S Sichuan, N & NW Yunnan, China.
Growing in conifer forests, in mixed forests and at forest margins, in open thickets,
amongst boulders on rocky slopes, and on cliffs,
at elevations of 2,000-3,400m.

Identification:
Shrub or small tree, compact and rounded, lax or broadly upright, 0.6 to 10m high;
branchlets rarely lepidote, glabrous or sometimes puberulous;
bark greyish-brown, finely striate.
Leaves evergreen, coriaceous,
elliptic through oblong-elliptic to oblong-lanceolate, oblanceolate or lanceolate,
2.5 to 6.8cm long by 1 to 3.2cm wide,
apex acute, shortly acuminate, rounded or obtuse, and mucronate,
base tapered, rounded or obtuse;
upper surface bluish-green (glaucous bluish-green in young leaves),
rarely lepidote, glabrous,
the midrib glabrous, rarely puberulous;
lower surface pale glaucous green, lepidote, the scales unequal,
medium and large-sized, brown, narrowly rimmed,
four to eight times their own diameter apart,
rarely two or three times their own diameter apart.
Petiole 2-12mm long,
sparsely through moderately lepidote or without scales,
glabrous, rarely puberulous.
Inflorescence terminal, or terminal and axillary in the uppermost one or two leaves,
shortly racemose, loose, 2-6-flowered;
often fragrant.
Rhachis 2-4mm long, lepidote or not, glabrous.
Pedicel 5-20mm long, rarely sparsely through moderately lepidote.
Calyx minute, a mere rim or 5-lobed, these triangular or rounded, and 0.5-1mm long,
their outer surface lepidote or not,
their margins lepidote or not, glabrous or rarely puberulous.
Corolla 1.8 to 3.1cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
white, pink, rose-lavender or reddish-purple,
with olive-brown or purple spots,
the outer surface rarely lepidote, glabrous.
Stamens 10, unequal, exserted;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 2-5mm long, 5-locular,
densely lepidote, glabrous, rarely puberulous at the apex.
Style long, impressed, declinate, slender, longer than the corolla, elepidote.
Capsule oblong, 8-10mm long, lepidote.

Seed Collections:

F 6771	1910	R 11267	1923/1924	CNW 389	1994
F 15578	1917/1919	R 11268	1923/1924	CNW 393	1994
F 15581	1917/1919	R 11288	1923/1924	CNW 789	1994
F 15589	1917/1919	F 28297	1930/1931	AC 1035	1995
F 21533	1921/1922	F 28326	1930/1931	JN 965	1999
R 6525	1923/1924	R 179	1948/1949	JN 12199	2012
		AC 795	1993		



R. rigidum

Peter and Kenneth Cox, writing of *R. rigidum* in their *Encyclopedia of Rhododendron Species,* reported in 1997 that 'after fieldwork in Yunnan, it is hard to accept that this species is any more than a variety of *R. yunnanense*'. Morphologically, while that indeed may be the case, genetically, they are far from two peas that have dropped from the same pod. For *R. rigidum* is a diploid with 26 chromosomes, whereas *R. yunnanense* is a hexaploid with 78, and as Peter himself has written - in 1979's *The Larger Rhododendron Species* - 'this is a limiting factor in hybridization as the different chromosome counts are hard to bridge'. An inability for two plants to breed successfully with one another in the wild would rather rule out their botanic association at subspecies or varietal ranking, or indeed, their synonymy, notwithstanding the precepts of polyploidy, so herein, the specific status of *R. rigidum* is maintained.

Jean-Marie Delavay discovered the species on April 26th, 1884, encountering a population of plants in the limestone gorge of Lan-kien-ho, near the village of Mosoyn, in northwest Yunnan. These were shrubs 2 to 3m in height with rose-coloured flowers and specimens - under the Delavay field number 837 - were returned to the Muséum National d'Histoire Naturelle in Paris for Adrien Franchet to examine, his botanic description of the taxon appearing in Volume 33 of the *Bulletin de la Société Botanique de France,* which was published in 1886.

As with most other rhododendron species, later gatherings were assigned their own epithet and given specific status, even though they were decidedly similar to *R. rigidum* in appearance. Five is the total in this case, and *R. caeruleum* - found by Edouard-Ernest Maire during 1912, on Mo-Tsou Shan, in the northeast of Yunnan; described by Augustin Hector Léveillé in 1913 within Volume 12 of *Repertorium Specierum Novarum Regni Vegetabilis* - is the only member of this now-synonymous quintet to be mourned, this evidenced by labelled plants that still cling to their original epithet as a mark of respect in one or two British gardens, these denoting the 1939 Award of Merit clone.

Distinguishing *R. rigidum* from its subsection cohorts relies on a number of features in combination: the glabrous abaxial midrib; the pale glaucous green lower leaf surface; the rarely lepidote outer surface of the corolla, whose varied hues do not encompass yellow; and the presence of two sizes of scale on the underside of the foliage, medium and large, which are between two and eight times their own diameter apart.

In comparison, the leaves of *R. yunnanense* bear only medium-sized scales, spaced from two to six times their own diameter apart, with the adaxial surface green rather than glaucous bluish-green. Equally telling is the presence of hairs or bristles on the branches and foliage of some forms of *R. yunnanense,* these absent from the *R. rigidum* feature set.

R. oreotrephes and *R. yunnanense* ssp. *tatsienense* may also be morphologically confused with *R. rigidum*. In the case of the former, differences in the leaf and corolla shape will assist an identification, while for the latter, rigid as opposed to leathery leaves, and reddish branchlets rather than bluish-green stems, will help. Both species also sport abaxial scales that are different to those present on *R. rigidum,* these set closer together, indeed, in the case of *R. oreotrephes,* they are often contiguous, while for ssp. *tatsienense,* they are normally just half their own diameter apart, although those distances can spread to four and two times their own diameters, respectively.

R. rigidum was introduced into UK cultivation from the eastern flank of the Cangshan by George Forrest during May 1910, and he reintroduced the species several times before his death in the field on January 5th, 1932. Joseph Rock returned seed from his 1923-24 expedition, as well as from his last trip to China in 1948-49, while Alan Clark was the first modern-day plant hunter to re-encounter the species, securing capsules in Yunnan during 1993. All six subsequent gatherings, through until 2012, were made by either him or Jens Nielsen, separately, or when working as a team with Murray Wilson.

White-flowering clones of *R. rigidum* are the most prized forms of the species grown in British gardens, with two of the three RHS award clones bearing corollas of this hue. Hardiness is sufficient to cope with most UK locales and the plants are free-flowering from a very young age, their habit always neat, whether compact and rounded, laxly upright, or if small tree status is attained. Strangely, one characteristic exhibited by *R. rigidum* is only rarely mentioned: its flowers are often fragrant. And not slightly scented, as some forms of *R. yunnanense* may be, but heavily perfumed, the tangy aroma of a large specimen in full bloom smelt long before the plant is seen in a woodland environment and on a still day, deliciously redolent even when grown out in the open.

Franchet's Latin epithet translates as 'stiff' and references the branchlets.



R. rigidum

R. rigidum (R 11288)



R. rigidum (R 11288)

R. augustinii (W 4238)

R. augustinii* ssp. *augustinii

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
C & E Sichuan, Shaanxi & Hubei, China.
Growing in valley forests, in thickets or forests on slopes, at forest margins,
and amongst rocks on open slopes, at elevations of 1,000-3,400m.

Identification:
Shrub or small tree, upright, 1 to 10m high;
branchlets lepidote, usually densely pubescent, occasionally glabrous;
bark greyish-brown, scaling in oblong flakes.
Leaves evergreen,
lanceolate through oblong-elliptic to elliptic-obovate,
3.3 to 12cm long by 1.1 to 4.5cm wide,
apex acute, acuminate or obtuse, and mucronate,
base tapered or obtuse;
upper surface dark green, lepidote or not, pubescent, the hairs overlying the veins,
the midrib pubescent for part of its length or glabrous;
lower surface lepidote, the scales unequal, medium and large-sized, brown,
half to five times their own diameter apart,
glabrous or pubescent,
the midrib hairy from one-third to its entire length, these hairs long and straight,
extending along the petiole for most of its length.
Petiole 5-14mm long, lepidote,
moderately through densely pubescent, often with long hairs, or glabrous.
Inflorescence terminal, shortly racemose or umbellate, loose, 2-6-flowered.
Rhachis 2-8mm long, lepidote or not, pubescent or glabrous.
Pedicel 6-27mm long, lepidote, puberulous or glabrous.
Calyx minute, a mere rim or 5-lobed,
these triangular or rounded, and 0.5-1mm long, but occasionally 2-4mm long,
their outer surface variably lepidote, pubescent or glabrous,
their margins ciliate, the hairs long, or sometimes glabrous.
Corolla 2 to 4.3cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
violet, lavender-blue, lavender-purple, lilac-purple,
purple, lavender-rose, rose, pink, or white tinged pink,
blotched or spotted yellowish-green, olive-green, purple or ochre,
the outer surface sparsely through moderately lepidote,
glabrous, or pubescent on the tube.
Stamens 10, unequal, long-exserted, variously coloured;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 3-4mm long, 5-locular,
densely lepidote, usually pubescent.
Style long, impressed, declinate, slender, longer than the corolla,
elepidote, puberulous at the base or glabrous.
Capsule oblong, 8-20mm long, moderately through densely lepidote.

Seed Collections:

W 598	1900	SICH 1452	1994	AC 4974	2001
W 1255	1900/1902	C&H 7008	1995	NN 0939	2009
W 608	1906/1909	C&H 7040	1995	CDHM 14576	2010
W 1207	1906/1909	C&H 7078	1995	JN 11013	2011
W 1237	1906/1909	EGM 293	1995	CNC 12096	2012
W 4238	1910/1911	EN 3527	± 1995	CNC 12122	2012
CCH 3921	1989	SICH 2084	1999	JN 12310	2012
CCH 4020	1989	AC 4962	2001	JN 12352	2012



R. augustinii:
pubescent hairs extending down along the leaf abaxial midrib
onto the petiole and then continuing onto a branchlet.

Augustine Henry, officially a medical officer in the Chinese Imperial Maritime Customs Service, was the first Western plant hunter to encounter *R. augustinii,* doing so during September 1886, with the find made in the Patung (Badong) District of Hubei Province, although to be strictly accurate, it was actually one of his trained local collectors - Man Yang - who made the discovery. Dried material was sent to the Royal Botanic Garden, Kew, under the field numbers 1420 and 1421, with an additional gathering made in November 1887, the locale of that find - under Henry 3736 - closer to Ichang (Yichang), where the Irishman was based. Two further collections - Henry 5414 and 5416 - were also returned before his day job involved a transfer to Hainan in 1889.

William Botting Hemsley, keeper of Kew's herbarium and library, used the specimens on the first three sets of plates to describe the new species in Volume 26 of the *Journal of the Linnean Society,* this published in 1890, and in the process, whether justified or not, named the find for Henry, even if he did simply pay for the postage.

R. augustinii, along with its three subspecies, can be keyed from all the other Subsection *Triflora* rhododendrons by the presence of pubescent hairs along the abaxial midrib. Excepting ssp. *rubrum* for the moment, these are long and straight, yellowish-white in colour, and described by the experts as filiform-acicular. Usually present as a densely packed covering, they extend out from the base of the midrib to a point one-third of the way along its spine, or more often, almost to the leaf apex. Travelling the other way, the hairs run along the underside of the petiole as a fringe, and may then carry on down the branchlet. This morphology can also be used to key apart two of the subspecies, for if virtually the whole petiole is spanned, ssp. *augustinii* will be the focus of attention, but if the hairs only venture onto the leaf stalk by a whisker, or not at all, then it will be ssp. *chasmanthum* that is to hand. Confirmation that ssp. *chasmanthum* is indeed the taxon being examined will be further provided by a lack of hairs overlying the veins on the leaf upper surface, a lack of scales on the outer surface of the corolla tube, and the lobes of the corollas being slightly reflexed.

Within the subsection, *R. trichanthum* is the only possible spoke-in-the-wheel as it too may have a pubescent abaxial midrib, but given the plentiful cloak of bristles that adorn virtually every other part of the plant - including the abaxial midrib when the softer hairs are missing - identification should prove to be a breeze.

Equally, the near completely deciduous foliage of *R. augustinii* ssp. *hardyi* will prove to be another no-brainer when keying it from ssp. *augustinii* and ssp. *chasmanthum,* with the white or greenish-white corollas providing an annual, additional assist.

However, returning to the placed-in-abeyance former *R. bergii,* specimens of today's *R. augustinii* ssp. *rubrum* will be found to have two types of hair on the underside of their petioles, the threadlike filiform-acicular variety joined by a more normal, strap-like loriform hair. The leaves will also be found to have a glossy upper surface, while the floral display will feature red-coloured corollas that open three or four weeks in advance of the earliest-flowering plants from the other three subspecies. At least, in UK cultivation.

Paul Guillaume Farges, another of the Roman Catholic priests sent out to China by Missions Étrangères de Paris to champion Western religious fiction over any home-grown brand of inveigled invention, was, like many of his colleagues, also an amateur botanist, and it was he who first introduced *R. augustinii* into cultivation, returning seed to France in 1899. In consequence, the species first flowered at the Arboretum National des Barres, then the test garden of the Vilmorin family's seed business, in 1904. Pipped to the post by just a year, Ernest Wilson's gathering of capsules - made within Augustine Henry's old stomping ground around Hubei - arrived at the Veitch nursery, Chelsea, during 1900. The Englishman also returned seed collected in Sichuan on his later expeditions and the now mature specimens of *R. augustinii* that dazzle visitors to the famous rhododendron gardens of the UK's southern counties, were all grown from those endeavours, because an almost eighty-year hiatus began after Wilson departed China for the last time in 1911. It was ended in 1989, when a team comprising David Chamberlain, Peter Cox and Peter Hutchison re-encountered the species in Sichuan, with close to twenty separate gatherings made on expeditions post that date.

In UK gardens, a cultivation generalisation is often made: the species thrives in the south, grudgingly tolerates sites along the eastern seaboard and up into Scotland, and is decidedly unhappy when set in some of the wetter locales along the west coast. Visitors admiring the specimen plants at Muncaster Castle and Benmore Botanic might conclude that this was complete nonsense, however, all the Subsection *Triflora* rhododendrons tend to opt for fairly dry sites in the wild, so drainage will need to be especially swift when planted in high rainfall areas. In this regard, *R. augustinii* has shown itself to be the most intolerant member of the group in cultivation, with leaf spot an early warning sign that all is not well below ground and that the scheduled maintenance of the discharge flow rate has been inadequate.

Another accepted rule of thumb is that the darker the flower colour, the more tender will be the plant, this adage born out by the fact that paler-coloured forms succeed in the north much better than their deep blue counterparts, even though the flowers and the new growth are regularly frosted. Again, total hokum, except,…

The best clones of *R. augustinii* originate from the gardens at Bodnant, Exbury, Lamellen and Tower Court, with each created by crossing the deepest-coloured forms of the species then available with each other, selecting the darkest-hued plants from those that germinated, and then repeating the process. Ad infinitum. The total number of breeding cycles for each of the clones is unknown, but even Mr F6 himself - the renowned American hybridiser Weldon Delp - would probably have felt dizzy. However, as a direct result of those selective breeding programmes, the named forms have proven to be the least hardy members of the species in cultivation.

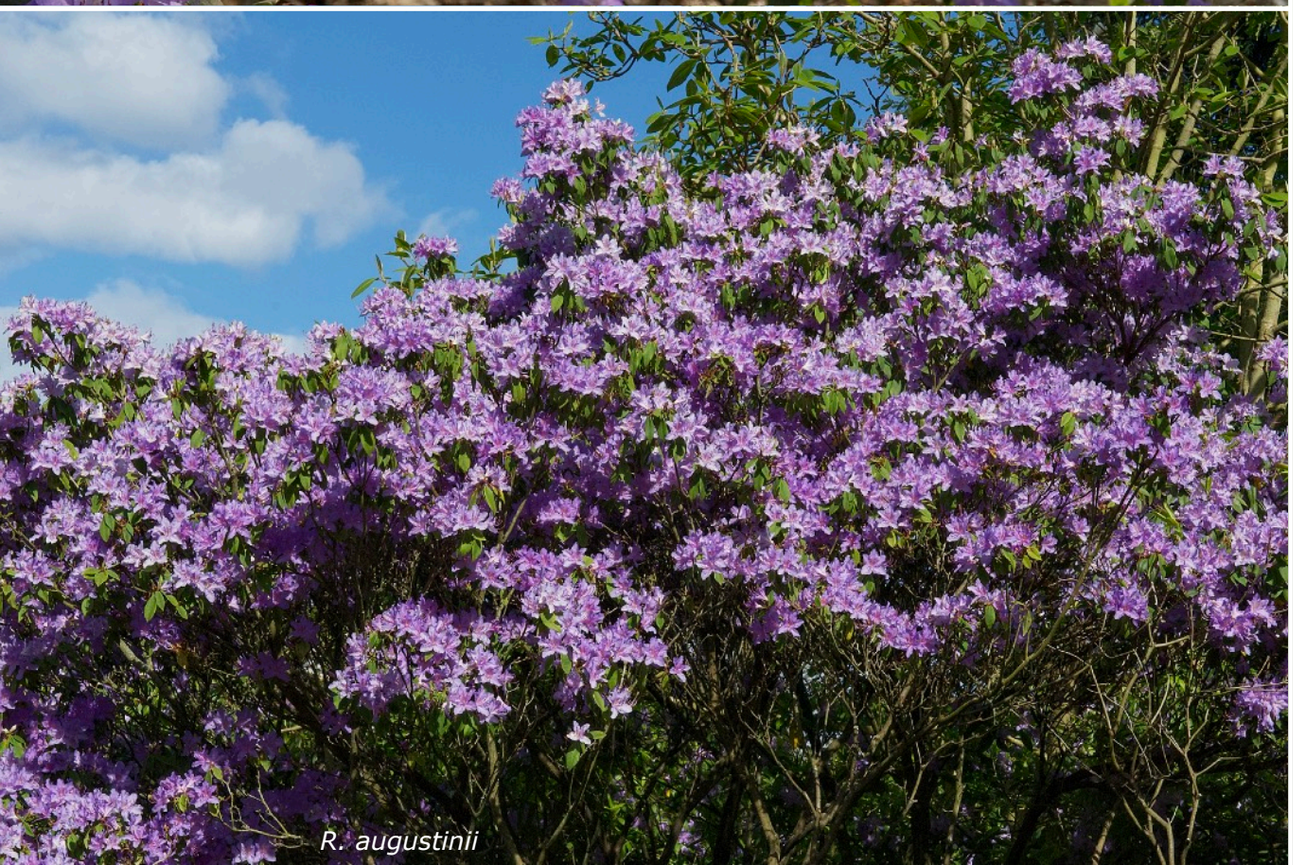
Two other points should also be borne in mind before a prospective purchaser rushes off to the nearest specialist nursery, credit or debit card in hand:

Because the hue of the stamen filaments dramatically effects the visual perception of the corolla colour - a reddish flush deepening purple tones, for instance - if space allows, several different clones should be grown. This practice will also overcome the problem of good and bad bloom years, for it is acknowledged that the pigmentation of an individual plant's corollas will vary over the years, sometimes substantially.

And young plants of *R. augustinii* will be far more tender than the H4-5 rating given above for a mature specimen, so will require extra cosseting to get through a harder-than-normal winter in the first few years after planting.

The type specimen of *R. vilmorinianum,* believed to have been collected in eastern Sichuan by Abbé Farges, was made synonymous under *R. augustinii* ssp. *augustinii* in the Cullen-Chamberlain-authored *Preliminary Synopsis* paper of 1978 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), while the feature set morphology of cultivated plants - raised by Maurice de Vilmorin (after whom the taxon was named) from the seed Farges returned - was included within the botanic descriptions of Balfour, Hutchinson and Davidian. Yet they do not match the dried herbarium material, so are now thought to be natural hybrids between *R. augustinii* and *R. yunnanense,* despite differing chromosome counts that should have ruled out such a match. They have glabrous abaxial midribs, yellowish-white or pink corollas, and despite the recent insertion of a small 'x' into their epithet are 'well worth a place in every garden', to quote the last-named author.


R. augustinii


R. augustinii


R. augustinii



R. concinnum



R. concinnum

R. concinnum

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
W & C Sichuan, Yunnan, Guizhou, Hubei, Gansu, Shaanxi & Henan, China.
Growing in mixed woodland, in thickets on slopes, and on cliffs,
at elevations of 1,500-4,500m.

Identification:
Shrub or small tree, rounded, upright and spreading, or broadly upright, 1 to 4.5m high;
branchlets moderately through densely lepidote, glabrous.
Leaves evergreen,
oblong, oblong-lanceolate through ovate-lanceolate to elliptic,
2.5 to 8.5cm long by 1.2 to 3.5cm wide,
apex acute, shortly acuminate or obtuse, and mucronate,
base rounded or obtuse;
upper surface dark green, glabrous,
sparsely through moderately lepidote, the scales sometimes deciduous,
the midrib moderately through densely puberulous;
lower surface green or pale glaucous green,
densely lepidote, the scales unequal, medium and large-sized,
brown, yellowish-brown or yellowish, often dimorphic in colour, broadly rimmed,
contiguous to half their own diameter apart, rarely their own diameter apart.
Petiole 5-13mm long, densely lepidote.
Inflorescence terminal, or terminal and axillary in the uppermost one or two leaves,
shortly racemose, loose, 2-5-flowered.
Rhachis 2-5mm long, lepidote, puberulous or glabrous.
Pedicel 4-18mm long, moderately through densely lepidote.
Calyx minute, a mere rim or 5-lobed,
these triangular or rounded, rarely oblong or lanceolate,
and 0.5-1.5mm long, rarely 4-6mm long,
their outer surface lepidote, rarely without scales,
their margins lepidote, ciliate, the hairs both loriform and filiform-acicular, rarely glabrous.
Corolla 1.5 to 3.2cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
purple, purplish-red, ruby-red, rosy-purple, purplish-lavender,
deep pinkish, creamy-white tinged purple, or white,
with or without brownish or crimson spots,
the outer surface moderately through densely lepidote, rarely without scales,
glabrous, or sparsely pubescent at the base.
Stamens 10, unequal, exserted;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 2-5mm long, 5-locular,
densely lepidote, rarely puberulous at the apex.
Style long, impressed, declinate, slender, slightly longer than the corolla,
elepidote, glabrous, rarely puberulous at the base.
Capsule oblong, 10-15mm long, densely lepidote.

Seed Collections:

W 1433	1904	W 3448	1906/1909	SICH 390	1988	EGM 151	1990
W 1524	1904/1905	W 4041	1910/1911	CCH 3925	1989	CEE 102	1991
W 1766	1904/1905	W 4233a	1910/1911	CCH 4029	1989	SICH 820	1991
W 1867	1904/1905	W 4236	1910/1911	Cox 5011	1990	AC 3720	1998
W 1869	1904/1905	W 4241	1910/1911	Cox 5062	1990	SICH 2150	2001
W 1878	1904/1905	McLaren Z 05	1932/1939	Cox 5070	1990	NN 0902	2009
W 1196a	1906/1909	Smith 17920	1934	Cox 5085	1990	JN 12080	2012
W 1201	1906/1909	SICH 163	1988	EGM 107	1990	JN 12290	2012


R. concinnum

R. concinnum was first found growing on Mount Omei (Emei Shan) in China's Sichuan Province during 1886, the Reverend Ernest Friedrich Ludwig Faber being the other party in the encounter. The species was described from Faber's dried specimens by William Botting Hemsley in Volume 26 of the *Journal of the Linnean Society,* which was published in 1890. Subsequently, the rhododendron proved to have a very wide natural distribution, extending from the fringes of Yunnan northwards through Sichuan into Gansu and Shaanxi, and spreading northeast through Guizhou into Hubei and Henan. In consequence, the list of once specific species, varieties and forms now made synonymous under the *R. concinnum* epithet is exceptionally long and the plant's morphological feature set distinctly varied.

That said, a glabrous abaxial midrib, a pale green or pale glaucous green lower leaf surface, and a corolla that is basically purplish-red in colour and lepidote on the outside, along with a glabrous petiole, will key the species from its Subsection *Triflora* cohorts. At least, in UK cultivation. The taxon is most closely allied to *R. amesiae,* but unlike that species, does not sport any bristles on its leaf stalks. However, it is nigh impossible to distinguish *R. concinnum* from *R. ambiguum* when out of flower, and if the latter did not have yellow coloured flowers, the two would have been merged many years ago, especially as they are both tetraploids with 52 chromosomes. But in this case, the different corolla hues indicate a biochemical difference between the pair and this currently sustains their continued specific species status.

Après publication of the Edinburgh Revision, the RHS Horticultural Group system was used to preserve two of the many epithets that were sunk, namely: Benthamianum Group, with lavender-purple blooms, distinctly colour-dimorphic scales on the leaf underside - dark brown and golden - and usually paler green foliage; and Pseudoyanthinum Group, with the darkest-coloured, ruby-red and reddish-purple corollas, in combination with usually larger oblong-lanceolate leaves.

Ernest Wilson was the first plant hunter to introduce the species into British gardens, returning seed on his second Veitch-sponsored expedition to Sichuan in 1904, and later on during both of his Arnold Arboretum-backed trips. In fact, he was the only collector to encounter the species until George Forrest's trained team of locals returned a single batch of seed during the 1930s when they were in the employ of Bodnant's Henry McLaren; and the Swedish-American botanist Karl August Harald 'Harry' Smith discovered the species to be a resident of Gansu Province during 1934. Fifty-four years later in 1988, the Howick Hall-Kew-Quarryhill expedition reintroduced *R. concinnum* from Sichuan Province under two numbers - SICH 163 and SICH 390 - after which a further sixteen lots arrived from various plant hunting teams through until 2012.

The epithet - 'neat' is the translation - reflects the habit, a well-filled dome or broadly upright bush to around 2.5m high, with some specimens in more favourable sites along the west coast attaining small tree status and topping 4m in height. Specimens are perfectly hardy for the UK's maritime climate, can be planted in full sun or partial shade, and are usually vigorous, growing away without any problems, plus they are free-flowering from a young age. The clones of *R. concinnum* most often found in cultivation are those with purple, ruby-red or lavender-purple corollas, though forms with pink, white, or white flushed purple blooms may also adorn a species collection.

Reports of suspected *R. concinnum* natural hybrids on the ground in Sichuan Province or elsewhere are scarce, apart from those involving *R. ambiguum* or *R. oreotrephes,* which is decidedly strange as rogues have repeatedly germinated in batches of returned seed, their features suggesting matings with the prime *R. augustinii* subspecies, as well as with *R. yunnanense* ssp. *davidsonianum*.


R. concinnum


R. concinnum

R. concinnum

R. hormophorum

R. yunnanense* ssp. *hormophorum

Hardiness:
H4-5.
Flowering Period:
May.
Distribution in the wild:
SW Sichuan & NW Yunnan, China.
Growing in forests, in thickets, amongst scrub,
in dry open situations, and on ledges and cliffs, at elevations of 2,400-4,000m.

Identification:
Shrub, upright and spreading, or broadly upright, 0.3 to 4.9m high;
branchlets lepidote, puberulous or glabrous (rarely).
Leaves completely deciduous,
lanceolate through oblanceolate,
2.8 to 7.3cm long by 1 to 2.4cm wide,
apex acute, and mucronate,
base tapered;
upper surface bright green or dark green, sparsely through moderately lepidote,
bristly or not, puberulous or glabrous,
the midrib puberulous or glabrous,
the margins bristly or not;
lower surface pale glaucous green or green, lepidote, the scales unequal,
medium-sized, brown or yellowish, narrowly rimmed or flat,
three to six times their own diameter apart, rarely two times their own diameter apart.
Petiole 3-10mm long, lepidote, bristly or not, puberulous.
Inflorescence terminal, or terminal and axillary in the uppermost one or two leaves,
shortly racemose, loose, 3-6-flowered,
the blooms precocious (opening before the new leaves extend).
Rhachis 2-4mm long, lepidote or not, puberulous or glabrous.
Pedicel 3-21mm long, lepidote or not.
Calyx minute, a mere rim or 5-lobed, these triangular or rounded, and 0.5mm long,
their outer surface moderately through densely lepidote or without scales,
their margins lepidote or not, ciliate or puberulous or glabrous.
Corolla 1.6 to 3.1cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
white, white flushed pink, rose, rose-lilac or lavender,
with or without olive-green, olive-brown, rose, crimson or orange spots,
the outer surface lepidote or not,
the lobes sometimes moderately lepidote, glabrous.
Stamens 10, unequal, exserted;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 2-4mm long, 5-locular,
densely lepidote, glabrous.
Style long, impressed, declinate, slender, elepidote.
Capsule oblong, 8-13mm long, densely lepidote.

Seed Collections:

F 5874	1910	R 23332	1932
F 16362	1917/1919	R 25327	1932
F 16816	1917/1919	R 25381	1932
F 19701	1921/1922	Yu 15014	1937
F 20485	1921/1922	CLD 652	1990
R 11422	1923/1924	SICH 1124	1992


R. hormophorum

The first Westerner to encounter *R. hormophorum* on the ground in the wild was the French missionary priest Jean-Marie Delavay, who collected specimens in northwestern Yunnan during April 1887, and again in April 1888, but unfortunately, these were not correctly identified as a new species when examined at the MNHN herbarium in Paris. The rhododendron was next collected by George Forrest, also from a population in Yunnan, but on an ascent of the Sung-kwei pass in the Lankong valley during April 1906. These too were incorrectly assessed - as *R. chartophyllum* forma *praecox,* by Friedrich Diels in 1912. Forrest's three 1910 collections of the species - F 5844, F 5846 and F 5874 - were also wrongly determined and continuing the catalogue of errors, a Heinrich von Handel-Mazzetti 1914 find under the field number 2153, which extended the species distribution into western Sichuan, was also misconstrued. Finally, in June 1918, material gathered in the Litang valley of Sichuan's Muli Mountains by Forrest, convinced Isaac Bayley Balfour that something unique had been found and the two men penned a botanic description for *R. hormophorum* - 'bearing a necklace' - that appears in 1920's Volume 12 of *Notes from the Royal Botanic Garden, Edinburgh,* the type number assigned to Forrest 16265.

It will come as no surprise therefore to know that *R. hormophorum* 'shows a strong resemblance to *R. yunnanense* in habit and height of growth, in the shape and size of the leaves, and in the shape, size and colour of the flowers' to quote from the entry in Volume 1 of H. H. Davidian's *The Rhododendron Species,* published in 1982. However, 'it differs markedly in that the leaves are completely deciduous, and the flowers are precocious'.

So, no problem with the keying then, as the only likely fly in the ointment will be *R. augustinii* ssp. *hardyi,* which can be distinguished by its hairy abaxial midrib, this feature being glabrous on the *R. hormophorum* leaf.

Yet the Subgenus *Rhododendron* revision, written by James Cullen and occupying the entirety of 1980's *Notes,* Volume 39, Number 1 - following on, of course, from the 1978-published *Preliminary Synopsis* paper he authored with David Chamberlain (*Notes, V*olume 36) - declared that 'there was no justification for the separation of the deciduous variants as *R. hormophorum*' and so maintained the sinking of the taxon under *R. yunnanense* first proposed two years earlier. But if you turn from page 68 to page 74 in the Volume 39 text and peruse the entry for *R. hardyi,* which Doctor Cullen had already indicated would be made a subspecies of *R. augustinii* in Volume 36, you will learn that it is 'a very handsome shrub, separated from subsp. *chasmanthum* by characters that are not entirely clear cut (deciduousness of leaves, corolla colour)'.

But separated it was.

Unlike *R. hormophorum*.

A clearer goose-gander case would be hard to find, so *R. hormophorum* is herein rescued from obscurity and placed as a subspecies of *R. yunnanense,* with the also sunk *R. chartophyllum* forma *praecox* shifting its synonymy accordingly. This move also respects the nomenclature precedence rules for despite a 1912 inauguration being swallowed up by a 1920 conception, the epithet *R. x praecox* was published during 1878 in *The Gardeners' Chronicle,* Volume 9, page 335, and so the Diels duplication is illegal within the genus and decidedly frowned upon by the botanic powers that be.

Officially *R. yunnanense* ssp. *hormophorum* was introduced into UK cultivation from Sichuan in 1918. Forrest 16816 is the given seed number, this recorded as flowering for the first time at Edinburgh Botanic during 1924. However, botanic history will need to be rewritten once again, following a taxonomic reassessment that declared Forrest's 1910 finds to be ssp. *hormophorum* rather than ssp. *yunnanense*. There is also the faintest of possibilities that viable seed was returned under F 2030 from the Scotsman's 1904-1906 expedition along with the dried material, but only Arthur Kilpin Bulley knows if that is fact or fiction, if germination occurred or not, or if the plants were sold-on or subsequently lost, and an answer to those three questions is unlikely to be forthcoming until the invention of time travel. CLD 652 and SICH 1124, returned in 1990 and 1992 respectively, are certainly completely deciduous in UK cultivation, but are likely not the first reintroductions of the subspecies given that Western botanists have been able to tramp the hills of China since the early 1980s during which time the Cullen synonymy was in force.

The British maritime climate plays havoc with the leaves of course, Davidian reporting that they are 'shed gradually in March and April, and by about the end of May the whole plant is completely deciduous'. But if mild conditions have prevailed over the winter, some of the foliage will still be firmly attached when the flowers open. At which point, irrespective of the degree of leaf retention, the display put on by a mature shrub will be eye-catching, with specimens free-flowering from a young age and hardy enough to thrive in most UK gardens, though the usual 'with shelter' proviso applies to those colder sites along the east coast and inland.



R. hormophorum (F 20485)



R. hormophorum (CLD 652)



R. hormophorum (SICH 1124)



R. hormophorum

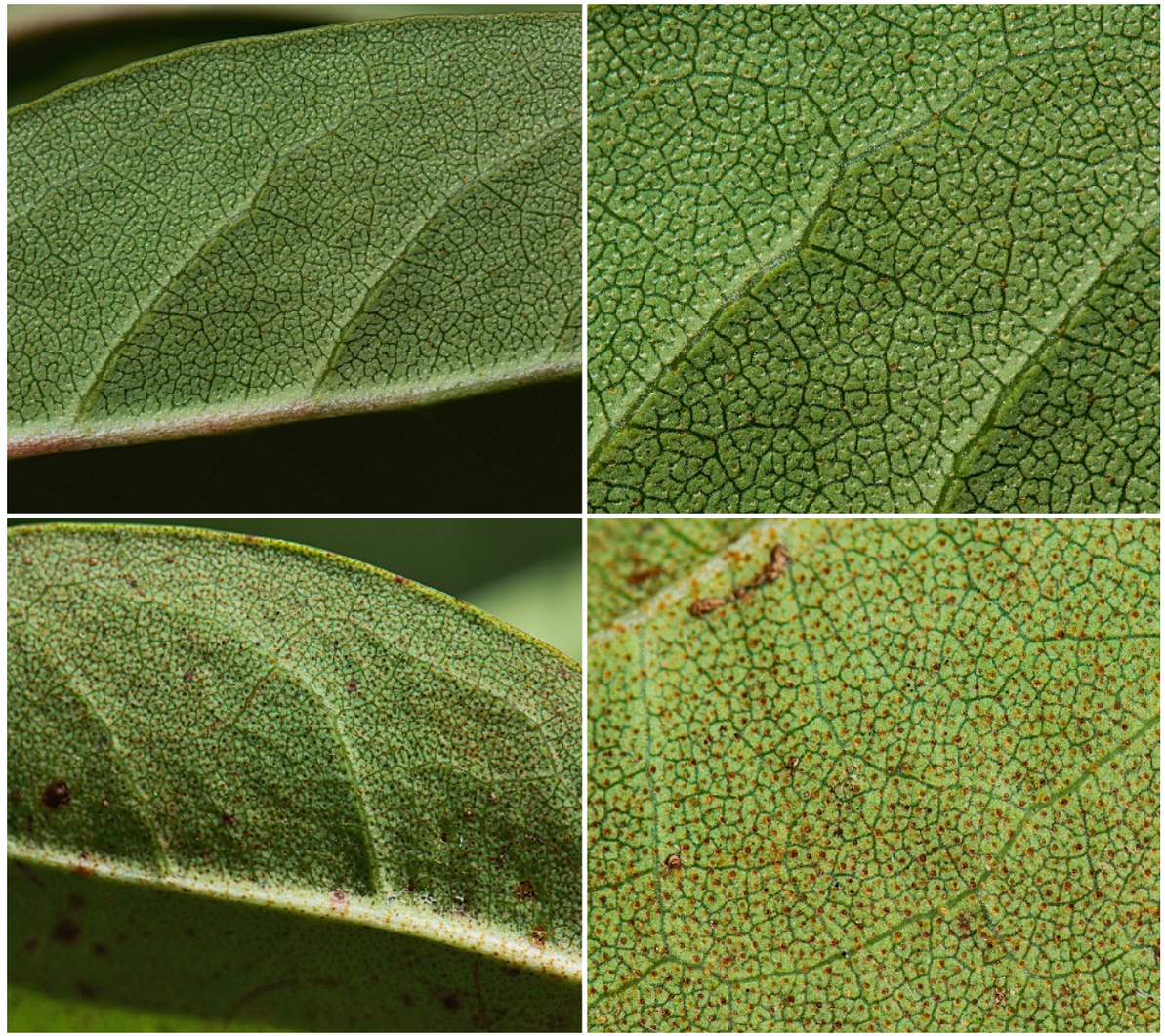
R. yunnanense* ssp. *siderophyllum

Hardiness:
H4-5.
Flowering Period:
March-May.
Distribution in the wild:
SW Sichuan, NE, C & S Yunnan, & Guizhou, China.
Growing in dry woodland on hillsides, in thickets and scrub, and on open ridges,
at elevations of 840-3,400m.

Identification:
Shrub or small tree, compact and rounded, or broadly upright, 0.9 to 8m high;
branchlets brownish, moderately through densely lepidote, glabrous or puberulous (rarely).
Leaves evergreen,
lanceolate through ovate-lanceolate to elliptic,
oblong-lanceolate to oblong-oval to near orbicular,
3 to 11cm long by 1.2 to 4.1cm wide,
apex acute, acuminate or obtuse, and mucronate,
base tapered, rounded or obtuse;
upper surface pale greyish-green, matt, lepidote, glabrous,
the midrib puberulous or glabrous;
lower surface lepidote, the scales unequal,
small and medium-sized, or medium-sized and large,
brown, broadly rimmed, flat or concave,
the darker centre making up less than half the diameter of the scale,
almost contiguous to one-and-a-half times their own diameter apart.
Petiole 6-15mm long, densely lepidote.
Inflorescence terminal and axillary in the uppermost one or two leaves,
rarely just terminal, shortly racemose,
dense, several buds often forming a compound truss, 3-6-flowered.
Rhachis 2-4mm long, lepidote, glabrous or sometimes puberulous.
Pedicel 3-15mm long, rarely to 21mm long,
moderately through densely lepidote, glabrous or puberulous (rarely).
Calyx minute, a mere rim or 5-lobed,
these lanceolate, triangular or rounded, and 0.5-1mm long, rarely to 2mm long,
their outer surface moderately through densely lepidote,
their margins moderately through densely lepidote, glabrous or ciliate (rarely).
Corolla 1.5 to 3cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
white, pale pink or pink, rose, pale lavender-violet or purple,
with or without yellow or rose spots,
the outer surface elepidote, the lobes sometimes sparsely through moderately lepidote,
or more rarely the tube and lobes lepidote, glabrous.
Stamens 10, unequal, exserted;
filaments puberulous towards the base or sometimes glabrous.
Ovary conoid or oblong, 3-4mm long, 5-locular, densely lepidote.
Style long, impressed, declinate, slender, longer than the corolla,
elepidote, glabrous, rarely puberulous at the base.
Capsule oblong, 10-16mm long, densely lepidote.

Seed Collections:

McLaren AA 16	1932/1939	CNW 1304	1994	AC 2009	1996
KR 337	1980	AC 832	1995	AC 2094	1996
SBEC K064	1981	AC 833	1995	AC 4312	1999
SBEC K161	1981	AC 1217	1995	KR 7728	2004
CNW 1112	1994	EGM 333	1995	C&N 5958	2007
CNW 1303	1994	EGM 346	1995	C&N 5968	2007



R. siderophyllum

New Leaf	Viewed Up Close
Mature Leaf	Viewed Up Close

R. siderophyllum (AC 1217)

A number of authors credit Emile Marie Bodinier and François Ducloux, two French missionary priests based in China's Yunnan Province during the 1890s, with the discovery of *R. siderophyllum* in early March 1897, but in fact, two of their MEP colleagues had already encountered the species by then, as well as returned dried herbarium material to the Muséum National D'Histoire Naturelle in Paris, namely: Jean-André Soulié, who made his gathering at Tsekou (Chigu), on May 9th, 1895, under the field number 1013; and Jean-Marie Delavay, who actually gets the credit for the premier find, as his encounter took place sometime between March and May, 1891. Adrien Franchet described the new species in Volume 12 of the *Journal de Botanique,* which was published in 1898, and although his text on page 262 does not include the collection dates, these can be confirmed from the online herbarium sheets for *R. siderophyllum* on the MNHN website.

The species is obviously very closely related to *R. davidsonianum, R. hormophorum, R. tatsienense* and *R. yunnanense,* and is herein treated as a subspecies of the latter, as of course, are the former three.

The larger leaves, greyish-green and matt above, the brownish branchlet colour, and the compound inflorescences all assist in keying *R. yunnanense* ssp. *siderophyllum* from *R. yunnanense* ssp. *tatsienense,* which is probably its closest ally even though their endemic distributions do not overlap (on the ground, that of ssp. *siderophyllum* is well to the south of the ssp. *tatsienense* range). The more distant separation of the scales on the abaxial leaf surface of ssp. *yunnanense* is distinctive, as is the completely deciduous foliage of ssp. *hormophorum,* while the V-shaped cross-sectional profile that is adopted by the leaves of ssp. *davidsonianum* contrasts with the flat lamina of ssp. *siderophyllum,* though one or two recently introduced clones buck that precept and also have pale pink flowers.

The endemic altitudinal range spanned by *R. siderophyllum* begins from a base on the 840m contour and only ascends to 3,400m, which means that some cultivated forms will be borderline tender in British gardens, with others closer to the H4 minimums than to those of H5, and certainly overall, they are the least hardy members of the *R. yunnanense* subspecies quintet. Furthermore, despite a body of expert opinion coalescing on a May flowering date, many specimens opt for March or early April, with Exbury's Award of Merit clone one of these. As a consequence therefore, *R. siderophyllum* should be provided with a well-sheltered and cosy position in the garden, even if it is known to have come from higher elevations. It will also need swift drainage, as in the wild, dry wooded hillsides are its ideal site of preference.

The subspecies is free-flowering from an early age, and those forms graced with the largest clusters of pure white or white flushed pink corollas are an absolutely splendid sight when mature specimens are covered in bloom from head to foot.

Prior to 1980, *R. yunnanense* ssp. *siderophyllum* had only been introduced into the UK's gardens on one occasion: in the 1930s; with the seed gathered by Forrest's trained team of local collectors when they were in the employ of Henry McLaren; under the field number AA 16. Two actual Forrest introductions, from 1918 and 1921 - F 15129 and F 20648 respectively - are no longer considered to represent the subspecies, with the doyens believing the latter to be a *R. tatsienense* x *R. siderophyllum* pairing, while the usual set of disclaimers come with two 1904 Forrest field numbers - F 507 and F 689. Keith Rushforth was the modern-day plant hunter who set the reintroduction ball rolling with a gathering made in Sichuan during 1980, and some eighteen lots followed his lead through until 2007, with Alan Clark's 1995 collections from Yunnan resulting in some especially fine plants.



R. siderophyllum (AC 832)



R. siderophyllum (AC 1217)

R. siderophyllum

R. davidsonianum

R. yunnanense* ssp. *davidsonianum

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
W & SW Sichuan, & NW Yunnan, China.
Growing in coniferous forest, open areas in forest and at forest margins, in thickets, alongside streams and on cliffs, at elevations of 1,500-3,600m.

Identification:
Shrub or small tree, upright and spreading, or broadly upright, 0.6 to 5m high;
branchlets greenish or brownish, moderately through densely lepidote,
minutely puberulous or glabrous;
bark yellowish-brown with age.
Leaves evergreen, the lamina often V-shaped,
lanceolate, rarely oblong-lanceolate or oblong,
2.3 to 7.8cm long by 0.8 to 2.6cm wide,
apex acute, rarely obtuse, and mucronate,
base tapered or obtuse;
upper surface bright green or dark green, somewhat shiny,
sparsely through moderately lepidote, glabrous,
the midrib puberulous or glabrous;
lower surface pale green, lepidote,
the scales unequal, medium and large-sized, brown or yellowish-brown,
narrowly rimmed, the darker centre making up more than half the diameter of the scale,
almost contiguous to their own diameter apart,
rarely up to 4 times their own diameter apart.
Petiole 3-10mm long, moderately through densely lepidote,
minutely puberulous or glabrous.
Inflorescence terminal, or terminal and axillary in the uppermost one or two leaves,
shortly racemose, 3-6-10-flowered.
Rhachis 2-4mm long, lepidote or not, glabrous or puberulous (rarely).
Pedicel 6-18mm long, moderately through densely lepidote,
glabrous or minutely puberulous (rarely).
Calyx minute, a mere rim or 5-lobed, these triangular or rounded, and 0.5-1mm long,
their outer surface moderately through densely lepidote,
their margins glabrous or ciliate (rarely).
Corolla 1.9 to 3.3cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
white, white flushed pink, pink, deep rose, pale lavender, purple or pale purplish-pink,
with or without purple or red spots,
the outer surface lepidote or not, glabrous.
Stamens 10, unequal, exserted;
filaments puberulous towards the base.
Ovary conoid or oblong, 2-4mm long, 5-locular, densely lepidote.
Style long, impressed, declinate, slender, longer than the corolla,
elepidote, glabrous, or sometimes puberulous at the base.
Capsule oblong, 6-18mm long, densely lepidote.

Seed Collections:

W 1535	1904	Cox 5035	1990	SICH 1065	1992
W 1779	1904	Cox 5040	1990	SICH 1409	1994
W 1274	1906/1909	Cox 5091	1990	AC 2081	1996
W 1275	1906/1909	EGM 149	1990	AC 2085	1996
W 1276	1906/1909	H&M 1414	1990	AC 4159	1998
W 1352	1906/1909	SICH 531	1991	AC 4162	1998
W 4239	1910/1911	SICH 533	1991	SICH 2064	1999
W 4280	1910/1911	SICH 622	1991	SICH 2182	2001
KW 260	1913	SICH 685	1991	CNC 12027	2012
McLaren AG 395	1932/1939	SICH 1026	1992	JN 12065	2012
Cox 5009	1990	SICH 1045	1992	JN 12083	2012


R. davidsonianum - new leaf


R. davidsonianum - mature leaf

R. davidsonianum was found near Tatsienlu (Kangding), in western Sichuan, by Jean-André Soulié during April 1892, with his herbarium specimens returned to Paris and the Muséum National d'Histoire Naturelle under field number 491, but unfortunately, they were misidentified as *R. chartophyllum* (now made synonymous under *R. yunnanense*). In May 1908, Ernest Wilson rediscovered the species while on his second Arnold Arboretum-funded expedition and gathered dried material under W 1275, with this collection designated as the type specimen.

Yet Wilson too had suffered from his specimens being wrongly identified, for in fact, he had returned herbarium material and seed of *R. davidsonianum* as early as July 1903. These muddles are all set out in Volume 1 of *Plantae Wilsonianae,* published in May 1913, which contains the botanic description the plant hunter jointly wrote with Alfred Rehder. Wilson's chosen epithet is an honorific for Doctor W. Henry Davidson, of the Friends Foreign Mission, located at Chengtu Fu (Chengdu), in western Sichuan, and was gifted 'in grateful recognition of the important services which he rendered to me after my serious accident in the early autumn of 1910'. Hit by an avalanche of boulders, Wilson's sedan chair was carried back along the trail by the rocks, which crushed his leg in the process. A camera tripod was used to reset the leg at the accident site and his native porters then carried him back to Chengtu Fu on a three-day forced march. At the time of the mishap, Wilson had been in the midst of collecting bulbs of *Lilium regale* in the Min valley, so from then on he walked with what he called his 'lily limp'.

R. davidsonianum currently has just one synonym, but it is problematical:

R. charianthum was sunk under the species by H. H. Davidian in his *Revision of the Triflorum Series of Rhododendron* text published in *The Rhododendron and Camellia Year Book 1963*. James Cullen maintained this status in his two Subgenus *Rhododendron* revision papers (the *Preliminary Synopsis* text in *Notes from the Royal Botanic Garden, Edinburgh,* Volume 36, 1978, which was written with David Chamberlain, and the full-blooded version in *Notes,* Volume 39, Number 1, 1980), however, because *R. charianthum* is a 2*n* = 52 tetraploid, while *R. davidsonianum* is a 2*n* = 78 hexaploid - as documented in the article *Chromosome Numbers In Species Of Rhododendron,* by E. K. Janaki Ammal, D.Sc., I. C. Enoch, B.Sc., and Margery Bridgwater, this published by the Royal Horticultural Society in *The Rhododendron Year Book 1950* - it cannot be allowed to stand.

In his 1916 description of the species for Volume 142 of the *Botanical Magazine,* tab. 8665, John Hutchinson writes that the plant was 'raised at Kew from seeds received from the Arnold Arboretum early in 1909'. These came from Ernest Wilson's W 1274 gathering of *R. davidsonianum,* so clearly a rogue germinated in the seed pan, the ploidy change confirming such even though its supposed character differences - densely red-spotted corollas and a pubescent style - were actually shared by members of the wider population of the parent plant - to such a degree that two eminent botanists who were often in taxonomic conflict, considered them identical, and placed one in synonymy under the other. However, the 2*n* = 52 stipulation requires that *R. charianthum* be treated separately.

Accepted practice with regard to seed pan rogues is to now designate them as natural hybrids and that practice is followed herein by the creation of *R. x charianthum*.

R. davidsonianum is closely allied to *R. yunnanense,* to *R. siderophyllum,* and to *R. tatsienense,* with all four species previously grouped together in the old Yunnanense Subseries of the Balfourian taxonomy, as well as being associated in numerous 'aggregates' and 'alliances' conceived by other authors (these illegal under the ICNAFP rules). The taxa have also been described as an 'intergrading microspecies' because their character feature sets overlap, as do parts of their wild populations, though there is some geographic separation on the ground, *R. davidsonianum* having a more northerly endemic distribution, for instance. But taking account of these factors and mirroring the taxonomic treatment applied to similar species associations in countless other subsections - both lepidote and elepidote - all are herein reduced to subspecies of *R. yunnanense,* which was described in 1886 and so takes precedence. Each of the four is a hexaploid with 78 chromosomes, so genetically, such a coalition presents no problems as all its members can successfully interbred with each other, producing a host of fertile offspring.

R. yunnanense ssp. *davidsonianum* has foliage that more often than not adopts a V-shaped profile in cross-section, is without bristles, and has an abaxial leaf surface that is densely lepidote. These scales are possessed of darker centres and set nearly contiguous to each other, or their own diameter apart, but may sometimes be up to four times their own diameter apart. The shrub's branchlets are greenish or brownish in hue, not reddish as in ssp. *tatsienense,* which in addition, usually has smaller corollas. However, these are not hard and fast morphologic distinctions, but generalities, so misidentifications are common, both historically - as illustrated above - and contemporarily. The key set out below should, however, separate ssp. *davidsonianum* from its Subsection *Triflora* cohorts, if a specimen being examined adheres to all the points:

1 - A glabrous abaxial midrib, with the leaf lower surface pale green, brown or pale glaucous green.

2 - A white, pink, rose or pale lavender corolla, its outer surface without scales or only sparsely scaly.

3 - The leaf lower surface scales usually contiguous or almost so.

4 - The leaf upper surface dark or bright green and somewhat shiny, the lamina often V-shaped.

5 - The leaf lower surface scales medium or large.

6 - The inflorescence terminal, or terminal and axillary in the uppermost one or two leaves, 3-6-flowered, more rarely to 10-flowered.

That penultimate edict keys ssp. *davidsonianum* from both ssp. *siderophyllum* and ssp. *tatsienense,* both of which have small to medium-sized abaxial scales, though those on the *siderophyllum* leaf may also be medium to large. The compound inflorescences of *R. siderophyllum* are also distinctive, while *R. tatsienense* forms axillary flower buds in its uppermost three leaves. The lower leaf surface scales of *R. yunnanense* are usually set 2 to 6 times their own diameter apart, but may occasionally be just their own diameter apart, though they are never contiguous. And of course, *R. hormophorum* has deciduous foliage.

Seed of ssp. *davidsonianum* was actually introduced by Wilson during 1904, under the Veitch expedition field numbers W 1535 and W 1779, with six additional gatherings made and returned up until 1911. Kingdon-Ward found the subspecies in 1913, while Forrest's trained collectors came upon it in the 1930s when employed by Henry McLaren. The reintroduction credit goes to Peter Cox, who returned seed from Sichuan in 1990.

White or pink flowering forms of the subspecies are those most often found in British gardens, these hardy, but requiring shelter inland and along the east coast. The FCC plant from Bodnant - now officially registered as 'Bonfires of Delight' - is one of the more tender clones, but still performs well if cossetted away from winter's coldest chills. The best clones of *R. davidsonianum,* with their deeply-hued floral displays, can easily rival or surpass those of *R. yunnanense,* and they begin doing so from a very early age. Moreover, the shrub is vigorous, often forming a small tree if allowed, but it can be cut back hard if circumstances dictate, as it will usually sprout from the base the following season.

The 2004 *International Rhododendron Register and Checklist,* lists the 1993 Award of Merit clone 'Ruth Lyons' not as a *R. davidsonianum* selection, but as a *R. davidsonianum* x *R. triflorum* pairing, with James Barto credited as the hybridiser.



R. davidsonianum ‘Bonfires Of Delight’



R. davidsonianum



R. davidsonianum (W 1274)

R. yunnanense* ssp. *tatsienense

Hardiness:
H4-5.
Flowering Period:
March-May.
Distribution in the wild:
N, W & SW Sichuan, N & NW Yunnan, & Guizhou, China.
Growing at forest margins, in thickets and scrub,
alongside streams, and in open areas, at elevations of 2,100-4,250m.

Identification:
Shrub, spreading, laxly upright or broadly upright, 0.3 to 5m high;
branchlets deep crimson or deep crimson-purple,
moderately through densely lepidote, glabrous or puberulous (rarely);
bark brown, striate.
Leaves evergreen, coriaceous, rigid,
elliptic, ovate, obovate or oblong-lanceolate,
1.6 to 7cm long by 1 to 3.1cm wide,
apex rounded or obtuse, rarely acute, and mucronate,
base rounded or obtuse, rarely cuneate;
upper surface dark green, shiny, moderately through densely lepidote,
the scales dried-out, but rarely without scales, glabrous,
the midrib puberulous or glabrous;
lower surface pale green or pale glaucous green,
variably lepidote, the scales unequal,
small and medium-sized, brown, narrowly rimmed,
the darker centre making up more than half the diameter of the scale,
half to their own diameter apart, rarely two times their own diameter apart.
Petiole 3-14mm long, moderately through densely lepidote,
glabrous or puberulous (rarely).
Inflorescence terminal, or terminal and axillary in the uppermost one to three leaves,
shortly racemose, loose, 1-6-flowered.
Rhachis 2-3mm long, lepidote, glabrous or puberulous (rarely).
Pedicel 4-19mm long, moderately through densely lepidote,
glabrous or puberulous (rarely).
Calyx minute, a mere rim or 5-lobed, these triangular or rounded, and 0.5-1mm long,
their outer surface lepidote,
their margins lepidote, rarely without scales, glabrous or ciliate (rarely).
Corolla 1.4 to 2.5cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
purple, rose-lavender, rose, rose-pink or whitish,
with or without red spots,
the outer surface sparsely through moderately lepidote, rarely without scales, glabrous.
Stamens 10, unequal, exserted;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 2-4mm long, 5-locular, densely lepidote.
Style long, impressed, declinate, slender, longer than the corolla, elepidote,
glabrous or sometimes puberulous at the base.
Capsule oblong, 6-14mm long, densely lepidote.

Seed Collections:

F 11299	1912/1914	F 20482	1921/1922	R 10572	1923/1924	CEE 334	1991
F 15204	1917/1919	F 20486	1921/1922	F 29331	1930/1931	EGM 321	1995
F 15263	1917/1919	F 21252	1921/1922	L 951	1981	SICH 2133	2001
F 15446	1917/1919	F 21270	1921/1922	CHM 2652	1986	NN 0941	2009
F 16249	1917/1919	F 21442	1921/1922	H&M 1553	1990	JN 12294	2012



R. tatsienense (H&M 1553)

R. tatsienense was found by Jean-André Soulié growing close to Tatsienlu (Kangding) in western Sichuan during 1893. It was described by Adrien Franchet in 1895's Volume 9 of the *Journal de Botanique,* and like its close morphologic and genetic associates, is treated herein as a subspecies of *R. yunnanense,* the field reporting and chromosome count data that underlies the ranking reduction mirroring that detailed for its fellows.

Broader leaves and smaller corollas visually distinguish specimens of *R. yunnanense* ssp. *tatsienense* from those of ssp. *siderophyllum*, especially when viewed in combination with an upper leaf surface that is dark green and shiny, not greyish-green and matt, and foliage that is usually rigid and leathery. The colour of the branchlets also assists with the keying, a reddish-crimson hue distinguishing the shrub from both ssp. *siderophyllum* and ssp. *davidsonianum,* which have greenish or brownish young shoots. The small to medium-sized abaxial scales and the usually flat leaf blades are in contrast to the medium and large-sized scales and V-shaped blades of ssp. *davidsonianum,* although some forms of ssp. *tatsienense* have leaves graced with a gently curved, concave profile.

Only medium-sized scales will be found on the underside of the ssp. *yunnanense* leaf and each of these will be set from two to six times their own diameter apart and rarely will they be closer, unlike those of ssp. *tatsienense,* where two distinct sizes of scale are present, these resident half to their own diameter apart, or sometimes up to twice this distance. Lastly, evergreen, as opposed to fully deciduous leaves, identify ssp. *tatsienense* from ssp. *hormophorum*.

Taking nitpicking to a whole new level, Chinese botanists have divided the taxon into two varieties, specifying *R. tatsienense* var. *tatsienense* as having branchlets that are rarely pubescent but densely or sparsely lepidote, and a calyx and pedicel that are densely scaly, while R. C. Fang's 1982-conceived *R. tatsienense* var. *nudatum* (*Acta Botanica Yunnanica, Kunming,* Volume 4, Number 3), has glabrous branchlets that are very sparsely lepidote, plus a calyx and pedicel equally devoid of scales. Endemicity-wise, var. *nudatum* will only be found in northwest Yunnan, where var. *tatsienense* is also present across the exact same altitudinal range. Thus herein, the varietal distinction is given short shrift.

Field reporting indicates that on the ground, the feature set of *R. tatsienense* can almost mirror that of *R. racemosum* at one pole and *R. davidsonianum* or *R. yunnanense* at the other. At one time this led the botanists to consider it a *R. racemosum* x *R. yunnanense* natural hybrid, but field study confirmation of large, uniform populations of the subspecies in Yunnan Province put the kibosh on such ruminations.

George Forrest was the first plant hunter to introduce *R. tatsienense* into British gardens, with a date of 1917 and the field number F 15204 quoted by most authors. However, the imposition of synonymy on *R. stereophyllum* back in 1963 - by H. H. Davidian in his *Revision of the Triflorum Series of Rhododendron* text for that year's *Rhododendron and Camellia Year Book* - has thrust the Forrest 11299 gathering of that taxon - made on the mountains northeast of the Yangtze Bend in September 1913 - into the limelight. Roy Lancaster reintroduced the subspecies from Sichuan Province in 1981, though only seven other collections have been made over the three decades leading up to 2012.

Florally, *R. tatsienense* is simply not in the same league as the four other subspecies of *R. yunnanense,* though it is far from an ugly duckling. In UK cultivation, hardiness accounts vary, with some authors reporting that clones from the lower elevations of the range are somewhat tender along the east coast, but of course fare better when grown at west coast sites, while other leading doyens described the plant as robust, vigorous and indifferent to position.



R. tatsienense (F 29331)



R. tatsienense



R. chasmanthum

R. augustinii* ssp. *chasmanthum

Hardiness:
H5.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; N Yunnan, W Sichuan, & Gansu, China.
Growing in evergreen broad-leaved forests, coniferous forests and mixed forests,
in thickets and amongst rocks, at elevations of 1,700-4,200m.

Identification:
Shrub or small tree, upright, 1 to 10m high;
branchlets lepidote, usually densely pubescent, occasionally glabrous;
bark greyish-brown, scaling in oblong flakes.
Leaves evergreen or semi-deciduous,
lanceolate through oblong-elliptic to elliptic-obovate,
3.3 to 12cm long by 1.1 to 4.5cm wide,
apex acute, acuminate or obtuse, and mucronate,
base tapered or obtuse;
upper surface dark green, lepidote or not, glabrous,
the midrib pubescent for part of its length or glabrous;
lower surface glabrous or pubescent,
lepidote, the scales unequal, medium and large-sized, brown,
half to five times their own diameter apart,
the midrib hairy from one-third to its entire length,
these hairs long and straight, barely or not extending onto the petiole.
Petiole 5-14mm long, lepidote,
moderately through densely pubescent, often with long hairs, or glabrous.
Inflorescence terminal, shortly racemose or umbellate, loose, 2-6-flowered.
Rhachis 2-8mm long, lepidote or not, pubescent or glabrous.
Pedicel 6-27mm long, lepidote, puberulous or glabrous.
Calyx minute, a mere rim or 5-lobed,
these triangular or rounded, and 0.5-1mm long, but occasionally 2-4mm long,
their outer surface variably lepidote, pubescent or glabrous,
their margins ciliate, the hairs long, or sometimes glabrous.
Corolla 2 to 4.3cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
violet, lavender-blue, lavender-purple, lilac-purple, purple, lavender-rose, rose,
pink, or white tinged pink,
blotched or spotted yellowish-green, olive green, purple or ochre,
the lobes sometimes partly reflexed,
the outer surface without scales, glabrous or pubescent on the tube.
Stamens 10, unequal, long-exserted, variously coloured;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 3-4mm long, 5-locular,
densely lepidote, usually glabrous.
Style long, impressed, declinate, slender, longer than the corolla,
elepidote, puberulous at the base or glabrous.
Capsule oblong, 8-20mm long, moderately through densely lepidote.

Seed Collections:

F 15004	1919	F 19814	1921/1922	R 23477	1932
F 16360	1919	F 19825	1921/1922	Yu 7989	1937
F 16692	1919	F 20063	1921/1922	SICH 163	1988
F 17456	1919	F 20064	1921/1922	H&M 1423	1990
F 17476	1919	F 20973	1921/1922	Cox 6124	1992
F 18903	1919	F 21470	1921/1922	CNW 543	1994
F 18906	1919	R 10937	1923/1924	CNW 558	1994


R. chasmanthum

Between the 10th and 19th of May 1895, Jean-Andre Soulié, the French missionary priest, made three collections of a plant closely resembling *R. augustinii*. He was exploring the hillsides above the village of Tsekou in eastern Tibet, where he was based at the MEP mission station with his colleague, Father Jules Etienne Dubernard, the mountains part of the Mekong-Salween Divide. Dried material was returned to Paris where Adrien Franchet, at the MNHN herbarium, described the material as *R. augustinii* forma *subglabra* (Soulié 1009 and 1010), and as *R. augustinii* forma *grandifolia* (Soulié 1012), publishing the two descriptions in Volume 12 of the *Journal de Botanique* in 1898.

Another MEP acolyte, Jean Théodore Monbeig-Andrieu, was the next Westerner to find the species, returning specimens under the field number Monbeig 167. Some authors cite the location of this find as northwestern Yunnan, others Tsekou, where he was posted from 1899. Brenda McLean, in her 1997-published book *A Pioneering Plantsman: A. K. Bulley and the Great Plant Hunters* relates how Monbeig sold some of his plant material to Bulley even though most went to Paris and MNHN. The to and fro of this commerce took place while George Forrest - Bulley's own principal collector at that time - was actually staying at the Tsekou mission station, so as you would expect, this caused more than a modicum of employee-employer friction between the Scotsman and the Liverpudlian. Bulley, of course, was interested only in the seed, donating Monbeig's herbarium plates to the Royal Botanic Garden, Kew, in June 1905, and these were used by Friedrich Diels, along with specimens gathered by Forrest in 1904 - under F 513 and F 639 - to produce a new-to-science botanic description and epithet, namely, *R. chasmanthum*. This appeared within *Plantae Chinenses Forrestianae,* in the 1912-published Volume 5 of *Notes from the Royal Botanic Garden, Edinburgh,* the text effectively a catalogue of the discoveries made on the Scotsman's first expedition to China.

A short historical aside:

Monbeig and Forrest both escaped death at the hands of marauding lamas - religious, rather than furry - during the Tibetan Revolt of 1905, though Soulié and Dubernard did not. Their colleague rebuilt the destroyed mission station, but nine years later near Litang, in western Sichuan, while travelling to a new posting, he too was murdered for believing in and preaching about a different variety of will-o'-the-wisp to that revered by the native population. Such are the existential vagaries of human life.

Back with the botany, and the dried herbarium specimens logged-in under Soulié 1012 were later reassessed by Isaac Bayley Balfour and George Forrest when the pair were considering material gathered under F 689 - in September 1904 - together with a number of collections made in 1918 - F 16360, F 17456, F 17476 and F 17479 - plus a lone batch secured in 1919 - F 18903. All were determined to be one and the same, and described as *R. chasmanthoides,* with the Soulié sheet designated the type specimen for this new species. The differences between *R. chasmanthoides* and *R. chasmanthum* were outlined by Harry Tagg in *The Species of Rhododendron,* published by the Rhododendron Society in 1930: more oblong leaves, with a triangular apex; laxer abaxial scales and fainter, more slender, lateral nerves; a rimmed rather than lobed calyx; the corolla tube sometimes scaly, but often not; and some of the stamen filaments virtually glabrous, while others in the same corolla were densely pubescent towards the base. However, these variations were so marginal that the former was sunk under the latter in 1949 (*Botanical Magazine,* Volume 166, t. 79).

The remaining Franchet designation - *R. augustinii* forma *subglabra* - was also made synonymous under *R. chasmanthum* at the same time as the latter was made a variety of *R. augustinii* by H. H. Davidian - in his article *Revision of the Triflorum Series of Rhododendron,* for *The Rhododendron and Camellia Year Book 1963* - who wrote that 'the variety differs from the species in that the corolla lobes are markedly reflexed, and the inflorescence is compact, 5-6-flowered'. All other distinctions between the two - scales on the calyx and corolla tube; abaxial scale separation; hairs on the branchlets, petioles, pedicels and ovary - were found to be completely inconsistent and it was 'impossible to distinguish between them'. With regard to the bent-backwards corolla lobes, the text also noted that although 'these extremes are distinct in cultivation', in the wild 'intermediates link these with *R. augustinii*'.

Re-examining all the available herbarium sheets for his 1978 *Preliminary Synopsis* paper and the 1980 Subgenus *Rhododendron* revision text (respectively, *Notes,* Volume 36, co-authored with David Chamberlain, and *Notes,* Volume 39, Number 1), as well as studying authenticated live material cultivated at Edinburgh Botanic and the Benmore outstation, James Cullen's fresh pair of eyes found a combination of keying characteristics that were immutable:

Firstly, the filiform-acicular hairs found on the leaf abaxial midrib of both plants then extended all the way along the underside of the *R. augustinii* petiole, but barely ventured out onto the leaf stalk of *R. chasmanthum*.

Secondly, on the leaves of *R. augustinii,* the upper surface veins were overlaid with hairs, while on the foliage of *R. chasmanthum* these were glabrous.

And thirdly, the outer surface of the *R. augustinii* corolla tube bore lepidote scales, whereas that of *R. chasmanthum* did not.

Furthermore, these traits were also associated with a geographic distribution that placed *R. augustinii* in Hubei and eastern Sichuan, and *R. chasmanthum* in southeast Tibet, western Sichuan and Yunnan. And that fact required subspecies rather than varietal ranking, which Doctor Cullen thereby adopted. Intermediates between the two do exist on the ground, but only in Sichuan, where, across the centre of the province, they link the two populations, with ssp. *chasmanthum* otherwise found at locales to the west and south of the ssp. *augustinii* distribution.

The reflexed corolla lobes that were previously considered so paramount were only determined to exist on part of the newly defined ssp. *chasmanthum* population, thus the subspecies epithet - 'with gaping flowers' - is no longer entirely accurate.

The characteristics separating ssp. *augustinii* from the other inhabitants of Subsection *Triflora,* as well as from ssp. *hardyi* and ssp. *rubrum,* are as equally applicable when keying them from ssp. *chasmanthum*.

George Forrest introduced *R. augustinii* ssp. *chasmanthum* into UK cultivation during 1919, the seed gathered in southeast Tibet under the field number F 15004. Additional collections made in northwest Yunnan by the Scotsman also arrived during that same year and it is possible that capsules and seed accompanied Forrest's F 513 and F 639 herbarium gatherings of 1904, but if so, germinated plants did not emerge from Bulley's commercial emporium with those numbers or an epithet attached.

Joseph Rock and Te Tsun Yu introduced seed in the 1930s, and once the turmoil of the Communist Revolution in China had quietened down by the start of the 1980s, a team comprising John Simmons, Charles Erskine, Charles Howick and William McNamara re-introduced the subspecies from Sichuan during 1988.

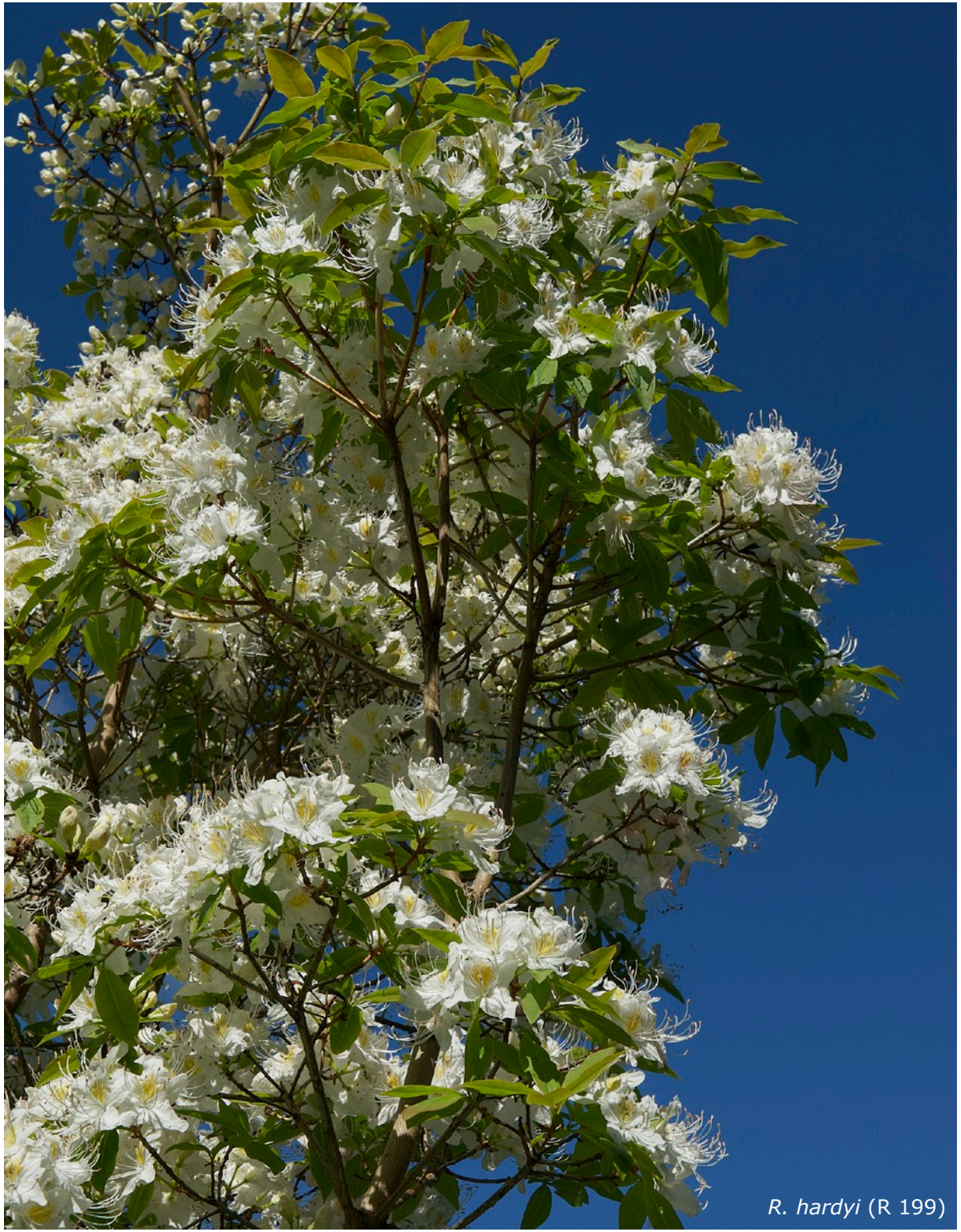
Cultivation requirements mirror those for ssp. *augustinii,* though ssp. *chasmanthum* is slightly hardier and tends to flower a little later in the season, so the blooms are less often frosted in northern gardens. Forms with semi-evergreen to near deciduous foliage, more especially those with white flowers, may be referable to ssp. *hardyi,* but expert opinion on the matter has yet to fully coalesce.



R. chasmanthum



R. chasmanthum (F 21470)



R. hardyi (R 199)

R. augustinii* ssp. *hardyi

Hardiness:
H5.
Flowering Period:
May.
Distribution in the wild:
E Tibet; NW Yunnan, China.
Growing in spruce forest and in thickets, at elevations of 3,300-3,700m.

Identification:
Shrub, upright, 1 to 3m high;
branchlets lepidote, minutely puberulous or glabrous.
Leaves completely or near deciduous,
lanceolate through oblong-lanceolate,
4.5 to 8.2cm long by 1.8 to 2.9cm wide,
apex acute or acuminate, and mucronate,
base tapered or obtuse;
upper surface dark green, shiny, lepidote, glabrous,
the midrib puberulous;
lower surface lepidote, the scales unequal, medium and large-sized, brown,
three to six times their own diameter apart,
glabrous,
the midrib hairy from two-thirds to its entire length, these hairs long and straight,
barely or not extending onto the petiole.
Petiole 5-9mm long, lepidote, minutely puberulous or glabrous.
Inflorescence terminal, or terminal and axillary in the uppermost one or two leaves,
shortly racemose, loose, 2-4-flowered.
Rhachis 2-5mm long, sparsely lepidote or not, minutely puberulous or glabrous.
Pedicel 12-30mm long, lepidote, minutely puberulous or glabrous.
Calyx minute or small, 5-lobed, these triangular or ovate, and 0.5-3mm long,
their outer surface lepidote or not, glabrous or rarely hairy,
their margins ciliate, lepidote or not.
Corolla 2.3 to 3.3cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
white or greenish-white faintly tinged lavender,
spotted yellowish or greenish at the base,
the outer surface lepidote, glabrous or pubescent on the tube.
Stamens 10, unequal, long-exserted;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 3-4mm long, 5-locular,
densely lepidote, glabrous, or densely pubescent at the apex or at the base.
Style long, impressed, declinate, slender,
elepidote, glabrous, rarely pubescent at the base.
Capsule oblong, 8-12mm long, densely lepidote.

Seed Collections:

R 199	1949

H. H. Davidian extracted *R. hardyi* from the various herbarium specimen sheets and sole seed introduction that had all previously been grouped under what was then *R. augustinii* var. *chasmanthum* on account of the completely deciduous or nearly deciduous foliage, and the white corollas. A botanic description for the new species, which Davidian had named for the renowned rhododendron expert and horticulturalist Major Alan E. Hardy, of Sandling Park, Hythe, in Kent, appeared in the 1974 edition of *Rhododendrons, with Magnolias and Camellias,* published by the Royal Horticultural Society.

One of the Jean-Andre Soulié collections made at Tsekou, in eastern Tibet, during May 1895 - Soulié 1010 - was identified as the type specimen, while a George Forrest gathering made at Shui-lu Shan, west of Wei-Hsi (Weixi), in northwestern Yunnan, under the field number F 25482 - with greenish-white flowers that had been found growing in thickets - was also included. As was a 1932 Joseph Rock find made on the Yunnan-Tibet border under R 23010 - with white flowers, growing in spruce forest - with this listed as the holotype. The Austrian-American had also introduced the now new-to-science rhododendron into Western cultivation - unknowingly - during 1949, securing capsules under the field number R 199. These plants open especially fine white-blotched-yellow flowers during May, the host of blooms individually arranged in an open truss of two to four corollas.

In their *Preliminary Synopsis* paper of 1978 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), James Cullen and David Chamberlain had correctly reduced the ranking of *R. hardyi* to a subspecies of *R. augustinii,* while in the Subgenus *Rhododendron* text that followed during 1980 (*Notes,* Volume 39, Number 1)*,* Doctor Cullen explained that this was down to the filiform-acicular hairs present on the leaf abaxial midrib, which like those of ssp. *chasmanthum,* did not extend out along the underside of the petiole. He also remarked that ssp. *hardyi* was 'separated from ssp. *chasmanthum* by characters that are not entirely clear cut', a reference, presumably, to the deciduousness of the leaves and the corolla pigmentation, although one suspects this was a botanic blind, as the prospect of making the redoubtable Alan Hardy synonymous almost certainly influenced the taxon's retention. For as Peter Cox wrote in his 1979 book *The Larger Rhododendron Species,* leaf retention 'varies from plant to plant and year to year', so is basically dependent on the prevailing climate.

Identification of ssp. *hardyi* within Subsection *Triflora* is straightforward, the nearly always - if variably - deciduous foliage, plus the hairy midrib on the underside of those leaves, keying the plant from the rest of the membership.

In UK cultivation, ssp. *hardyi* matches ssp. *chasmanthum* in hardiness, though the bronzy new growth, usually extending at the same time as the flowers open, or shortly afterwards, may sometimes be frozen in northern gardens, especially in those along the east coast of Scotland, with bark split an associated problem. Otherwise, the plants are without problem, easy to grow, and free-flowering from a young age. They form upright, spreading bushes to around 3m in height over time, and are - to again quote the esteemed Doctor Cullen - 'very handsome', a sentiment with which Alan would surely agree.

Modern-day collectors may have reintroduced the species in the early 1990s when white-flowering forms of *R. augustinii* ssp. *chasmanthum,* with semi-deciduous foliage, were gathered on Xi Bi Shan and other locales in Weixi, but these currently remain listed as they were first determined.



R. hardyi (R 199)



R. hardyi (R 199)

R. ambiguum (W 4252)

R. ambiguum
Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
C & W Sichuan, China.
Growing in forests and thickets, and amongst rocks, at elevations of 2,300-4,500m.

Identification:
Shrub, rounded or broadly upright, 0.5 to 5.8m high;
branchlets moderately through densely lepidote, glabrous;
bark greyish-brown, rough, shredding.
Leaves evergreen, coriaceous,
oblong-lanceolate, lanceolate through ovate-lanceolate to elliptic,
2.2 to 8cm long by 1.2 to 3.2cm wide,
apex acute, acuminate or obtuse, and mucronate,
base rounded or obtuse;
upper surface dark green, persistently lepidote, glabrous,
the midrib pubescent for part of its length, rarely glabrous;
lower surface greyish-green, glaucous,
lepidote, the scales unequal,
medium and large-sized, blackish, dark brown or yellowish-brown,
broadly rimmed, contiguous to their own diameter apart.
Petiole 5-13mm long, densely lepidote.
Inflorescence terminal, rarely terminal and axillary in the uppermost leaf,
shortly racemose, loose, 2-7-flowered.
Rhachis 2-4mm long, lepidote, puberulous or glabrous.
Pedicel 5-20mm long, moderately through densely lepidote.
Calyx minute, 5-lobed, these triangular or rounded, and 0.5-1mm long,
their outer surface lepidote,
their margins bristly or puberulous or glabrous.
Corolla 2 to 3.4cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
pale yellow, yellow or greenish-yellow,
spotted green on the posterior side,
the outer surface lepidote, glabrous.
Stamens 10, unequal, long-exserted;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 2-5mm long, 5-locular,
densely lepidote.
Style long, impressed, declinate, slender, longer than the corolla,
elepidote.
Capsule oblong or oblong-oval, 6-15mm long,
densely lepidote.

Seed Collections:

W 1879	1904	KR 195	1980	AC 4785	2001
W 1880	1904	SICH 785	1991	AC 4812	2001
W 1881	1904	CEE 531	1991	AC 4819	2001
W 1324	1908	SICH 1171	1992	C&N 6056	2007
W 1330	1908	SICH 1476	1994	C&N 6073	2007
W 4240	1910	SICH 1633	1994	C&N 6083	2007
W 4252	1910	SICH 1643	1994	C&N 6130	2007
W 4265	1910	C&H 7025	1995	C&N 6134	2007
McLaren 38/010	1932/1939	EFH&M S 1643	1995	C&N 6159	2007
KR 139	1980	AC 3712	1998	CNC 12133	2012
KR 143b	1980	AC 3737	1998	JN 12085	2012
KR 187	1980	AC 3742	1998	JN 12322	2012


R. ambiguum (SICH 1643)

Ernest Wilson was the first Western plant hunter to encounter *R. ambiguum,* finding the species in western Sichuan during 1904 and introducing it into UK cultivation later that same year. The plant was described by William Botting Hemsley under tab 8400, in Volume 137 of the *Botanical Magazine,* which was published in 1911.

Clearly resembling *R. triflorum,* as well as some of the taller-growing forms of *R. keiskei,* out-of-flower the species is also virtually identical to *R. concinnum,* with which it merges in the wild. In consequence, a correct identification relies on multiple morphologic elements to differentiate it from each taxon:

So when keying *R. ambiguum* from *R. triflorum:* the bark will be found to be rough, rather than smooth, greyish-brown rather than fawn, pink, or reddish-brown, and it shreds rather than peels; the leaf lower surface scales of *R. ambiguum* are unequal, medium to large in size, of different colours, and contiguous to their own diameter apart, while those of *R. triflorum* are equal, very small in size, brown in colour, and half to their own diameter apart; and lastly, the leaf upper surface midrib is hairy for part of its length on the leaves of *R. ambiguum,* but wholly glabrous on *R. triflorum*.

Distinguishing *R. ambiguum* from *R. keiskei* is of course assisted in the wild by the huge distance between their endemic distributions - some two thousand miles or three-thousand-two-hundred kilometres - the former located in Sichuan, southwestern China, the latter in Japan, with even the recently reported population of *R. keiskei* var. *laticostum* in South Korea only marginally closer. In cultivation, *R. keiskei* is usually a much lower-growing or even dwarf shrub, but if height is unavailing, a check of the leaf abaxial scales will show them to be half to five times their own diameter apart for the Japanese-Korean species, whereas on the Chinese taxon they are contiguous to their own diameter apart.

Unfortunately, no such tricks work when cleaving *R. ambiguum* from *R. concinnum,* for it is only the corolla colour that differentiates the two: yellow as opposed to purple. So given that the populations merge in the wild, with intermediates between the pair found on the ground, as well as germinating in some recent seed collections - they have wishy-washy pinkish-yellow corollas - it would seem appropriate to challenge their continued specific status, especially as both plants are tetraploids with a $2n = 52$ chromosome count. Varietal status and the precedence rules would produce *R. concinnum* var. *ambiguum,* with full synonymy clearly another choice. Except both options are currently held in check by the biochemistry. Specifically, that determining flower colour.

Included within *Contributions Toward a Classification of Rhododendron* - the 1980-published tome that provided an in-depth account of the proceedings of the International Rhododendron Conference held at the New York Botanical Garden on the 15th, 16th and 17th of May, 1978 - was the full text of Doctor Wolfgang Spethmann's presentation and paper entitled *Flavonoids and Carotenoids of Rhododendron Flowers and Their Significance for the Classification of the Genus Rhododendron.* A highly technical discourse on the 113 discrete compounds that underlie a corolla's pigmentation - '70 flavonol glycosides and aglycones, 27 anthocyanins and 16 other compounds, most of them simple phenolics' is a typical, single-sentence extract - the research found out that red through violet colouring is produced when 'the vacuoles of epidermal cells are coloured by anthocyanins', which would cover *R. concinnum,* while for the yellow-green tones of *R. ambiguum* specifically, it was 'chloroplasts or early stages of the change to chromoplasts, present in the mesophyll' that did the trick.

If that does the trick for you, then great, but if not, in layman's terms, the two rhododendrons are basically biochemically different, with the genes along their individual DNA strands - ultimately responsible for producing the differing colouring agents - also dissimilar, although it has to be stated that the genetic information needed to carry out both of the colouring processes could be present at that locus, but just not used. Which effectively means that specific status must be maintained despite the apparent outward morphological similarities. At least, until such time when a cast-iron confirmation arrives that the chromosomes chains do indeed hold the instruction sets needed to produce both colour palettes.

A somewhat less esoteric article, written by Doctor Robert J. Griesbach of the United States Department of Agriculture, and titled *Rhododendron Flower Colour: Genetic/Cultural Interaction,* was published in Volume 41, Number 1, of the *Journal American Rhododendron Society.* It can be viewed online at:

https://scholar.lib.vt.edu/ejournals/JARS/v41n1/v41n1-griesbach.html

Seed of *R. ambiguum* was gathered and returned to the UK by Ernest Wilson on both of his subsequent expeditions to China, while George Forrest's trained collectors also contributed viable capsules when employed by Henry McLaren. Keith Rushforth was the first modern-day plant hunter to reintroduce the species, doing so in 1980, after which a ten-year hiccup ensued before a regular flow of lots resumed. At least, until 2012, after which the ramifications of the Nagoya Protocol curtailed the explorations of individuals and collecting teams alike.

R. ambiguum is one of the hardiest members of Subsection *Triflora* grown in British gardens, forming a neat, rounded or upright bush to around 2m in height. It is very free-flowering from a young age and the blooms open later in the season than those of *R. lutescens,* for instance, so usually escape damage from any late spring frosts.

Until quite recently, many botanists regarded *R. wongii,* another Wilson discovery of 1904 vintage, as the taxon that was morphologically closest to *R. ambiguum*. Discovered on a hillside above Tatsienlu (Kangding), this plant only differed in having smaller corollas that were elepidote on the outside, and leaves that were half as long, although broader in proportion. However, most experts now regard the shrub as a natural hybrid cross between *R. ambiguum* and *R. flavidum,* indeed, Peter and Kenneth Cox report matching specimens of such 'growing amongst the putative parents' in Sichuan (*The Encyclopedia of Rhododendron Species,* 1997). Which means that a Chinese proposal - made in 2003 by Gong et al, in Volume 41 of *Acta Phytotaxonomica Sinca* - to consider *R. ambiguum* as a synonym of *R. wongii* came as somewhat of a surprise to the botanical glitterati. To date, however, its only practical effect has been to raise Western doyenic eyebrows.

The *R. ambiguum* Latin epithet translates as 'doubtful', which may well be a forecast of its future specific status, though not under *R. x wongii*.



R. ambiguum



R. ambiguum (KR 195)



R. ambiguum

R. trichanthum

R. trichanthum
Hardiness:
H5-6.
Flowering Period:
May-June.
Distribution in the wild:
W Sichuan, China.
Growing in forests and in thickets, at elevations of 1,600-3,700m.

Identification:
Shrub, broadly upright, 1 to 6m high;
branchlets lepidote, often pubescent,
moderately through densely bristly, these retained for at least one year;
bark brown, striate.
Leaves evergreen,
lanceolate through ovate-lanceolate to oblong-lanceolate,
4 to 11cm long by 1.5 to 3.7cm wide,
apex acutely acuminate or acuminate, and mucronate,
base rounded, cuneate or obtuse;
upper surface dark green, lepidote, bristly and often pubescent,
the midrib pubescent;
lower surface pale green,
lepidote, the scales unequal, medium and large-sized, brown,
one to four times their own diameter apart,
bristly or pubescent,
the midrib densely bristly or pubescent from half to its entire length.
Petiole 4-10mm long, lepidote,
moderately through densely bristly, often pubescent.
Inflorescence terminal, shortly racemose, loose, 3-5-flowered.
Rhachis 3-5mm long, lepidote or not, rarely without bristles.
Pedicel 10-15mm long, lepidote, moderately through densely bristly.
Calyx minute, 5-lobed, these rounded and 0.5-1mm long,
their outer surface sparsely through moderately lepidote,
and moderately through densely bristly,
their margins bristly.
Corolla 2.8 to 3.8cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
pale through dark purple or rose,
sometimes with a green or brown blotch,
the outer surface lepidote, the tube bristly.
Stamens 10, unequal, long-exserted;
filaments densely villous towards the base.
Ovary oblong, 4mm long, 5-locular,
densely lepidote, moderately through densely bristly.
Style long, impressed, declinate, slender, longer than the corolla,
elepidote, glabrous, or rarely puberulous at the base.
Capsule oblong, 14-20mm long,
densely lepidote, bristly, rarely glabrous.

Seed Collections:

W 1862	1904	CEE 242	1991
W 1220	1908	CEE 524	1991
W 1342	1908/1909	Cox 5089	1990
W 3445	1908/1909	Cox 6149	1992
W 4242	1910	SICH 2154	2001
McLaren 38/013	1932/1939	SICH 2257	2001


R. trichanthum (CEE 524)

R. trichanthum was first encountered by Ernest Wilson in western Sichuan during 1904. Writing in the 1910-published *Bulletin of Miscellaneous Information, Royal Gardens, Kew,* Wilson and William Botting Hemsley described the find and named it *R. villosum*. However, thirty-five years later in 1945, Alfred Rehder politely pointed out - in Volume 26 of the *Journal of the Arnold Arboretum* - that Albrecht Wilhelm Roth had already used that very same epithet within Genus *Rhododendron* in 1807, so to avoid confusion, offered *R. trichanthum* - 'with hairy flowers' - in its stead. H. H. Davidian, writing in Volume 1 of *The Rhododendron Species,* published in 1982, states that although the change was regrettable 'it is strictly in accordance with the International Code of Botanical Nomenclature'. The ICBN rules have, of course, been incorporated wholesale into today's ICNAFP.

Identifying *R. trichanthum* within Subsection *Triflora* is a cinch, because the bristles on the branchlets, petioles, and leaves - upper surface, lower surface, and adaxial midrib – plus those on the rhachis, the pedicels, the calyx margins, the corolla tube, the ovary, and the capsules, are so obvious a five-year-old could probably execute the keying, with only the reinstated *R. suberosum* likely to cause a modicum of confusion, although its ivory-white corollas and a lack of any bristles on the pedicels and corolla tube will quickly eliminate any such discombobulation. Even for the put upon infant.

Wilson introduced the species into UK cultivation in 1904 under W 1862, in 1908 under W 1220, W 1342 and W 3445 (his field collection numbering system being reset to zero when he swapped expedition sponsors) - the Veitch Nursery in Chelsea being ditched for the Arnold Arboretum in Boston post the 1903-1905 trip - and lastly, in 1910 under W 4242. However, germinating in the seed pans of Wilson 1220, in addition to *R. trichanthum,* was a plant that Isaac Bayley Balfour catalogued as *R. lochmium* in 1919 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 11). Needless to say, a small 'x' now precedes its epithet, this designating it a natural hybrid, which the doyens have reason to believe is a cross with *R. davidsonianum*.

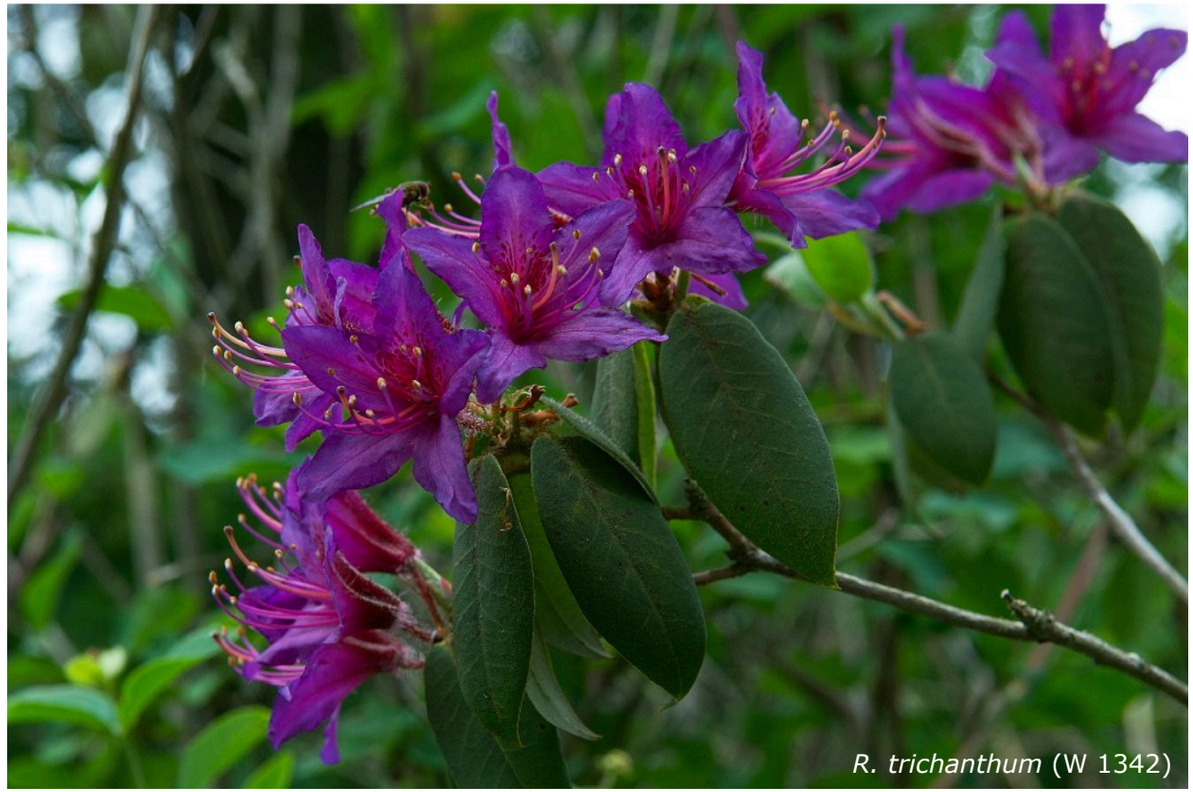
Another rogue, found amongst the seedlings of *R. trichanthum* W 4242, was *R. x trichophorum,* this also described by Bayley-Balfour, but in *Notes,* Volume 12, 1920, and without the small 'x'. In his Subgenus *Rhododendron* revision, James Cullen states that 'it is intermediate in every way between *R. trichanthum* and *R. augustinii* and is almost certainly a hybrid between them' (*Notes,* Volume 39, Number 1, 1980).

The Chengdu-Edinburgh Expedition to Sichuan, mounted jointly by Edinburgh Botanic and Yunnan's Kunming Institute of Botany, reintroduced *R. trichanthum* into British gardens during 1991.

The dark purple forms of the species are those most often grown in the UK, with *R. trichanthum* especially prized because the plant blooms later in the season than most of its subsection cohorts, often from late May into mid June. The shrub usually forms an upright but compact dome to around 2.5m in height, densely filled with dark green foliage, unless grown in too much shade, in which case it will be open and leggy. However, dappled shade produces the best results in southern locales, while an open but sheltered situation is ideal for sites along the east coast and inland. A full sun placement out of the wind along the northwest coast and up into Scotland completes the positioning summation. Equally, the taxon's besotted fan base should note that leaf spot will visually announce the fact that the drainage provided in any of these locales, is not swift enough.



R. trichanthum (CEE 524)



R. trichanthum (W 1342)

R. trichanthum

R. amesiae

Hardiness:
H5-6.
Flowering Period:
May.
Distribution in the wild:
NW Sichuan, China.
Growing in forests, at elevations of 2,200-3,000m.

Identification:
Shrub, spreading or broadly upright, 2 to 4m high;
branchlets moderately through densely lepidote, bristly or not.
Leaves evergreen, coriaceous,
ovate through elliptic,
2.8 to 8cm long by 1.5 to 3.5cm wide,
apex acute or obtuse, and mucronate,
base rounded or obtuse;
upper surface dark green, variably lepidote, pubescent or glabrous,
the midrib pubescent;
lower surface pale green, densely lepidote, the scales unequal,
medium and large-sized, brown or yellowish-brown,
half to their own diameter apart.
Petiole 5-11mm long, moderately through densely lepidote, densely bristly.
Inflorescence terminal, shortly racemose, loose, 2-5-flowered.
Rhachis 2-3mm long, lepidote, puberulous or glabrous.
Pedicel 8-18mm long, lepidote, bristly or not.
Calyx minute, 5-lobed, these ovate, triangular or rounded, and 0.5-1mm long,
their outer surface densely lepidote, bristly or not, pubescent or glabrous,
their margins lepidote or not, bristly or not, pubescent or glabrous.
Corolla 2.8 to 4cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
purple or dark reddish-purple,
with or without darker spots on the posterior side,
the outer surface sparsely through moderately lepidote, glabrous,
or sparsely pubescent on the tube.
Stamens 10, unequal, exserted;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 3-4mm long, 5-locular,
densely lepidote, glabrous, or sparsely pubescent at the apex.
Style long, impressed, declinate, slender,
elepidote.
Capsule oblong, 12-18mm long,
moderately through densely lepidote.

Seed Collections:

W 1196	1908/1909
W 4233	1910

R. amesiae was discovered by Ernest Wilson near Mupin in western Sichuan during June 1908, and he remains the only Western plant hunter known to have secured seed, introducing the species into cultivation later that same year and returning a second batch of capsules in 1910. Regrettably, a collection made in the Jiuzhaigou Valley by Peter Cox, Peter Hutchison and Donald Maxwell-MacDonald during September 1986 under their field number CH&M 2568, although initially recorded as a Subsection *Triflora* species, then later tentatively pigeonholed as *R. amesiae,* proved to be *R. invictum* when the plant eventually flowered (Cox & Hutchison, *Seeds of Adventure,* 2008). The online Edinburgh Botanic herbarium database details three gatherings made by David Boufford and Yu Jia (of the Institute of Botany, Beijing) during May 2007, and these have indeed been determined to be *R. amesiae* by Doctor David Chamberlain, but only dried material was gathered.

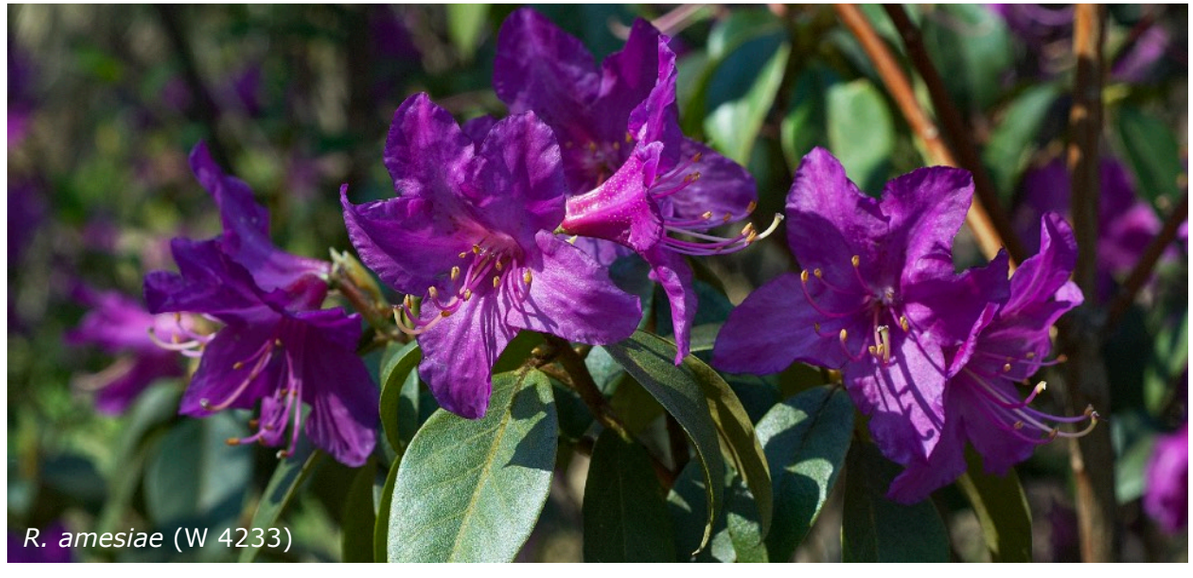
In Volume 1 of *The Rhododendron Species,* 1982, H. H. Davidian writes that:

> 'The species is distinguished from *R. concinnum* by the bristly petioles and sometimes by the bristly branchlets, pedicels and calyx. Whether *R. amesiae,* on these distinctions, merits specific rank, is very doubtful. Nevertheless, the specific status of this plant will have to stand until more adequate material is available'.

An alternative opinion has also been put forward - that the taxon is a natural hybrid resulting from a *R. concinnum* x *R. trichanthum* cross. This would tie-in with the small 'local distribution' recorded in Ernest Wilson's field notes, but the choice of which road to travel has yet to be decided and currently, any genetic evidence is lacking.

Cultivated specimens of *R. amesiae* are fully hardy, flower freely from a young age and late enough in the year to miss any unseasonal spring frosts. They are usually vigorous and without problem. Mature shrubs will hover around 2m in height, spread out a touch further, and often reflect Ernest Wilson's assertion that the 'handsome rich purple-red flowers make it one of the most beautiful plants in this section'.

The species, a tetraploid with fifty-two chromosomes, was described by Wilson and Alfred Rehder in Volume 1 of *Plantae Wilsonianae,* this edited by Charles Sprague Sargent and published in 1913. The epithet is an honorific for Mary Shreve Ames (1867-1955), of North Easton, Massachusetts, who was 'a generous friend of the Arnold Arboretum and of its Chinese explorations' to quote the citation.



R. amesiae (W 4233)

R. amesiae (W 4233)

R. searsiae

Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
W Sichuan, China.
Growing in forests and in thickets, at elevations of 2,300-3,100m.

Identification:
Shrub, compact and rounded, spreading or broadly upright, 1.5 to 5m high;
branchlets moderately through densely lepidote, glabrous.
Leaves evergreen, coriaceous,
lanceolate through oblanceolate to oblong-lanceolate, rarely oblong-elliptic,
2.5 to 8cm long by 1 to 2.6cm wide,
apex acute, acutely acuminate or acuminate, and mucronate,
base tapered or obtuse;
upper surface pale or dark green, sparsely lepidote, glabrous,
the midrib puberulous, rarely glabrous;
lower surface bluish-glaucous-green or silvery-grey,
densely lepidote, the scales unequal,
small and medium-sized, yellowish or pale brown, broadly rimmed,
half their own diameter apart, rarely to their own diameter apart,
with large, dark brown, scattered scales.
Petiole 3-10mm long, moderately through densely lepidote.
Inflorescence terminal, rarely terminal and axillary in the uppermost leaf,
shortly racemose, 3-8-flowered.
Rhachis 3-6mm long, lepidote, rarely without scales, puberulous or glabrous.
Pedicel 5-16mm long, moderately through densely lepidote.
Calyx minute, 5-lobed, these unequal, triangular or rounded, rarely oblong,
0.5-1mm long, and often with two longer lobes 4-5mm long,
their outer surface lepidote,
their margins lepidote, glabrous or rarely ciliate.
Corolla 2 to 3.5cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
white through pale rose-purple to pale reddish-purple,
spotted pale or dark green on the posterior side,
the outer surface without scales, glabrous,
the tube occasionally lepidote.
Stamens 10, unequal, exserted, longer than the corolla;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 3-5mm long, 5-locular,
densely lepidote.
Style long, impressed, declinate, slender,
elepidote, glabrous, rarely puberulous at the base.
Capsule oblong, 10-14mm long,
densely lepidote.

Seed Collections:

W 1343	1908
AC 2013	1996
AC 2014	1996
C&N 6058	2007
C&N 6059	2007
C&N 6064	2007



R. searsiae

Until 1996, when Alan Clark rediscovered and reintroduced the species into British gardens, *R. searsiae* was only known from the Ernest Wilson collections made on Wa Shan, a mountain in Hongya County, Sichuan. Herbarium material was gathered in June 1908 under the field numbers W 1343 and W 3449, seed in November of that same year, which was logged-in under the type number. The find was botanically described by Wilson and Alfred Rehder in Volume 1 of *Plantae Wilsonianae,* this published in May 1913, with their chosen epithet another honorific, the plant being named for the American artist and photographer Sarah Choate Sears (1858-1935), who apparently - to again quote the text's citation - was a 'lover and successful cultivator of flowers'.

R. searsiae is closely allied to *R. concinnum* and *R. polylepis*. It differs from the first in having paler corollas, which are usually without scales on their outer surface (though the tube may sometimes be lepidote), and bearing longer, much narrower leaves. From the second, that elepidote corolla also works to cleave the two apart, as does the silvery-grey or bluish-glaucous-green leaf abaxial surface, which is brown on *R. polylepis*. The presence of three different sizes of scale on the underside of the *R. searsiae* leaf - small, medium and large; these set half to their own diameter apart - will also help to distinguish the species: from *R. concinnum,* because it has contiguous scales of two sizes; and from *R. polylepis,* which has overlapping or contiguous large scales, plus even larger scattered ones. There is also a resemblance to *R. zaleucum,* but this species has an intensely white-papillose and shiny undersurface to its leaves, with scales that are 1.5 to 4 times their own diameter apart, and lepidote corollas, so any confusion should be short-lived.

The species is a tetraploid with 52 chromosomes.

In cultivation, a number of forms of *R. searsiae* will be seen to have decidedly wishy-washy flowers in white-flushed-pinkish tones, although those with darker, purplish corollas, are more eye-catching. Mature specimens fall into two types: rounded domes that are around 2m high and wide; and more upright bushes to 3 or 4m. All are hardy, usually problem free if protected from strong winds, and covered with bloom from an early age.

The 1996 Alan Clark gatherings were made in Sade County, Sichuan, at 3100m - the top of the endemic range - while the capsules he collected with Shelagh Newman in 2007, came from a population of plants at Huangmaogeng, in the province's Leibo County, these established between the 2,500 and 2,800m contours.



R. searsiae (W 1343)



R. searsiae (W 1343)

R. oreotrephes

Hardiness:

H5-6.

Flowering Period:

April-May.

Distribution in the wild:

S & SE Tibet; SW Sichuan, N & NW Yunnan, China; NE Upper Myanmar.
Growing in mixed forests and at the margins of conifer forests,
in mixed thickets, in scrub, on cliffs and on rocky slopes,
at elevations of 2,700-4,300m.

Identification:

Shrub or small tree, compact and rounded to broadly upright, 0.6 to 8m high;
branchlets variably lepidote or without scales, glabrous or puberulous;
bark greyish-brown, striate.
Leaves evergreen, occasionally semi-evergreen, coriaceous,
oblong through oblong-elliptic to elliptic, ovate, oval or near orbicular,
1.8 to 8.9cm long by 1.2 to 4.2cm wide,
apex rounded or obtuse, rarely acute, and mucronate,
base rounded, cordate or obtuse;
upper surface dark green, green, or bluish-green,
glaucous or not (juvenile foliage markedly glaucous),
variably lepidote or without scales, glabrous,
the midrib glabrous or sometimes puberulous;
lower surface glaucous, pale glaucous-green, or brown,
lepidote, the scales equal, medium-sized,
reddish, purplish, grey or brown, but opaque, narrowly rimmed,
almost contiguous to three or four times their own diameter apart.
Petiole 5-20mm long, lepidote or not, glabrous or puberulous.
Inflorescence terminal, or terminal and axillary in the uppermost one or two leaves,
shortly racemose, loose, 3-10-flowered.
Rhachis 1-8mm long, rarely to 10mm, lepidote or not, glabrous or sometimes puberulous.
Pedicel 5-30mm long, lepidote or not.
Calyx minute, a mere rim or 5-lobed,
these triangular, rounded or oblong, and 0.5-1mm long, rarely to 2mm long,
their outer surface lepidote or not,
their margins lepidote or not, glabrous or sometimes ciliate.
Corolla 1.8 to 4cm long, 5-lobed,
widely- or narrowly-funnel-shaped, more rarely funnel-campanulate,
usually zygomorphic,
whitish-pink, pink, lavender-rose, rose, purple or lavender-blue, rarely white or apricot,
with or without crimson or brownish-crimson spots,
the outer surface sparsely lepidote or without scales, glabrous.
Stamens 10, unequal, exserted;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 3-6mm long, 5-locular, densely lepidote.
Style long, impressed, declinate, slender, elepidote.
Capsule oblong, 8-16mm long, moderately through densely lepidote.

Seed Collections:

F 5873	1910	R 11387	1923/1924	KEY 23	1985
F 10210	1912/1914	R 11429	1923/1924	KEY 28	1985
F 10213	1912/1914	F 27598	1924/1925	SBLE 201	1987
F 10297	1912/1914	KW 5790	1924/1925	SBLE 306	1987
F 13931	1917/1919	R 18140	1929	CLD 214	1990
F 15222	1917/1919	R 18351	1929	SSNY 221	1992
F 15418	1917/1919	R 18456	1929	SSNY 24	1992
F 15465	1917/1919	R 18457	1929	KGB 173	1993
F 16291	1917/1919	F 30910	1930/1931	KGB 566	1993
F 16543	1917/1919	KW 9505	1931	CNW 295	1994
F 16584	1917/1919	KW 9509	1931	CNW 298	1994
KW 3299	1919	R 23491	1932	CNW 388	1994
F 19544	1921/1922	R 24404	1932	CNW 493	1994
F 20481	1921/1922	R 25429	1932	CNW 741	1994
F 20489	1921/1922	McLaren P 69	1932/1939	CNW 1299	1994
F 20629	1921/1922	KW 13151	1937	SICH 1437	1994
F 20783	1921/1922	Yu 10700	1937	FED 147	1995
F 20840	1921/1922	Yu 7991	1937	AC 1798	1996
F 21006	1921/1922	KW 61	1938/1939	AC 1799	1996
F 21822	1921/1922	KW 233	1938/1939	AC 1811	1996
F 21835	1921/1922	LS&E 13761	1946/1947	AC 1823	1996
KW 4309	1921	LS&E 13110	1946/1947	AC 1880	1996
KW 5602	1922	LS&E 13163	1946/1947	AC 1899	1996
R 10550	1923/1924	LS&E 13613	1946/1947	AC 1902	1996
R 10954	1923/1924	LS&E 13614	1946/1947	AC 1983	1996
R 10986	1923/1924	LS&E 13622	1946/1947	KR 4113	1996
R 11000	1923/1924	LS&E 13705	1946/1947	JN 158	1997
R 11014	1923/1924	LS&E 13732	1946/1947	JN 484	1997
R 11128	1923/1924	LS&E 15013	1946/1947	JN 741	1999
R 11132	1923/1924	LS&E 15039	1946/1947	TARRVS 145	2002
R 11141	1923/1924	LS&E 15059	1946/1947	C&N 5761	2007
R 11258	1923/1924	LS&E 15321	1946/1947	CNC 12011	2012
R 11262	1923/1924	LS&E 15819	1946/1947	JN 12101	2012
R 11298	1923/1924	R 96	1948/1949	JN 12243	2012
R 11300	1923/1924	R 165	1948/1949	MH 369-64	2018

R. oreotrephes (F 5873)

R. oreotrephes is regarded as the linking species between the rhododendrons of Subsection *Triflora* and those of Subsection *Cinnabarina.* Its foliage is clearly reflective of some of the *R. cinnabarinum* clones, while natural hybrids between the two taxa have been documented in southeastern Tibet. However, some experts isolate *R. oreotrephes* from the other members of the subsection by placing it into a monotypic 'alliance', which is an illegal construct under the current nomenclature rules. To gain botanic acceptance, this would need to be replaced by Series *Oreotrepha*. Yet like the five *R. yunnanense* subspecies, as well as all the Subsection *Cinnabarina* species where chromosome counts are known, *R. oreotrephes* is a 2*n* = 78 hexaploid, and its blooms are usually - though not always - composed of widely or narrowly funnel-shaped zygomorphic corollas. Florally then, the association is with Subsection *Triflora* rather than Subsection *Cinnabarina,* despite a few clones bearing funnel-campanulate flowers.

R. cuneatum, which is the linking species between Subsection *Lapponica,* Subsection *Heliolepida* and Subsection *Triflora,* is also a hexaploid that herein, has been placed in its own subsection (with the once-synonymous *R. ravum,* a tetraploid). A formal association with *R. oreotrephes* in the same botanic pigeonhole was therefore considered, but ruled out. For while *R. cuneatum* was clearly aberrant when placed within Subsection *Lapponica,* that terminology has not, and cannot be applied to *R. oreotrephes* despite it having abaxial leaf scales 'unlike those of any other species' (James Cullen, *Notes from the Royal Botanic Garden, Edinburgh,* Volume 39, Number 1, 1980). Regrettably, neither rhododendron was examined in the Goetsch-Eckert-Hall molecular systematics paper of 2005, so information relating to a possible cladistic association - mirroring, for instance, the joint placement their research recorded for *R. nipponicum* and *R. semibarbatum* - is lacking.

Switching back to the morphology, the *R. oreotrephes* abaxial leaf surface scales are narrowly rimmed, coloured reddish, purplish, grey or brown, and they are opaque. Equal in size, medium in diameter, they are set contiguous to each other or up to three or four times their own diameter apart. Moreover, they are found on each and every one of the ten once-specific species that have been made synonymous under the *R. oreotrephes* epithet - namely, *R. artosquameum, R. cardoeoides, R. depile, R. hypotrichum, R. oreotrephoides, R. phaeochlorum, R. pubigerum, R. siderophylloides, R. timetum* and *R. trichopodum* - and vary only in the distance that separates one scale from its neighbour. Furthermore, they are also found on the leaves of *R. exquisitum,* the AM-graced plant that was grown at Exbury from Forrest 20489 seed. This too was once placed in synonymy under *R. oreotrephes,* but it is a seed pan rogue with 52, rather than 78 chromosomes, making it a tetraploid, not a hexaploid, so it must therefore be treated as *R. x exquisitum*.

Extra aids to the keying process are provided by the glabrous abaxial midrib, the glaucous lower leaf surface, the markedly glaucous young growth - a state that may persist on older leaves - and the often-elliptic leaf shape. In some texts, a lack of scales adorning the branchlets, adaxial leaf surface and corolla is alluded to, but such morphology is a far from consistent characteristic.

R. oreotrephes was discovered during June 1910 on the western side of the Lichiang Range in northwestern Yunnan by George Forrest and introduced into British gardens later that same year under the type number F 5873, the seed collected from a population of plants with deep rose-lavender flowers that were small trees to around 8m in height. Subsequent finds made by all the major collectors up until 1949 showed the species to have a very wide endemic distribution that stretches from northeast Upper Myanmar in the east, across Yunnan and Sichuan, into southeastern Tibet in the west, and, mirroring *R. lutescens,* comes with a 2,600m altitudinal range. But unlike that yellow-flowering species, the *R. oreotrephes* base will be found at 2,700m, which means that all the cultivated plants from the more than one hundred seed gatherings introduced into British gardens up until 2018, are all fully hardy across the whole of the UK. They are also easy to grow, free-flowering from a young age, tolerant of full sun or partial shade, have a neat habit irrespective of whether that results in a compact shrub or a small tree, and are well-filled with dark green and often glaucous foliage. And the range of flower colours available would likely not limit the creative visions of van Gogh or Warhol, yet alone Jekyll or Jellicoe.

On that subject, field reporting has indicated that the pigmentation gamut exhibited across just one population of plants in the wild traverses light to dark, and white through purple. In contrast, other groups within the species distribution have been found to display a uniform corolla hue across their membership.

Natural hybrids between *R. oreotrephes* and both *R. racemosum* and *R. zaleucum* have been recorded in Yunnan, plus pairings with *R. concinnum* in Sichuan, these in addition to those with *R. cinnabarinum* detailed above.

The species was described by William Wright Smith in Volume 8 of *Notes,* which was published in 1914, and the chosen epithet translates as 'mountain bred'.



R. oreotrephes



R. oreotrephes (FED 147)



R. oreotrephes (KW 5790)



R. oreotrephes (R 11300)



R. oreotrephes (R 96)

R. oreotrephes

R. oreotrephes

R. zaleucum

R. zaleucum* var. *zaleucum

Hardiness:
H4.
Flowering Period:
March-May.
Distribution in the wild:
N. Myanmar; W Yunnan, and Guizhou, China.
Growing in forests, rhododendron forests and open woodland,
in thickets, amongst scrub, and on dry rocky slopes, at elevations of 1,800-4,000m.

Identification:
Shrub or small tree, compact, straggly or bushy, or broadly upright, 0.3 to 10.7m high;
branchlets sparsely lepidote, glabrous.
Leaves evergreen, aromatic,
oblong-lanceolate through lanceolate, rarely oblong, obovate or elliptic,
3.2 to 8.8cm long by 1 to 3cm wide,
apex acute, acutely acuminate or acuminate, rarely broadly obtuse or rounded,
and mucronate,
base tapered, rounded or obtuse;
upper surface olive-green, pale or dark green, elepidote, rarely with scales, glabrous,
the midrib puberulous, rarely glabrous,
the margins sparsely loriform-setose at first, the bristles lost at maturity;
lower surface glaucous, intensely white-papillose and shiny,
lepidote, the scales unequal, large, brown, rimless and flat,
one-and-a-half to four times their own diameter apart,
the midrib glabrous or minutely puberulous.
Petiole 4-15mm long, sparsely lepidote.
Inflorescence terminal, or terminal and axillary in the uppermost leaf,
shortly racemose, loose, 3-5-flowered, sometimes fragrant.
Rhachis 2-5mm long, lepidote, glabrous or puberulous (rarely).
Pedicel 8-28mm long, sparsely lepidote.
Calyx minute, a mere rim or 5-lobed, these triangular, rounded or oblong (rarely),
and 0.5-1mm long, rarely to 2mm long,
their outer surface moderately through densely lepidote,
their margins lepidote or not (rarely),
glabrous or ciliate or sparsely through moderately bristly.
Corolla 2.6 to 4.8cm long, 5-lobed, funnel-shaped,
zygomorphic,
white, white flushed rose, pink, rose, lavender-rose or purple,
with or without crimson spots, pubescent inside,
the outer surface lepidote, glabrous,
the tube often puberulent at the base or across the lower half.
Stamens 10, unequal, exserted;
filaments pubescent towards the base.
Ovary conoid or oblong, 3-5mm long, 5-locular, densely lepidote.
Style long, impressed, declinate, slender,
elepidote, glabrous or pubescent at the base (rarely).
Capsule oblong, 8-15mm long,
densely lepidote.

R. zaleucum* var. *flaviflorum

Hardiness:
H4.
Flowering Period:
April-May.
Distribution in the wild:
Kachin State, Upper Myanmar.
Growing along exposed ridges at elevations of 2,700m.

Identification:
as var. *zaleucum* except:
Leaves to 10cm long, upper surface dark green.
Corolla pale yellow or white.

Seed Collections: var. *zaleucum*

F 8923	1912	F 25606	1924/1925	AC 626	1993
F 15688	1917/1919	F 25609	1924/1925	AC 641	1993
F 17937	1917/1919	F 25611	1924/1925	KR 2687	1993
F 18042	1917/1919	F 25765	1924/1925	AC 3055	1996
Farrer 891	1919	F 25796	1924/1925	KR 3979	1996
Farrer 980	1919	F 25799	1924/1925	CCHH 8120	1997
KW 3039	1919	F 27103	1924/1925	DGEY 400	2001
R 7649	1923/1924	F 27603	1924/1925	DGEY 413	2001
F 24101	1924/1925	R 18410	1929	C&N 5840	2007
F 24562	1924/1925	R 18411	1929	C&N 5848	2007
F 25576	1924/1925	R 18418	1929	C&N 5855	2007
		AC 585	1993		

Seed Collections: var. *flaviflorum*

KW 20837	1953

R. zaleucum was first encountered on the mountains of the Shweli-Salween Divide in western Yunnan by George Forrest, who made the discovery during August 1912. The species was then described by Isaac Bayley Balfour and William Wright Smith in Volume 10 of *Notes from the Royal Botanic Garden, Edinburgh,* this published in 1917.

The intensely white-papillose, shiny and glaucous lower leaf surface, peppered with large, distant brown scales, which are golden when young, distinguishes either variety of the species from all the other members of Subsection *Triflora,* so rarely will the lepidote and large, funnel-shaped corollas be needed to provide assistance, nor the aromatic nature of the foliage, or the restriction of any axillary flower buds to just the uppermost leaf.

In a number of UK species collections however, specimens of *R. shweliense,* grown from F 24154, have been misidentified and labelled as *R. zaleucum,* principally on account of a perceived similarity in the corolla shape and colour. It should be noted that these lack the distinctive abaxial leaf surface illustrated opposite. Moreover, mature specimens of *R. shweliense* are low-growing bushy shrubs that rarely top more than 1m in height, while those of true *R. zaleucum* are usually 4m-high small trees. Armed with such information, any competent five-year-old, randomly plucked from the ranks of the visiting public, would likely make a correct determination, so why this was beyond the capabilities of those employed at the RH17 outstation of a certain Royal Botanic Garden, is somewhat puzzling.

A caucus of knowledgeable experts consider *R. zaleucum* to be the linking species with the Subsection *Maddenia* rhododendrons due to the size of the leaves and the flowers; the corollas being pubescent inside; and the southerly and relatively low-elevation endemic distribution. *R. ciliicalyx* from Subseries *Dalhousiae* is thought to be the most likely tie-in.

R. zaleucum var. *flaviflorum* was found by Frank Kingdon-Ward at Uring Bum, above Akhail, in Kachin State, Myanmar, during May 1953, but was only described in 1978, H. H. Davidian correcting the oversight in Volume 32, Number 2, of the *Quarterly Bulletin of the American Rhododendron Society*. The variety differs from the species in having larger leaves, with blades up to 10cm long, and pale yellow flowers, but it has only once been introduced into cultivation - under KW 20837, the type number - and amongst the seedlings that germinated, were pink-flowering natural hybrids considered to be crosses with *R. oreotrephes*. Coincidentally, pairings between *R. oreotrephes* and *R. zaleucum* var. *zaleucum* have also been reported - as well as collected - near to Wei-hsi (Weixi), which is somewhat northeast of the taxon's main distribution. These have the opaque scales found on the underside of the *R. oreotrephes* leaf blade, retain the white-colouration of the *R. zaleucum* foliage, though far less intensely, but have much smaller corollas.

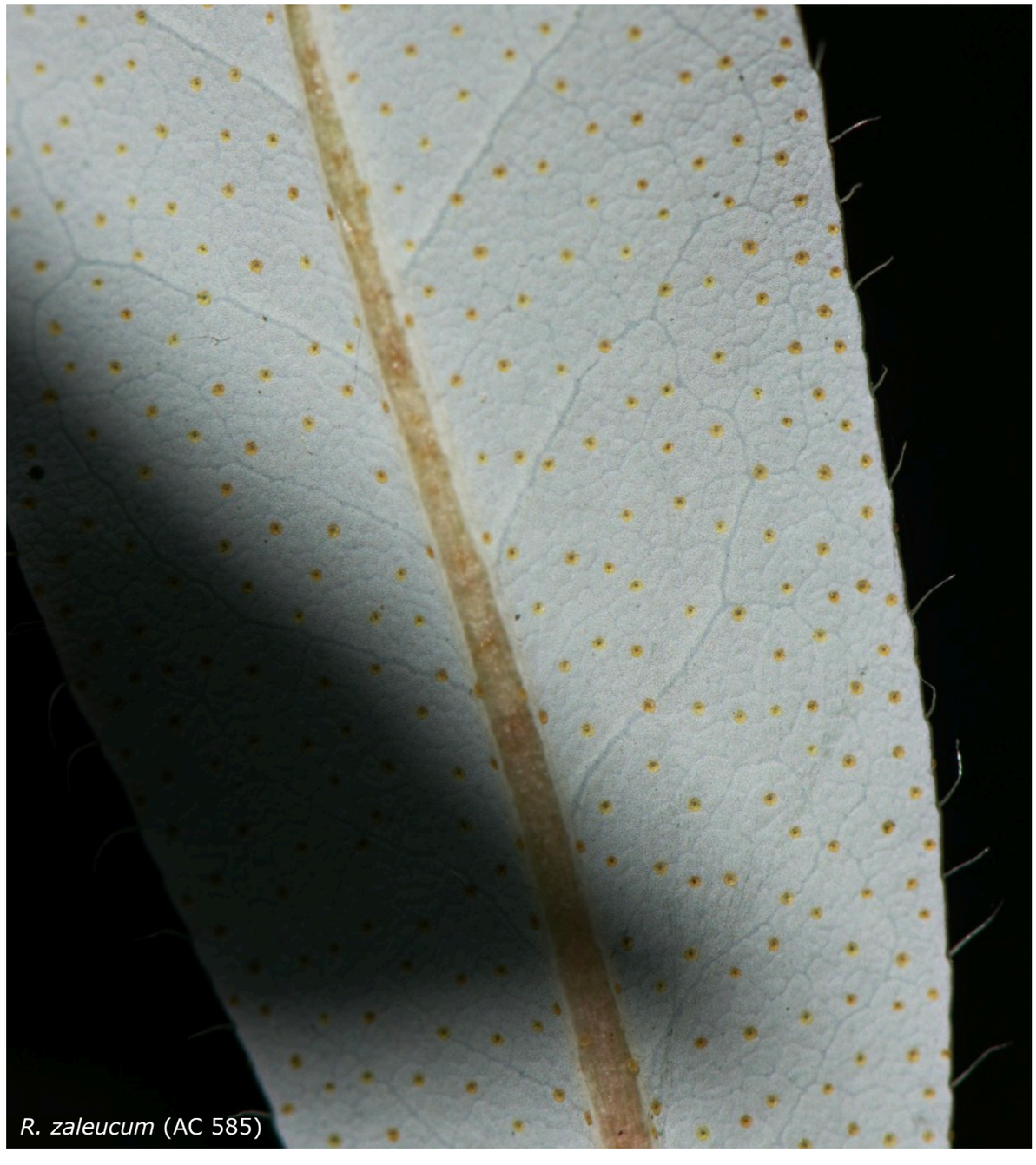
Chinese botanists recognise *R. zaleucum* var. *pubifolium,* but like the var. *nudatum* formulation concocted for *R. tatsienense,* and that of ssp. *multiflorum* for *R. triflorum,* all are the work of the same botanist and they take pettifogging to the extreme. In this case the listed character differences are an adaxial leaf surface pubescent at least along the midrib and a glabrous style base. No niche distribution is associated with the variety, it has not been introduced into UK cultivation, and it is not maintained herein.

R. zaleucum var. *zaleucum* was introduced into British gardens by Forrest in 1912, the Scotsman returning an additional fourteen lots subsequently and Reginald Farrer, Kingdon-Ward and Joseph Rock all adding contributions to the pot. Alan Clark reintroduced the species in 1993, ending a hiatus of more than sixty years.

Both varieties of *R. zaleucum* are only hardy in the milder areas of the UK, along the western seaboard and in the southern counties, as they have a -10ºC minimum winter temperature rating, with just a few of the clones drifting from H4 into H5 territory. They are vigorous in growth, have fine bronzy-red young foliage, and while not as free-flowering as the best forms of the *R. yunnanense* subspecies or *R. rigidum,* especially as young plants, a mature shrub or small tree covered in white, pink or lavender bloom can certainly give the celebutantes of the subsection a run for their money. Prospective purchasers with addresses along the east coast or inland, even if these are sheltered locales, should note that the young growth will regularly be frosted if the species is attempted.

The var. *zaleucum* epithet translates as 'very white'.

That for var. *flaviflorum,* as 'with yellow flowers', though these may also be white.



R. zaleucum (AC 585)

R. zaleucum (F 15688)

R. flaviflorum (KW 20837)



R. aechmophyllum (F 16790)

R. aechmophyllum

Hardiness:
H5.
Flowering Period:
May.
Distribution in the wild:
SW Sichuan and NW Yunnan, China.
Growing amongst scrub, alongside streams and on open stony meadows,
at elevations of 3,350-3,650m.

Identification:
Shrub, laxly or broadly upright, 0.9 to 1.3m high (more in cultivation);
branchlets reddish, sparsely lepidote, puberulous or glabrous (rarely);
bark brown, striate.
Leaves evergreen or semi-evergreen, coriaceous, somewhat stiff,
oblong-lanceolate through oblanceolate to lanceolate,
3 to 5cm long by 1 to 1.5cm wide,
apex acute or acuminate, and mucronate,
base tapered or obtuse;
upper surface pale olive-green, shiny, without scales, glabrous or ciliate towards the base,
the midrib puberulous, rarely glabrous;
lower surface pale green, lepidote, the scales unequal, medium-sized, brown, flat,
three or more times their own diameter apart.
Petiole 4-8mm long, reddish, sparsely lepidote, puberulous or glabrous (rarely).
Inflorescence terminal, shortly racemose, loose, 3-6-flowered.
Rhachis 2-3mm long, lepidote, puberulous or glabrous.
Pedicel 10-14mm long, sparsely lepidote.
Calyx minute, a mere rim or 5-lobed, these triangular or rounded, and 0.5-1mm long,
their outer surface without scales,
their margins without scales, glabrous.
Corolla 1.8 to 3.1cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
white, pink, pinkish-lavender, rose, rose-lavender, lavender,
with or rarely without crimson, rose, olive-brown or green spots,
the outer surface lepidote or not, or moderately lepidote on just the lobes, glabrous.
Stamens 10, unequal, long-exserted;
filaments pubescent towards the base.
Ovary oblong, 3-4mm long, 5-locular,
densely lepidote.
Style long, impressed, declinate, slender, elepidote, glabrous.
Capsule oblong, 6-15mm long, densely lepidote.

Seed Collections:

F 16790	1918	F 20795	1921/1922	R 24309	1932
F 18904	1918/1919	F 20923	1921/1922	R 24432	1932
F 20176	1921/1922	F 20926	1921/1922	R 24591	1932
F 20185	1921/1922			R 24592	1932

R. aechmophyllum was discovered on the Muli Mountains of southwestern Sichuan by George Forrest in August 1918, the plant hunter describing the species with Isaac Bayley Balfour in Volume 13 of *Notes from the Royal Botanic Garden, Edinburgh,* in 1922. Both Forrest and Joseph Rock subsequently found the shrub in northwest Yunnan.

Synonymy was imposed on *R. aechmophyllum* when H. H. Davidian sunk the taxon under *R. yunnanense* in his *Revision of the Triflorum Series of Rhododendron* update that was published in *The Rhododendron and Camellia Year Book 1963,* and James Cullen, author of the Edinburgh Revision's Subgenus *Rhododendron* classification, maintained this status. Both botanists would have been aware that *R. aechmophyllum* was known to be a tetraploid with 52 chromosomes, while *R. yunnanense* was a hexaploid with 78, but at the time, the full ramifications of this difference were unknown. Today however, scientists can report that a hexaploid is birthed when the unreduced gametes of a triploid are paired in meiosis. In layman's terms:

Sperm and egg - the gametes - each hold half of an individual's genetic code.

A triploid has a total of 39 chromosomes.

39 is not easily split in two without creating a mess.

And so the division bit of the process is skipped and the sperm and egg each retain 39 chromosomes.

Self-pollination occurs courtesy of a busy bee and the now fertilised seed has a grand total of 78 chromosomes, making the plant a hexaploid.

But there is another complication: the tetraploid itself.

In order for it to be fertile and able to reproduce, it has to have been created from a tetraploid-diploid pairing that did not involve the parent plant, otherwise the resulting juvenile would turn out to be a sterile mule. Again, in layman's terms:

Rhododendrons are basically diploids with 26 chromosomes, arranged as 13 paired chromosome sets.

Sometimes things go wrong and instead of each set dividing down the middle so that the sperm or the egg get half the total amount of genetic information - 13 chromosomes, one from each pair - they get the lot, and those gametes are then described as being unreduced, because each has 26 chromosomes.

Cue self-pollination, and the youngster that eventually sprouts will be a tetraploid with 52 chromosomes, 26 from the sperm, added to the 26 inside the egg.

If that tetraploid then tries to breed with its nearby parent plant and normal chromosome reduction has occurred, one of the gametes will hold 26 chromosomes, the other 13. But no new genetic data will have been introduced into the egg when they pair at the moment of conception. And later on in that seedling's life, when it tries to breed, those extra duplicate chromosomes will gum up the process and prevent reproduction from taking place.

But if the diploid involved in the match was not the original parent plant, new genetic information enters the equation and the youngster finds that not only can it breed, but that its fertility and adaptability may even have been enhanced.

Apply those convolutions to the synonymy maintained by Doctors Davidian and Cullen - *R. aechmophyllum,* a tetraploid with 52 chromosomes, sunk under *R. yunnanense,* which is a hexaploid with 78 - and the alarm bells should have started to ring. Because even if the best-case scenario had occurred, it would see a parent sunk under its own hybrid polyploid offspring, with which it cannot successfully breed.

For this reason, *R. aechmophyllum* is herein returned to specific status.

Within Subsection *Triflora, R. aechmophyllum* can be keyed from its fellows: by a lack of hairs on the abaxial midrib; the leaf underside being pale green with distant medium-sized unequal scales; no bristles along the leaf margins; a terminal inflorescence of 3-6-flowers without axillary flower buds; and those corollas not being purple or yellow. Clearly, if an attempt is being made to distinguish *R. aechmophyllum* from *R. yunnanense* ssp. *yunnanense,* then all of those morphologic characteristics, used in combination, will be required to achieve a determination. However, doubt may still persist, so a few additional features might prove helpful: the *R. aechmophyllum* branchlets are reddish in colour; the foliage is leathery and somewhat stiff; the upper leaf surface is shiny and without any scales; and mature shrubs in UK cultivation are usually between 1 and 2m high, they are certainly not small trees.

R. aechmophyllum was introduced by George Forrest in 1918 under the type number F 16790. A second batch of seed - F 18904 - arrived shortly afterwards, and the Scotsman returned another five lots during his 1921-1922 expedition. Joseph Rock added four more gatherings to the pot in 1932 and the species has almost certainly been reintroduced since that date, but it has not been possible to identify specific field numbers within the sixty or more documented collections of *R. yunnanense* ssp. *yunnanense* made between 1981 and 2012 by Western expeditions combing China's re-opened hillsides.

A sunny spot will produce the best specimen of *R. aechmophyllum* in a British garden, though this should be a sheltered locale if situated along the east coast or inland. As with *R. yunnanense,* youngsters will need extra protection to get them through any really bad cold snap in the first few years after planting, but otherwise, the species is hardy, free-flowering from a young age and without problem.

The *R. aechmophyllum* Latin epithet translates as 'with spear-pointed leaves'.



R. aechmophyllum (F 16790)

R. suberosum (F 26463)

R. suberosum
Hardiness:
H5-6.
Flowering Period:
April-May.
Distribution in the wild:
SW Sichuan and W Yunnan, China; NE Upper Myanmar.
Growing in thickets on rocky slopes and in open scrub by streams in side valleys,
at elevations of 3,300-4,000m.

Identification:
Shrub, bushy or broadly upright, 1 to 3m high;
branchlets lepidote, glabrous, bristly or not;
bark brown, striate.
Leaves evergreen, chartaceous,
lanceolate through oblong-lanceolate,
3.5 to 7.3cm long by 1 to 2.2cm wide,
apex acute or acuminate, and mucronate,
base tapered or obtuse;
upper surface dark green, shiny, lepidote or not, glabrous, bristly or not,
the midrib puberulous or glabrous,
the margins erose, rough to the touch, moderately through densely bristly,
flat or slightly recurved;
lower surface pale or dark green,
lepidote, the scales unequal, medium-sized, brown, narrowly rimmed,
two to five times their own diameter apart.
Petiole 4-7mm long, moderately through densely lepidote, glabrous, bristly.
Inflorescence terminal and axillary in the uppermost 2 through 7 leaves,
shortly racemose, loose, 1-3-flowered.
Rhachis 1-3mm long, lepidote, glabrous.
Pedicel 5-15mm long, moderately through densely lepidote, glabrous, without bristles.
Calyx minute, a mere rim or 5-lobed, these triangular or ovate, and 0.5-1mm long,
their outer surface moderately through densely lepidote,
their margins lepidote or not, glabrous, bristly or not.
Corolla 1.7 to 3cm long, 5-lobed, funnel-shaped,
zygomorphic,
white faintly flushed rose, ivory-white flushed rose or ivory-white,
spotted green or deep rose on the posterior side,
the outer surface lepidote, glabrous.
Stamens 10, unequal, exserted;
filaments moderately through densely pubescent towards the base.
Ovary conoid or oblong, 2-4mm long, 5-locular,
densely lepidote, glabrous.
Style impressed, declinate, slender, longer than the corolla and the stamens,
elepidote, glabrous.
Capsule oblong, 7-10mm long, densely lepidote, glabrous.

Seed Collections:

F 18000	1919
F 24618	1924/1925
F 26463	1924/1925
F 26486	1924/1925
F 26596	1924/1925
F 27404	1924/1925
F 27405	1924/1925


R. suberosum (F 26463)

In an article for *The Rhododendron and Camellia Year Book 1963,* H. H. Davidian wrote that from 'the ample material now available, confirmed by the additional evidence of plants in cultivation, *R. suberosum* agrees with *R. yunnanense* in every respect' (*Revision of the Triflorum Series of Rhododendron,* page 217, paraphrased), and so the former was made synonymous under the latter.

But by 1982, when the first volume of *The Rhododendron Species* was published, Davidian had reversed that decision and restored the species to specific status.

The reason for this change of mind was likely the bristles, but new scientific evidence, which discussed the genetic hurdles to interbreeding between polyploids and normal plants, was soon to be published. And it had been known since the early 1950s, that *R. suberosum* was a diploid with the standard set of 26 chromosomes, while *R. yunnanense* was a hexaploid with 78 (*Chromosome Numbers In Species Of Rhododendron,* written by E. K. Janaki Ammal, D.Sc., I. C. Enoch, B.Sc., and Margery Bridgwater, and published in the RHS *Rhododendron Year Book 1950*).

A more recent article by Doctor Thomas Ranney of North Carolina State University and Jeff Jones, then his Research Specialist, titled *Understanding Polyploidy: Insights into the Evolution and Breeding of Azaleas,* explains the problem in layman's language and by now, can likely be recited verbatim by those engaged with the text:

> 'In contrast to the gradual evolutionary process whereby new species evolve from isolated populations, new species of plants can arise abruptly. The most common mechanism for abrupt speciation is through the formation of natural polyploids. Once a tetraploid arises in a population, it can generally hybridize with other tetraploids. However these tetraploids are reproductively isolated from their parental species. Tetraploids that cross with diploids of the parental species will result in triploids that are typically sterile. This phenomenon provides a "reproductive barrier" between polyploids and the parental species – a driving force for speciation'.
> *The Azalean,* Winter 2008.

The reproductive barrier that exists between diploid and tetraploid also exists, though to a lesser extent, between diploid and hexaploid, if the former was the parent of the latter. So while *R. suberosum* may have given rise to *R. yunnanense,* it cannot be made a synonym of that taxon as was proposed in the 1978 paper *A Preliminary Synopsis of the Genus Rhododendron,* by James Cullen and David Chamberlain (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), and confirmed in Doctor Cullen's full Subgenus *Rhododendron* revision of 1980 vintage (*Notes,* Volume 39, Number 1), because the taxa cannot successfully breed with each other in the wild. The specific status reapplied by H. H. Davidian in 1982, is therefore confirmed and re-established herein.

R. suberosum was found on the mountains of the N'Maikha-Salween Divide in the west of Yunnan by George Forrest during May 1919 and introduced into UK cultivation later that same year under the type number F 18000. The species was described by the plant hunter and Sir Isaac Bayley Balfour in Volume 13 of *Notes,* published during 1922. Forrest collected the species again later in 1919, as well as in 1924 and 1925, extending the known distribution into northeast Upper Myanmar, while Joseph Rock returned herbarium material from southwest Sichuan in 1932, but did not secure any seed.

The species has leaves with margins that are densely bristly and rough to the touch, the foliage displaying a pale or dark green abaxial surface and glabrous midrib. The 1-3-flowered inflorescence is terminal and axillary in the uppermost two through seven leaves, while the corollas are funnel-shaped and ivory-white in hue, though often flushed with rose. The lack of any bristles on the pedicels and corolla tube keys specimens of *R. suberosum* from those of *R. trichanthum,* as of course, does the corolla colour.

Specimens of *R. suberosum* will be found in many British gardens but they will be carrying a *R. yunnanense* label, though the Forrest field number - if such is present - will confirm a true identification if it is one of the seven known introductions. The plants are very hardy and will certainly be unbothered by winter lows down to -18ºC, especially if provided with some shelter. Mature shrubs will be well-clothed upright bushes to around 2.5m in height with a slightly narrower spread. They are free-flowering from a young age and the green-spotted, ivory-white corollas, are delicately beautiful.

The species epithet translates from the Latin as 'slightly gnawed' and references the erose and rough-to-the-touch leaf margins.



R. suberosum (F 26463)

R. suberosum (F 26463)

R. augustinii* ssp. *rubrum

Hardiness:
H4-5.
Flowering Period:
March-April.
Distribution in the wild:
NW Yunnan, China.
Growing in thickets and amongst scrub on rocky slopes,
at elevations of around 4,000m.

Identification:
Shrub, compact, 1.5 to 2.75m high;
branchlets moderately through densely lepidote,
glabrous or sparsely pubescent, the hairs long.
Leaves evergreen, coriaceous,
lanceolate through oblong-lanceolate to oblong,
4 to 7.8cm long by 1.6 to 3.3cm wide,
apex acute or acuminate, and mucronate,
base tapered or obtuse;
upper surface dark green, shiny, lepidote or not, glabrous or sparsely puberulous,
the midrib puberulous;
lower surface pale green, glabrous,
lepidote, the scales unequal, medium and large-sized, brown,
one to three times their own diameter apart,
the midrib densely pubescent,
the hairs of two types, loriform (strap-like) and filiform-acicular (threadlike),
not extending onto the underside of the petiole.
Petiole 6-16mm long, lepidote, glabrous or pubescent, the hairs long.
Inflorescence terminal, or terminal and axillary in the uppermost one to three leaves,
umbellate, loose, 3-5-flowered.
Rhachis 2-3mm long, lepidote, glabrous.
Pedicel 7-20mm long, densely lepidote, glabrous.
Calyx minute, a mere rim or 5-lobed, these ovate or rounded, and 0.5-1mm long,
their outer surface densely lepidote, glabrous,
their margins ciliate.
Corolla 2.7 to 3cm long, 5-lobed, widely-funnel-shaped,
zygomorphic,
reddish-purple or reddish-pink,
spotted darker on the upper lobes,
the outer surface lepidote, glabrous or puberulous on the tube.
Stamens 10, unequal, long-exserted;
filaments densely pubescent towards the base.
Ovary conoid or oblong, 2-3mm long, 5-locular,
densely lepidote, glabrous.
Style long, impressed, declinate, slender,
elepidote, glabrous.
Capsule oblong, 7-10mm long,
densely lepidote, glabrous.

Seed Collections:

F 25914	1924
AC 1858	1996
AC 1864	1996
AC 1879	1996
AC 1892	1996
JN 284	1996
JN 290	1996



R. rubrum (F 25914)

First described as *R. augustinii* var. *rubrum* in the 1963 *Rhododendron and Camellia Year Book*, H. H. Davidian then had a change of mind, deciding in 1976 that the plant was so distinct in cultivation that it deserved specific status. So, in Volume 30, Number 4, of the *Quarterly Bulletin of the American Rhododendron Society,* he upped the ranking and changed the epithet to *R. bergii,* the species 'named after Mr & Mrs Warren E. Berg, Washington, U.S.A., in recognition of their outstanding contributions to the cultivation of rhododendrons'.

Unfortunately the accolade was short-lived, for James Cullen and David Chamberlain ditched the honorific in favour of *R. augustinii* ssp. *rubrum* in the first part of their *Preliminary Synopsis* paper published just two years later in Volume 36 of *Notes from the Royal Botanic Garden, Edinburgh,* this status confirmed in Doctor Cullen's full revision of Subgenus *Rhododendron* that arrived in 1980 (*Notes,* Volume 39, Number 1). Now, despite this potentially being seen as mean-spirited, it was fully compliant with the internationally agreed nomenclature rules - even the 'rubrum' terminator, as amazingly, it had only been used within the genus for that sole 1963 combination, unlike its near shade 'roseum'. Some less charitable individuals might also point to the fact that Edinburgh Botanic is some 4,413 miles closer to Sandling Park than Warren Berg's home in Port Ludlow, Washington State, and being on the same island, if not within commuting distance, certainly easily reachable in a day by car, train or plane, but of course, this fact was likely not even considered. Not for an instant.

Doctor Cullen describes ssp. *rubrum* as 'a curious plant, known only from two gatherings and material in cultivation, in some respects (presence of loriform hairs, purple corolla) similar to *R. trichanthum*', though he went on to add that 'it is perhaps a naturally occurring hybrid, but field observations on this point are necessary'.

Such specific reporting is still awaited, although a possible parental combination has been proposed involving *R. augustinii* ssp. *chasmanthum* and *R. rubiginosum*. Yet more than forty years on from the good Doctor's remarks and despite two Western collectors returning seed from Da Po Shan in Weixi during 1996 - Alan Clark and Jens Nielsen, but the plants that germinated have glabrous abaxial midribs and winged petioles - no one is out-and-out committing to *R. x bergii*.

George Forrest was the plant hunter who made the initial find during October 1924, the locale the same as that for one of the ssp. *hardyi* gatherings, Shui-lu Shan to the west of Wei-Hsi (Weixi) in northwest Yunnan. The plants were in fruit, so capsules were gathered and seed introduced under F 25914, but any flowers were long gone, which meant that that part of the botanic description was provided later by a cultivated plant. From the habitat information detailed in Forrest's field notes - 'in thickets and amongst scrub in side valleys on rocky slopes' - more than one population existed on the ground, but they have now escaped further human attention for almost a century.

In cultivation, *R. augustinii* ssp. *rubrum* is hardy, but flowering three or four weeks in advance of its three close relations, is more likely to be frosted. It is therefore not a good prospect for northern gardeners, a fact borne out by reports that the plant is considered tender at Glendoick, to the east of Perth in Scotland (Peter Cox, *The Larger Rhododendron Species,* 1979), although the specimen at Edinburgh Botanic - as the crow flies, forty miles to the south - has been in situ since 1956 and appears in fine fettle. Youngsters grown from hand-pollinated seed flower freely from quite an early age and usually grow without problem.



R. rubrum (F 25914)



R. rubrum (F 25914)

Section *Lepipherum* Subsection *Uniflora:*



R. pemakoense



Taxa:

R. imperator
R. ludlowii
R. patulum
R. pemakoense
R. pumilum
R. uniflorum

Taxonomic Revision:

The placement of Subsection *Uniflora* remains as designated in the 1996 Edinburgh Revision classification.

R. patulum however, has been returned to specific status to address polyploidy issues related to its synonymy under either *R. imperator* or *R. pemakoense*.

Subsection Morphology:

Shrubs, dwarf, prostrate or mat-forming, 0.03 to 1m high;
occasionally stoloniferous;
branchlets lepidote, puberulous or glabrous;
bark pale brown or greyish, scaling or flaking.

Leaves evergreen or semi-deciduous, coriaceous, sometimes aromatic,
lanceolate, oblanceolate, obovate, oval or rounded,
0.8 to 3.8cm long by 0.4 to 1cm wide,
apex acute or rounded, and mucronate,
base tapered, obtuse or rounded;
upper surface dark green, sometimes bright green or greyish-green, usually shiny,
lepidote or not,
the margins revolute, occasionally crenulate;
lower surface pale glaucous green or pale green,
lepidote, sometimes densely so, the scales golden or brown, darker at maturity,
unequal or equal, rimless or with undulate rims,
distant, between 0.5 and 6 times their own diameter apart.

Leaf anatomy comprises a 1- or 2-layered upper epidermis,
with the cells in the top layer equal in size to those in the layer below;
the cuticle is thin or thick; water tissue is absent;
the lower epidermis cells are prolonged into papillae.
Sclereid cells are absent.

Petiole 1-5mm long, lepidote.

Inflorescence terminal, 1-3-flowered, the leaves beneath the inflorescence bract-like.

Pedicel 10-26mm long, lepidote,
often accrescent in fruit, extending to between 35 or 60mm.

Calyx usually small, rarely large, sometimes coloured, deeply 5-lobed,
these ovate or oval, and 1-7mm long,
their outer surface lepidote,
their margins ciliate or not.

Corolla 0.8 to 3.5cm long, 5-lobed,
widely funnel-shaped, tubular-funnel-shaped,
funnel-campanulate, campanulate or tubular-campanulate,
pink, purple or yellow,
sometimes spotted within the tube,
the outer surface variably pubescent, usually lepidote.

Stamens 10, unequal, declinate, shorter than the corolla;
filaments pubescent towards the base.

Ovary conoid, ovate or ovoid, 2-3mm long, 5-locular,
densely lepidote.

Style inserted into a depression at the ovary apex, declinate or straight,
usually glabrous, sometimes sparsely lepidote at the base.

Capsule rounded, oblong or oblong-oval, 4-13mm long,
densely lepidote, the scales often very small.

Seeds elongate, without wings or appendages, or each end with a minute appendage.



R. patulum



R. pemakoense



R. pumilum (McBeath 1120)

R. pumilum

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
E Nepal; S & SE Tibet; NE Bhutan;
Sikkim, Arunachal Pradesh & Assam, India; NE Upper Myanmar.
Growing on moss-covered rocks, alpine grassy slopes and screes, and on open hillsides,
at elevations of 3,300-4,300m.

Identification:
Dwarf shrub, prostrate, creeping or spreading, or broadly upright, open,
0.05 to 0.6m high.
Leaves evergreen or semi-evergreen,
oval through elliptic to near orbicular or obovate,
0.8 to 1.9cm long by 0.4 to 1.2cm wide,
apex rounded or obtuse,
base obtuse or rounded;
upper surface dark green, somewhat shiny, lepidote or not;
lower surface pale green or pale glaucous green, lepidote,
the scales small, brown or dark brown, one to three times their own diameter apart.
Inflorescence terminal, 1-3-flowered.
Pedicel 10-26mm long, densely lepidote,
accrescent in fruit, extending to 60mm long.
Calyx crimson- or reddish-purple, or reddish-brown, 1-3mm long.
Corolla 0.8 to 2.1cm long, campanulate,
pink, pinkish-purple, rose, or purple,
the outer surface densely pubescent, sparsely through moderately lepidote.
Style short, straight,
equal to or longer than the stamens, around half as long as the corolla.

Seed Collections:

KW 5856	1924	L&S 2552	1936	LS&E 13183	1946/1947
KW 5862a	1924	L&S 2652	1936	LS&E 15161	1946/1947
KW 6961	1926	L&S 2762	1936	LS&E 15284	1946/1947
L&S 1362	1936	LS&T 3784	1938	LS&H 20686	1949
L&S 1624	1936	LS&T 3925	1938	LS&H 21184	1949
L&S 1634	1936	LS&T 4765	1938	KW 19591	1950
L&S 1741	1936	LS&T 5198b	1938	McBeath 1120	1981
L&S 1773	1936	LS&T 5559	1938	EMAK 304	1991
L&S 1889	1936	LS&T 6342	1938	EMAK 685	1991
L&S 2378	1936	LS&T 6533	1938	AC 3244	1997
		LS&T 6556	1938		

R. pumilum was a J. D. Hooker find that was made during 1849 and described in the expedition's fully illustrated write-up, *The Rhododendrons of Sikkim-Himalaya,* published in 1851. Sir Joseph is also credited with the first introduction, his seeds arriving back in the UK during 1850, although the oldest specimens found in gardens today are from Frank Kingdon-Ward's 1924 or 1926 reintroductions, under the field numbers KW 5856 and KW 6961, respectively. The latter gathering comes with one of Ward's typical sobriquets - 'Pink Baby' - and he describes his encounter with this member of the genus, high above the Seinghku Valley on the then Burma-Assam frontier, in his 1930 book *Plant Hunting on the Edge of the World:*

> 'To descend an unexplored gulley connecting the ice shelf with the main valley is to risk trouble. Sooner or later the gulley will end in a cliff. However, on this occasion I had no difficulty, and presently found myself on a tall scree, with a straight descent into the valley. On the scree I noticed tuffets of a dwarf rhododendron, with pairs of pale pink flowers borne stiffly on long stalks. The plants were scattered, never forming a continuous carpet like most of the dwarf rhododendrons, though this might have been the fault of the scree. This was "Pink Baby" (*R. pumilum*) a plant of the Eastern Himalaya'.

That locale should immediately foretell that *R. pumilum* will be difficult in cultivation, and so it has proved, with plants requiring shelter from strong winds, a somewhat shady ideally north-facing site, first class drainage and a soil rich in decayed organic matter. But even if all those stipulations are met, the species will still hop the twig in some gardens no matter what and in others gradually deteriorate through dieback over successive winters. The lucky few however, will see their plant develop into a laxly prostrate or compact spreading shrub, no more than 20cm high by 40cm across, which despite being somewhat sparse of foliage, will each year and from a young age, produce a flush of dainty, thimble-like pink blooms, dotted across the low framework of branches on long, erect pedicels.

The style within each of those campanulate flowers is short, barely half the length of the corolla, and this is one of the prime characteristics used to identify *R. pumilum* within the subsection. *R. ludlowii* and *R. uniflorum* are similarly vexed, but less embarrassingly so, the former easily determined by its yellow blooms and notched leaf margins, the latter having far more distant scales on its abaxial leaf surface, these three to six times their own diameter apart, rather than one through three, plus a widely funnel-shaped corolla.

R. pumilum has the most widespread natural distribution of any of the Subsection *Uniflora* species, with populations found in eastern Nepal, southeast Tibet, Sikkim and Bhutan, as well as in Arunachal Pradesh, Assam and northeastern Upper Myanmar. In consequence, it is the most well represented member of the subsection in herbaria collections, and has more seed introductions than the five other species combined. Yet despite that, only four documented gatherings have been returned in modern times: nurseryman Ron McBeath securing seed from Nepalese plants in 1981; the Edinburgh-Makalu Expedition to Nepal providing two lots in 1991; and Alan Clark gathering a final bunch of capsules on the slopes of the Doshong La in 1997.

Kingdon-Ward has reported that a possible *R. patulum* x *R. pumilum* natural hybrid is present on the Mishmi Hills of the Delei Valley, Assam, growing at an altitude of 3,600m (*ibid,* page 259). This may indicate that *R. pumilum* too is a tetraploid, but regrettably, the species is one of three subsection members for which no chromosome counts are presently available.



R. pumilum (McBeath 1120)



R. pumilum (McBeath 1120)

R. uniflorum

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
Doshong La, SE Tibet.
Growing in clumps on steep grassy slopes,
on moss-covered rocks, glacial moraines and gravel, at elevations of 3,400-3,900m.

Identification:
Shrub, compact, spreading or broadly upright, 0.3 to 1m high.
Leaves semi-deciduous,
obovate through oblong-obovate to oblong-oval and oval,
1.3 to 2.4cm long by 0.6 to 1.2cm wide,
apex rounded or obtuse,
base obtuse or cuneate;
upper surface dark green or bright green, lepidote or not;
lower surface glaucous, pale glaucous green or pale green, loosely lepidote,
the scales small, golden at first, quickly becoming dark brown or almost black,
three to six times their own diameter apart.
Inflorescence terminal, 1-3-flowered.
Pedicel 13-22mm long, lepidote,
accrescent in fruit, extending to 35mm long.
Calyx 1-2.5mm long.
Corolla 2 to 2.8cm long, widely funnel-shaped,
purple,
the outer surface densely pubescent, lepidote.
Style slender, straight, two-thirds the length of the corolla.

Seed Collections:

KW 5876	1924
LS&E 13120	1946/1947
LS&E 13592	1946/1947
AC 3610	1997

R. uniflorum was discovered on the slopes of the Doshong La, southeast Tibet, on June 29th 1924, Frank Kingdon-Ward making the find and returning dried material and seed under the type number KW 5876. His field notes record that the species grew in clumps on steep grassy slopes, was less than 0.3m high and was rare in the type locale. Two Frank Ludlow, George Sherriff and Henry Elliott collections made on their 1946-47 expedition - LS&E 13120, and LS&E 13592 - are listed as being *R. uniflorum* in the 1967 RHS *Rhododendron Handbook,* but these may just be gatherings of dried material and not 'Rhododendrons in Cultivation in Great Britain' as stated, because the field numbers are not repeated in later editions of the book. Alan Clark is the only other Western plant hunter to have found *R. uniflorum,* reintroducing the species from Po Tsangpo, above Showa La, in October 1997. His field notes detail a prostrate evergreen shrub growing on moss-covered rocks just below the snow line at 3,900m.

Two features identify *R. uniflorum* from the other members of the subsection: a style that is shorter than its widely funnel-shaped corolla; and the abaxial leaf surface scales, which are small, of a golden hue at first, this then becoming dark brown or even black, these set three to six times their own diameter apart. Suggestions that the species be made synonymous with the more widespread *R. imperator* - also present on the upper slopes of the Doshong La, and in far greater numbers - appear not to have taken into account the differences in style length and the accrescent nature of the pedicel in fruit. For the *R. imperator* style, unlike that of *R. uniflorum,* is equal to or longer than the corolla, and its flower stalks do not extend, harden and become erect as the capsules develop. Both of these features are significant within this subsection's membership and are herein judged to preclude the proposed synonymy.

R. uniflorum first flowered in cultivation at Edinburgh Botanic in 1927 when no more than 5cm high. It was described by John Hutchinson and Frank Kingdon-Ward, their text included within *The Species of Rhododendron,* the now classic tome that was published by the Rhododendron Society in 1930.

While *R. uniflorum* is a dwarf and slow-growing plant on the Doshong La, in UK cultivation, the maritime climate offers a far less vigorous environmental challenge, which allows 1m high upright bushes to develop quite quickly, with larger leaves than those found on the type herbarium sheets. Flowering is usually profuse, the single, paired or trefoil corollas on a mature specimen often blanketing the entire framework of branches in pinkish-purple. The buds begin opening in April, so avoid some of the late spring frosts that hit their more early-flowering compatriots, but a sheltered site is still advised to protect the copious display.



R. uniflorum (KW 5876)



R. uniflorum (KW 5876)



R. uniflorum



R. uniflorum

R. pemakoense (KW 6301)

R. pemakoense

Hardiness:
H4-5.
Flowering Period:
March-May.
Distribution in the wild:
SE Tibet.
Growing on moss-covered rocks, on slopes in ravines and on cliffs,
at elevations of 2,900-3,700m.

Identification:
Dwarf shrub, mounding, spreading or broadly upright, 0.3 to 0.6m high;
often stoloniferous.
Leaves aromatic,
obovate through oblong-obovate to oblanceolate,
1 to 3cm long by 0.5 to 1.5cm wide,
apex rounded or obtuse,
base obtuse or tapered;
upper surface bright or dark green, or greyish-green, lepidote;
lower surface glaucous, or pale glaucous green, lepidote,
the scales unequal, the larger with somewhat wavy margins,
golden at first, becoming brown with age,
half to one-and-one-half times their own diameter apart.
Inflorescence terminal, 1-2-flowered.
Pedicel 13-25mm long, lepidote,
accrescent in fruit, extending to 38mm long, sometimes more.
Calyx crimson- or reddish-purple, purple, pink or greenish, 1-4mm long.
Corolla 2.4 to 3.5cm long, tubular-campanulate or tubular-funnel shaped,
pale purple, pinkish-purple or pale pink,
the outer surface densely pubescent, lepidote.
Style long, slender and straight,
longer than the stamens, equal to or longer than the corolla,
occasionally pubescent at the base, rarely lepidote at the base.

Seed Collections:

KW 6301	1924
CC 7561	1996

Prior to 1996, when Peter and Kenneth Cox reintroduced the species from southeast Tibet, *R. pemakoense* was only known in cultivation from one wild gathering of capsules: Frank Kingdon-Ward's 1924 collection under the type number KW 6301.

Ward first encountered the species in the Tsangpo Gorge at Pemakochung, on November 21st of that year, and his field notes - attached to the herbarium plate at the Royal Botanic Garden, Kew - describe the shrubs as 'forming carpets on steep damp moss-clad slabs of rock, facing north'. Nine days later, more plants were found, these 'fairly common on cliffs up the glens above the Tsangpo Gorge, Namcha Barwa and Sanglung'.

In Volume 1 of *The Rhododendron Species,* H. H. Davidian reported in 1982 that:

> 'According to Kingdon-Ward, some of the seeds came from his first gathering on November 21, 1924, but the bulk of the seeds was collected ten days later on November 30. The extreme variation of the plant in cultivation shows that the seeds must have been collected from two or three or more different plants and were placed in one bag under No. 6301'.

This would offer an explanation - in addition to 'seed pan rogue' - for the two differing chromosome counts recorded by the RHS science team at Wisley in the late 1940s, with one sample of *R. pemakoense* (established in the garden at Wisley), determined to be a diploid with 26 chromosomes, the other (provided by Exbury Gardens), a tetraploid with 52 (*Chromosome Numbers in Species of Rhododendron,* published in *The Rhododendron Year Book 1950*).

A rhododendron species can be a diploid, or it can be a tetraploid, but it has to be one or the other, it cannot be both. Therefore the Exbury clone, if it can be tracked down, must be considered a new species and its epithet changed, *R. pseudopemakoense* maintaining the linkage with the parent species. However, further testing will be needed before that new moniker can be extended to any of the other similar clones. Alternatively of course, and dependent on the results, a small 'x' may need to be inserted into the binomial.

R. pemakoense has a style that is equal in length or longer than the corolla and leaves that are obovate through oblong-obovate in shape. The leaf underside has a dense patina of scales that are unequal in size, with each set between 0.5 and 1.5 times their own diameter apart. These three features key the species from all the other members of Subsection *Uniflora* without recourse to the changeable corolla silhouette, which varies between a tubular-campanulate or tubular-funnel-shaped profile.

Four forms of the species are widely grown in cultivation: a mounding, rounded shrub to around 0.3m high; a more upright clone attaining 0.5m in height; a stoloniferous form that is also broadly upright, but spreads by means of underground runners; and a low, compact-spreading clone, also no more than 0.3m high, believed to have been conceived in the UK via controlled pollination. *R. pemakoense* blooms freely from a very young age, but begins opening its flower buds during March and April, so is prone to having them hit by late spring frosts. And as those who have a specimen will know, from the moment they start to swell, the buds are in danger, which determines where the shrub should be placed in the garden if the display is to avoid being hit year after year. Otherwise, cultivation is without problem, the species the easiest member of the subsection to grow.

R. pemakoense was described by Kingdon-Ward in Volume 88 of *The Gardeners' Chronicle,* published during 1930.



R. pemakoense (KW 6301)


R. pemakoense




R. pemakoense


R. pemakoense



R. imperator (CC 7530)

R. imperator

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet; Upper Myanmar.
Growing in shady gullies, on rocks and steep slopes, and on shady cliff ledges,
at elevations of 3,000-3,400m.

Identification:
Dwarf shrub, prostrate, spreading or creeping, 0.03 to 0.3m high.
Leaves semi-deciduous, aromatic,
lanceolate through oblanceolate,
1.3 to 3.8cm long by 0.4 to 1cm wide,
apex acute or rounded,
base tapered;
upper surface dark green, shiny, lepidote or not;
lower surface pale glaucous green or pale green, lepidote,
the scales small, brown, two to six times their own diameter apart.
Inflorescence terminal, 1-2-flowered.
Pedicel 10-25mm long, lepidote,
not extending in fruit.
Calyx 1-2mm long.
Corolla 2.3 to 3.2cm long, widely-funnel-shaped,
purple or pinkish-purple,
with or without darker crimson spots,
the outer surface densely pubescent,
sparsely or moderately lepidote, or without scales.
Style long, slender and straight, equal to or longer than the corolla.

Seed Collections:

KW 6884	1926
CC 7530	1996

Frank Kingdon-Ward was again responsible for the discovery of *R. imperator,* the encounter occurring on June 9th 1926 in the Seinghku Wang valley along the Burma-Tibet border, the former state now rebranded as Myanmar, the latter illegally annexed by China in 1951 following a military invasion. Currently, of course, Russia is attempting to do the same to Ukraine, but as Western journalism has an attention span of less than a week and our politicians can barely walk and chew gum at the same time - to paraphrase President Lyndon Johnson - the two have not been correlated, so instead of diplomatic isolation and a raft of hard-hitting sanctions being applied in the 1950s and maintained, the Chinese Communist Party has got away with their own precedent-setting land grab scot-free.

Back on subject, rant over, according to Kingdon-Ward's field notes - these copied onto the herbarium plate at Edinburgh Botanic - the rhododendron was growing 'on the bare ledges of granite cliffs, fully exposed, forming perfectly flat mats with *Cassiope* and other species'. The flowers were over, with just a single unwithered corolla left on the shrub, but when Ward returned to collect the matured capsules in late October of that same year, a second flush of bloom was dotted across the prostrate branches. With typical élan, he named the species 'Purple Emperor' in his books, John Hutchinson translating the sovereign ruler part into the botanic description's Latin epithet, and their jointly written text can be found within the pages of *The Species of Rhododendron,* published by the Rhododendron Society during 1930.

Within the subsection, *R. imperator* is keyed from its cohorts using three features: the style - equal in length or longer than the corolla; the leaves - narrowly lanceolate through oblanceolate, pointed at the apex, tapering at the base, and up to 3.8cm long; and the abaxial leaf surface scales - small, and set from two to six times their own diameter apart.

R. imperator was introduced into cultivation under the Kingdon-Ward type number KW 6884 at the tail end of 1926 and it flowered for the first time in a British garden just two years and a few months later in the spring of 1929, the large purple flowers quickly drawing attention, as well as an Award of Merit from the RHS when shown in 1934. But the plants are very slow growing and have proved difficult in some locales. Peter and Kenneth Cox, writing in their 1997 *Encyclopedia of Rhododendron Species,* report the species to be somewhat tender at Glendoick and 'cover it with a cloche from September to May to help stop die-back from wet and frost'. It was they who reintroduced *R. imperator* from the hillsides of the Doshong La in southeastern Tibet during 1996, only the second gathering of capsules to be secured, and on the basis of field study, proposed the return to specific status. For varietal ranking under *R. uniflorum* had been imposed by James Cullen and David Chamberlain in 1978 (*A Preliminary Synopsis of the Genus Rhododendron,* Part 1, *Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), this status confirmed when Doctor Cullen's full Subgenus *Rhododendron* revision text was sent to the printers in 1980 (*Notes,* Volume 39, Number 1).

Researched, written and published just before the hillsides of China were once more made accessible to Western botanists, the Subsection *Uniflora* narrative does at least come with the proviso that 'the treatment presented here should be regarded as purely provisional'. That was because five of its members were then 'known from only seven wild collections' in total and 'all were very similar (at least as far as the wild specimens are concerned - material in cultivation is more variable, and may include hybrids) and present difficult taxonomic problems which cannot be properly answered until more material is collected'. So back in the day, the author clearly expected his own revision to be revised.

Peter and Kenneth write that 'the accepted wisdom was that *R. uniflorum* occurred in S.E. Tibet and *R. imperator* in Burma', but 'two expeditions have revealed large populations of typical *R. imperator* on the southern slopes of the Doshong La while there was no sign of *R. uniflorum*. It is obvious that *R. imperator* is the "true" species with quite a wide distribution, and we have therefore returned it to specific status'.

That change is maintained herein. It also reflects H. H. Davidian's 1982 treatment of the species in Volume 1 of his tetralogy *The Rhododendron Species*.

The Doshong La plants are somewhat different from those collected by Kingdon-Ward in 1926, most notably in having larger and flatter corollas, but they have exactly the same leaves - narrowly lanceolate or oblanceolate in shape, with a pointed tip and a tapered base. Chinese botanists continue to maintain Cullen's status disposition in their online *Flora of China* tome, and this ranking was also restated in the good Doctor's own 2005-published tome *Hardy Rhododendron Species: A Guide to Identification,* which regrettably took no account of the new field reporting.

Mature specimens of *R. imperator* will be no more than 10cm high and 30cm across after several decades of growth, but they will completely cover themselves with bloom each spring. A north-facing, shady niche in a rock garden or a peat wall serves the species best, assuring good drainage and shelter. Kingdon-Ward noted that the older leaves turn scarlet in winter and that the foliage was aromatic, however, one specimen, grown from the type introduction and quite widely distributed, is actually a seed pan rogue, its habit broadly upright rather than prostrate, though the shrub is no less pleasing when in flower.



R. imperator (CC 7530)



R. patulum
Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
Arunachal Pradesh & Assam, India.
Growing on rocks, stabilised mudslides, and steep slopes in full exposure,
at elevations of 3,300-3,700m.

Identification:
Dwarf shrub, prostrate, spreading or creeping, 0.03 to 0.1m high.
Leaves lanceolate through oblanceolate,
1.3 to 1.9cm long by 0.4 to 0.6cm wide,
apex acute or rounded,
base tapered;
upper surface dark green, lepidote or not;
lower surface pale glaucous green or pale green,
lepidote, the scales small, golden at first, becoming brown,
one to one-and-one-half times their own diameter apart.
Inflorescence terminal, 1-2-flowered.
Pedicel 10-25mm long, lepidote.
Calyx 1-2mm long.
Corolla 2.3 to 3.2cm long, widely-funnel-shaped,
purplish-pink,
with darker purplish-crimson spots on the upper lobe,
the outer surface densely pubescent,
sparsely or moderately lepidote, or without scales.
Style long, slender and straight, equal to or longer than the corolla.

Seed Collections:

KW 8260	1927/1928

R. patulum was found growing on the Mishmi Hills, close to the Assam-Myanmar border in the Delei Valley, on May 30th 1928. Frank Kingdon-Ward was the plant hunter who made the discovery and he describes how he made the find in his 1930-published book, *Plant Hunting on the Edge of the World:*

> 'While peering over one of the cliffs, I spied, just out of reach, a dwarf rhododendron unlike anything known to me. As we could not reach it from above, we continued along the ridge, and descended an easier gulley, forcing our way through bamboo and rhododendron. And then we came to a slanting rock, over which spread a drift of the new rhododendron, promptly christened "Rock Rose". The thread-like stems crawl over the clammy surface, and bear only a few tiny, sharp-pointed leaves. But the solitary prostrate flowers are large, and of so delicate a shade of purple as to be almost pink; within the throat are constellations of darker spots'.

Ward himself wrote the much less flowery botanic description that appears in Volume 88 of *The Gardeners' Chronicle,* which was also published during 1930, and the chosen epithet for his new species translates from the Latin as 'spreading'. His field notes - again attached to the type specimen herbarium plate at Kew - confirm the rhododendron to be 'an absolutely prostrate creeping species, growing in extensive drifts on steep mudslides and rocks in full exposure'. They also link *R. patulum* to *R. imperator,* which Ward had also discovered, two years earlier in 1926, and on the other side of the border in the Seinghku Valley of northeastern Upper Myanmar.

H. H. Davidian compared the two plants in 1982 (*The Rhododendron Species,* Volume 1), writing that 'the only distinction between them is that in *R. imperator* the scales on the lower surface of the leaves are 2-6 times their own diameter apart; in *R. patulum* they are 1-1½ times their own diameter apart'. Outwith the Subsection *Lapponica* pigeonhole, this morphological difference was not regarded as significant enough to halt the imposition of synonymy, with *R. imperator* narrowly winning the precedence race.

James Cullen and David Chamberlain had also imposed synonymy on the species four years earlier in 1978 when writing the first part of their *Preliminary Synopsis* paper (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), this later confirmed in the full Subgenus *Rhododendron* revision that Doctor Cullen penned in 1980 (*Notes,* Volume 39, Number 1). At the time, the botanist wrote that he could 'find no distinction, other than flower colour, between *R. pemakoense* from the Tsangpo Gorge (corolla pink) and *R. patulum* from the Delei Valley, some 190 km to the south east (corolla pale purplish mauve)'. And so the prostrate *R. patulum* was officially sunk under the mound-forming *R. pemakoense,* a position maintained in his 2005-publication, *Hardy Rhododendron Species: A Guide to Identification*.

Yet neither doyen noted that *R. patulum* was a tetraploid where 2*n* = 52, for at that time, the possibility that the chromosome count alone could pull the rug from under their synonymy arguments, was unrecognised. It will come as no surprise then to learn that both *R. imperator* and *R. pemakoense* are diploids where 2*n* = 26, and that these counts were listed in the article *Chromosome Numbers in Species of Rhododendron,* written by members of the science team at RHS Wisley and published in *The Rhododendron Year Book 1950.* Of course, when Cullen and Davidian were scribbling, scientists had still to detail the reproductive barrier that exists between the various types of polyploid, but that evidence is now widely accepted and it states that if any viable offspring germinate from a diploid x tetraploid match, they will be triploids where 2*n* = 39, and in the main, be sterile mules. Moreover, within a population of plants, naturally occurring tetraploids should be considered a new species, the result of an abrupt speciation event (see Hegarty & Hiscock, *Genomic Clues to the Evolutionary Success of Polyploid Plants,* published in *Current Biology,* Volume 18, May, 2008; and Ranney & Jones, *Understanding Polyploidy: Insights into the Evolution and Breeding of Azaleas,* published in *The Azalean,* Winter 2008).

Because we now know that *R. patulum* cannot successfully breed with either taxon it was made synonymous under, its specific status is herein restored.

Keying within the subsection uses the same criteria as for *R. imperator,* but takes account of the less distant scales and the smaller leaves. So *R. patulum* will also have a style that is equal in length or longer than the corolla, plus narrowly lanceolate through oblanceolate leaves, pointed at the apex and tapering at the base, but these will only be up to 1.9cm in length and their abaxial scales will be much closer together, separated by between one and one-and-one-half times their own diameter.

The 1928 Kingdon-Ward gathering under the type number KW 8260 is the only introduction of the species into British gardens and it is unlikely to have been unknowingly collected under another epithet as the geographic locales for the recent reintroductions of *R. imperator, R. pemakoense, R. pumilum* or *R. uniflorum* do not venture onto the slopes of the Mishmi Hills. However, rhodophiles who might wish to add the resuscitated species to their inventories should note that the description in past editions of the RHS *Rhododendron Handbook* usually concluded with some sage advice:

> 'Very closely allied to *R. imperator.* Very often difficult in cultivation'.

Peter and Kenneth Cox report that most 'cultivated plants labelled *R. patulum* are referable to *R. pemakoense,* these slightly less vigorous than the type, with a deeper-than-normal flower colour' (*The Encyclopedia of Rhododendron Species,* 1997). Whether this is the result of high altitude plants growing in the UK's more lax maritime climate, rogue seedlings prospering better than the true species, or a labelling mix-up, is not made clear, but the plant featured in the photograph opposite and also overleaf - happily growing at the RHS's Wisley Garden under a *R. pemakoense* Patulum Group label - certainly benefits from the first possibility, while likely falling foul of the second.

R. patulum

R. ludlowii

Hardiness:
H5.
Flowering Period:
May.
Distribution in the wild:
S Tibet.
Growing on open rocky hillsides, creeping through moss and other shrubs,
at elevations of 3,900-4,300m.

Identification:
Dwarf shrub, prostrate, spreading or creeping,
or rounded to broadly upright, rarely dense, to 0.3m high.
Leaves obovate through oval to rounded,
1.2 to 1.6cm long by 0.8 to 1cm wide,
apex rounded,
base obtuse or rounded;
upper surface dark green, lepidote,
the margins crenulate-undulate;
lower surface pale glaucous green or pale green,
lepidote, the scales large, brown, flat, narrowly-rimmed,
two to three times their own diameter apart.
Inflorescence terminal, 1-2-flowered.
Pedicel 15-25mm long, densely lepidote.
Calyx 5-7mm long.
Corolla 1.5 to 2.5cm long, broadly campanulate,
yellow,
spotted reddish-brown inside the tube,
the outer surface densely pubescent, lepidote.
Style slender and straight, longer than the stamens, shorter than the corolla.

Seed Collections:

L&S 1895	1936
LS&T 3941	1938
LS&T 5571	1938
LS&T 6600	1938
HECC 10017	2002
HECC 10050	2002
KR 10481	2012
KR 10530	2012

Named for one of the plant hunters who found it, the yellow-hued corollas of *R. ludlowii* are an exception within Subsection *Uniflora* where pinkish-purple tones otherwise predominate. The crenulate-undulate leaf margins - toothed as well as wavy - are also unique within the membership, as are the relatively large calyx lobes, each 5-7mm long and deeply lobed to the base. This last feature is duplicated on *R. pumilum,* but here the quintet are ovate or oval in shape rather than oblong and rounded, and just 1-3mm long.

The species was discovered growing at an elevation of 4,100m, on an open, north-facing and rocky hillside, at Lo La, in the Pachakshiri District of southeast Tibet, on July 2nd, 1936. Frank Ludlow and George Sherriff made the discovery and returned herbarium specimens under the type field number L&S 1895. The listings in the 1967 edition of the RHS *Rhododendron Handbook* include that field number within the 'Rhododendrons in Cultivation in Great Britain' section of the book, but it is the only source to do so. All others indicate an introduction date of 1938, under LS&T 6600, a gathering made on Tsari Sama, Tibet, with George Taylor from the Botanical Department of the British Museum joining the expedition team. Two other field numbers quoted in the same volume - LS&T 3941 and LS&T 5571 - must also be considered tenuous.

The British maritime climate has had a negative effect on the habit of *R. ludlowii* in cultivation, allowing a prostrate plant with long creeping branches to become an upright rounded dome graced with short branchlets, although the shrub still remains very slow growing. It also flowers from a young age. However, its reputation for being exceedingly difficult is legendary and specimens need to be sited in a cool and shady but open spot with a north facing aspect, ideally in friable, well-rotted and swiftly draining organic compost to stand any chance of success. But even then, they will likely be pushing up the daisies in less than a few scant years.

H. H. Davidian reports that *R. ludlowii* 'has been grown successfully in only two or three cold gardens' (*The Rhododendron Species,* Volume 1, 1982), and surprisingly, one of those sites was Bracken Hill, the former venue of the University of Bristol's Botanic Garden before it moved to The Holmes. Another was in Randle Cooke's garden at Kilbryde, Prospect Hill, in the northeast of England, which was donated to Newcastle University when its owner died in 1973. (Much of the planting was later transferred to Moorbank Botanic Garden in the mid 1980s, but this site has been closed to visitors since 2014).

All the classic photographs featuring stunning specimens of *R. ludlowii* in full flower were taken in these two gardens, but their owners' success was probably far more down to the location than the skill of the individual. As evidenced by Peter and Kenneth Cox, who bravely set a picture of the species growing at Glendoick, against one taken at Kilbryde - in their 1997 *Encyclopedia of Rhododendron Species* - a visual offering of chalk and cheese. And telling advice that if the UK's top two professional rhododendron growers also have problems keeping the species alive, so will you.

Luckily, with their hybridising hats on, the doyens of Glendoick Gardens have taken pollen from those large, bowl-shaped corollas and pressed the grains onto the styles of any number of dwarf lepidote species to gift the rhodophile fraternity and the wider gardening public 'Euan Cox', 'Swift', 'Woodchat', 'Chikor', 'Curlew', Wren' and 'Goosander', all of which are far easier to grow longterm than their recalcitrant parent.

Peter and Kenneth, in the company of Peter Hutchison and Philip Evans, were also responsible for the 2002 reintroduction of the species from Arunachal Pradesh, sixty-four years after it had last been collected.

R. ludlowii was described in 1937 by John MacQueen Cowan, his text appearing in Volume 19 of *Notes from the Royal Botanic Garden, Edinburgh*.

Section *Lepipherum* Subsection *Virgata:*



R. virgatum (McLaren C78)



Taxa:

R. virgatum

Taxonomic Revision:

The placement of Subsection *Virgata* remains as designated
in the 1996 Edinburgh Revision classification,
but it is treated herein as a monotypic pigeonhole.

Subsection Morphology:

Shrub, arching, straggly and sprawling, or broadly upright, 0.3 to 2.4m high;
branchlets moderately through densely lepidote, glabrous;
bark greyish-white, scaling in long shreds, the underbark chestnut-brown.

Terminal bud is always vegetative, continuing shoot growth.

Leaves evergreen, coriaceous,
lanceolate through oblong-lanceolate to oblong,
oblong-obovate, or oblong-oval, rarely obovate,
1.8 to 8cm long by 0.5 to 2cm wide,
apex acute, obtuse or rounded, and mucronate,
base tapered, rounded or obtuse;
upper surface dark green, lepidote or not,
the margins recurved;
lower surface pale glaucous green or pale green, papillose,
densely lepidote, the scales dimorphic, brown, unequal, medium-sized, flaky,
half to their own diameter apart, or two to four times their own diameter apart,
with larger, peltate scales, closely or widely scattered,
glabrous.

Leaf anatomy comprises a 2-layered upper epidermis,
with the cells in the top layer being smaller than those in the layer below;
the cuticle is around half as thick as the top cells are deep; water tissue is absent;
the lower epidermis cells are somewhat prolonged into papillae.
Sclereid cells are absent.

Petiole 3-8mm long, moderately through densely lepidote, glabrous.

Inflorescence axillary, in the axils of the upper 1-12 leaves, each 1-2-flowered;
flower bud scales persistent during flowering,
their outer surface and margins densely puberulous or glabrous, without scales.

Rhachis 0.5-1mm long, lepidote or not, glabrous.

Pedicel 2-8mm long, densely lepidote, glabrous.

Calyx small, 5-lobed, these rounded, and 0.5-3mm long,
their outer surface usually lepidote, glabrous,
their margins usually without scales, puberulous or glabrous.

Corolla 1.4 to 3.9cm long, 5-lobed, funnel-shaped or tubular-funnel shaped,
pink, rose, white flushed rose, white or purple,
the outer surface moderately through densely pubescent, or glabrous, lepidote.

Stamens 10, unequal, declinate;
filaments pubescent towards the base.

Ovary conoid or ovoid, 2-4mm long, 5-locular,
densely lepidote, glabrous.

Style long, straight, declinate, impressed into a depression at the ovary apex,
longer than the stamens,
lepidote at the base or along the lower half, or without scales,
pubescent at the base or along the lower half, or glabrous.

Capsule oblong or oblong-ovate, 5-13mm long,
densely lepidote, glabrous.

Seeds unwinged, but with tail-like (caudate) appendages at both ends.

R. virgatum
Hardiness:
H3-4.
Flowering Period:
March-May.
Distribution in the wild:
E Nepal; SE Tibet; Bhutan;
Sikkim & Arunachal Pradesh, India; NW & SW Yunnan, China.
Growing at the margins of conifer forests, in thickets, amongst scrub, in cane breaks,
in dry open pastureland, on the banks of streams, on grassy slopes, rocks and cliffs,
at elevations of 1,800-4,000m.

Identification:
Shrub, arching, straggly and sprawling, or broadly upright, 0.3 to 2.4m high.
Terminal bud is always vegetative, continuing shoot growth.
Leaves lanceolate through oblong-lanceolate to oblong,
oblong-obovate, or oblong-oval, rarely obovate,
1.8 to 8cm long by 0.5 to 2cm wide;
upper surface dark green, lepidote or not,
the margins recurved;
lower surface pale glaucous green or pale green, papillose,
densely lepidote, the scales dimorphic, brown, unequal, medium-sized, flaky,
half to their own diameter apart, or two to four times their own diameter apart,
with larger, peltate scales, closely or widely scattered,
glabrous.
Petiole 3-8mm long.
Inflorescence axillary, in the axils of the upper 1-12 leaves, each 1-2-flowered.
Corolla 1.4 to 3.9cm long, funnel-shaped or tubular-funnel shaped,
pink, rose, white flushed rose, white or purple.

Seed Collections:

F 6770	1910	L&S 1279	1936	SBEC 1227	1981
F 9342	1912/1914	L&S 1346	1936	P&L 35	1986
F 12100	1912/1914	L&S 1366	1936	C&S 1528	1990
Cooper 2819	1914	L&S 2770	1936	C&S 1614	1990
Cooper 3064	1914	L&S 3021	1937	KR 1583	1990
Cooper 3151	1914	LS&E 12024	1946/1947	Heasman 9	1992
Cooper 3588	1914	LS&E 12253	1946/1947	SSNY 375	1992
Cooper 3815	1915	LS&E 12326	1946/1947	Sinclair 1720	1993
F 17588	1917/1919	LS&E 12515	1946/1947	KR 2758	1993
F 18900	1917/1919	LS&E 13550	1946/1947	CNW 374	1994
F 20067	1921/1922	LS&E 13645	1946/1947	CNW 844	1994
F 21716	1921/1922	L&S 15835	1948	CNW 907	1994
F 22833	1921/1922	R 17	1948/1949	KR 3582	1995
KW 5421	1922	LS&H 15841	1949	AC 3076	1996
R 11219	1923/1924	LS&H 16054	1949	AC 3381	1997
F 24228	1924/1925	LS&H 16206	1949	AC 3554	1997
F 26065	1924/1925	LS&H 18687	1949	AC 3582	1997
KW 6069	1924/1925	KW 19244	1950	AC 3670	1997
KW 6279	1924/1925	KW 19325	1950	AC 3673	1997
KW 7138	1926	Stainton 166	1956	AC 4534	2000
KW 9529	1931	Bowes-Lyon 3040	1966	AC 4548	2000
R 22045	1932	Bowes-Lyon 3068	1966	AC 4620	2000
R 22634	1932	BLM 298	1971	KR 8699	2006
McLaren C 78	1932/1939	SBEC 265	1981	C&N 5924	2007
KW 10351	1933	SBEC 621	1981	OJL 10-31	2010

R. virgatum

R. virgatum is another of the species Sir Joseph Dalton Hooker discovered on his expeditions across the Sikkim-Himalaya, the encounter taking place early-on, during 1849, in the Lachen Valley. The botanic description and accompanying colour illustration appear in Hooker's 1851-published *Rhododendrons of Sikkim-Himalaya*.

Just over twenty years later, in early July 1882, Jean Marie Delavay encountered *R. oleifolium* at the foot of the Tsong-chan above Tali in northwest Yunnan (now the Cangshan and the city of Dali, respectively). Specimens were returned to Paris, then forwarded from the Missions Étrangères headquarters on Rue du Bac to the Muséum National d'Histoire Naturelle and the Jardin des Plantes on the left bank of the Seine, actually in the 5th arrondissement, where Adrien Franchet described the new species in 1886, writing in Volume 33 of the *Bulletin de la Société Botanique de France*.

Except of course, it wasn't a new species, just a form of Hooker's *R. virgatum*. Yet the supposed set of morphologic character differences that divide the two - corolla size, colour and pubescence; the presence or not of scales and hairs around the base of the style; the pubescent or glabrous flower bud scales - have kept an inordinate number of otherwise calm and reasonable botanists at each other's throats for decades:

Leading the pack, H. H. Davidian had made the two plants synonymous in the 1964 edition of *The Rhododendron and Camellia Year Book,* in the process, confirming the previous sinking of *R. sinovirgatum* under *R. oleifolium*.

Except a decade later, James Cullen and David Chamberlain opted for subspecies status under *R. virgatum* when they published the first part of their *Preliminary Synopsis* paper in 1978 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 36), this status confirmed in Doctor Cullen's subsequent Subgenus *Rhododendron* solo effort that went to print two years later (*Notes,* Volume 39, Number 1, 1980).

The argument used for this botanic resurrection was that the variation in corolla length between *R. virgatum* and *R. oleifolium* was clinal, the flowers being larger across the western half of the distribution, so giving grounds for a subspecies split.

Yet John McQuire and Mike Robinson in their *Pocket Guide to Rhododendron Species,* of 2009 vintage, used the very same argument to justify reversing that position: 'as this variation in corolla size is clinal, it can be accommodated in one species'.

Thankfully, despite the authors of the online *Flora of China* texts clinging to Hermann Sleumer's outdated Subgenus *Pseudorhodorastrum* Section *Rhabdorhodion* concepts for the two rhododendrons, they actually proclaim that 'the characters used to separate them in the past are very variable'.

And that confirms Davidian's original 1964 diagnosis and pronouncements on the duo, in as much as 'the ample material now available and plants in cultivation show that *R. oleifolium* agrees with *R. virgatum* in height and habit of growth, in the shape and size of the leaves, in the axillary inflorescence, in the shape, size and colour of the flowers, and in all other respects they are identical'.

The master doyen then adds that 'the glabrous or pubescent corolla which is given as a diagnostic criterion in the descriptions and Key in *The Species of Rhododendron,* is inconstant and unreliable', which ever so eruditely, if more than three decades late, rather put John Hutchinson in his place.

Unsurprisingly then, synonymy is the option adopted herein.

Hooker's seed arrived back in the UK during 1850 and the species has been in cultivation ever since, the long list of reintroductions an 'ancient and modern' who's-who of the plant hunting fraternity. Yet despite being easy to grow, most of the *R. virgatum* forms returned are only borderline hardy across much of the country, the 2,200m altitude range of the distribution notwithstanding, as it begins on the 1800-metre contour. They do best on dryer sites, favouring the milder southern counties, but also succeed in west coast gardens regardless of the higher rainfall totals and soil that only rarely completely dries out, as well as in east coast locales if given sufficient shelter. 2m-high straggly bushes are the norm, with arching branches the result of each new shoot extension surpassing 0.3m in length. The flowers open from buds in the leaf-axils, with some clones restricting this to the uppermost six leaves, while others sport pink, rose or white trumpets - singly or in pairs - along the whole span of the previous year's growth. A few clones only attain 1 to 1.3m in height at maturity and these often spend their initial decade outwith the seed capsule or cuttings tray as a low and compact 0.3m-high dwarf. Equally, there are also rock garden forms no taller in old age than 0.6m.

White-flowered forms - the 1973 Award of Merit plant from Sandling Park in Kent, which may be the same as the clone from Achamore Gardens on the Isle of Gigha - are especially prized, their funnel-shaped corollas boasting stamen filaments and a style that are flushed pale-yellow.



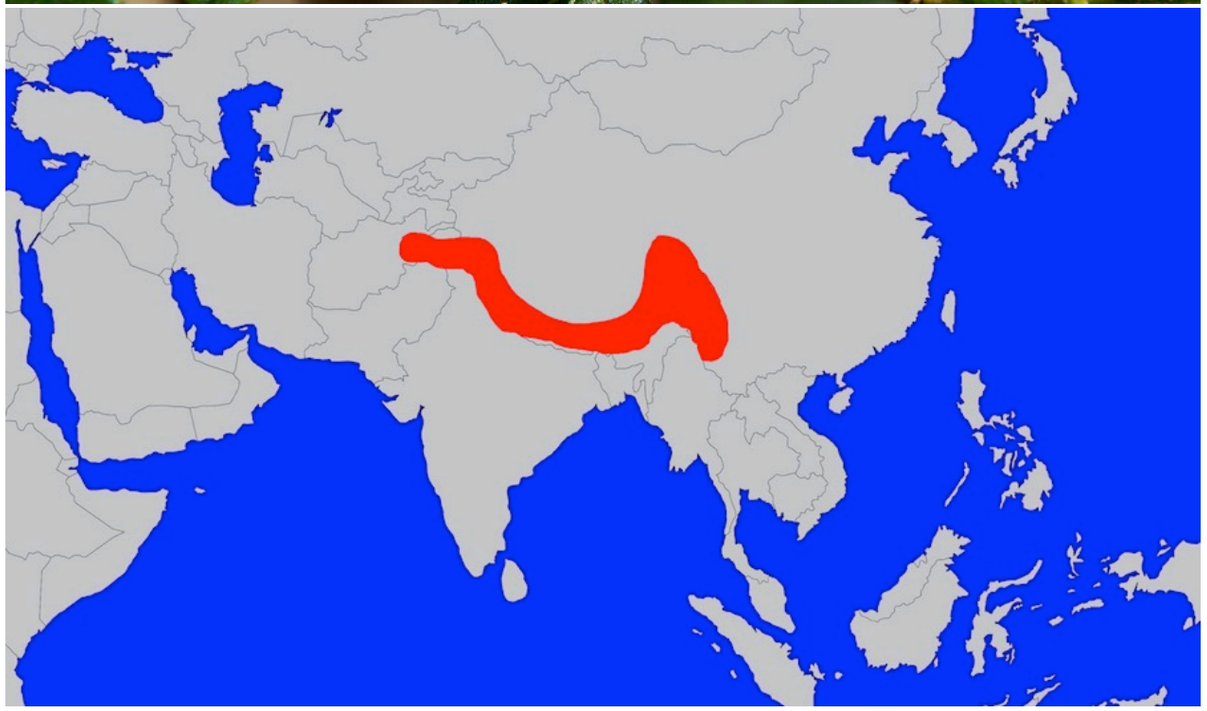
R. virgatum


Section
Pogonanthum

Section *Pogonanthum:*



R. kongboense (KW 6020)



Taxa:

R. anthopogon
- *R. anthopogon* ssp. *anthopogon*
- *R. anthopogon* ssp. *hypenanthum*

R. anthopogonoides
R. cephalanthum
- *R. cephalanthum* ssp. *cephalanthum*
- *R. cephalanthum* ssp. *platyphyllum*

R. collettianum
R. fragrans
R. kongboense
R. laudandum
- *R. laudandum* var. *laudandum*
- *R. laudandum* var. *temoense*

R. primuliflorum
R. radendum
R. sargentianum
R. trichostomum

Taxonomic Revision:

The placement of Section *Pogonanthum* remains as designated in the 1996 Edinburgh Revision classification.

Section Morphology:

Shrubs, prostrate, dwarf and mounding, to upright, 0.05 to 2.8m high; branchlets lepidote.

Vegetative bud scales deciduous or persistent, sometimes fringed with branched dendroid hairs.

Leaves evergreen, usually small, strongly aromatic with a pineapple-like scent, lanceolate through elliptic, ovate and oval to orbicular, 0.8 to 6cm long by 0.2 to 2.8cm wide; upper surface dark green; lower surface densely lepidote, the scales stalked, with lacerate margins, sometimes with a domed centre, arranged in overlapping tiers due to varying stalk length.

Leaf anatomy comprises a single-layered upper epidermis; the cuticle is thick; water tissue is absent; the lower epidermis cells are prolonged into papillae. Sclereid cells are absent, or only sparsely present.

Petiole 2-14mm long, lepidote and glabrous, rarely setose.

Inflorescence terminal, capitate, daphne-like, many-flowered; always with branched dendroid hairs fringing the bud scales.

Pedicel 1-8mm long, lepidote and glabrous, sometimes pubescent, rarely setose.

Calyx 0.5-7mm long, 5-lobed, somewhat bilaterally symmetric.

Corolla hypercrateriform,
narrowly tubular with spreading lobes,
white, cream, lavender, pink, purple, red or yellow,
always with a prominent ring of hairs in the throat.

Stamens 5-10, radially arranged, always included within the corolla tube.

Ovary small, 4-5-celled, scaly, sometimes downy.

Style short, thick and straight, clavate, not exserted.

Capsule small, lepidote, valves soft, usually twisted on dehiscence.

Seeds elongate, unwinged, with or without minute appendages.



R. anthopogon (L&S 1091)



R. collettianum

R. anthopogon* ssp. *anthopogon

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
Nepal; S & SE Tibet; Bhutan; Uttar Pradesh to Arunachal Pradesh, N India.
Growing on rocks and moorland at elevations of 3,350-4,900m.

Identification:
Prostrate through to upright shrub, 0.3 to 1.5m high.
Leaf bud scales deciduous.
Leaves strongly aromatic, ovate through orbicular,
1.3 to 3.8cm long by 0.8 to 2.5cm wide;
lower surface scales dense, in 2 to 3 overlapping tiers,
the upper tier dark reddish-brown, rarely pale brown,
the lowest tier as dark as those above, or more so.
Inflorescence 5-9-flowered, bud scales persistent.
Corolla white or pale yellow, sometimes pink or deep rose,
resembling crumpled tissue paper, not lepidote outside.
Stamens 5 to 9, only rarely 10.

Seed Collections:

Cooper 3235	1914	LS&H 16419	1949	AGS 418	1983	KR 8295	2005
Cooper 3485	1914	LS&H 17550	1949	AGS 561	1983	KR 8298	2005
Cooper 3903	1915	LS&H 18949	1949	Hedegaard B114	1983	KR 9513	2008
KW 7023	1926	LS&H 19361	1949	McBeath 1507	1983	KR 10001	2010
KW 10532	1933	LS&H 20655	1949	EGM 87	1988	KR 10062	2010
L&S 638	1934	Polunin 207	1949	KEKE 635	1989	TDA 028	2011
L&S 1091	1934	Polunin 1103	1949	KEKE 694	1989	TDA 034	2011
KW 11569	1935	KW 19590	1950	Kinmouth 78	1990	TDA 404	2013
L&S 1565	1936	Lowndes 950	1950	Kinmouth 79	1990	TDA 406	2013
L&S 1606	1936	Lowndes 1005	1950	H&M 1784	1993	TDA 407	2013
L&S 1653	1936	Stainton 239	1956	H&M 1850	1993	TDA 408	2013
L&S 1756	1936	Stainton 263	1956	Fox 7	1995	TDA 409	2013
L&S 2824	1936	Stainton 270	1956	Fox 37	1995	TDA 429	2013
L&S 2828	1936	Bowes-Lyon 3149	1966	Fox 70	1995	TDA 430	2013
KW 13699	1937	Bowes-Lyon 3231	1966	KR 3845	1995	TDA 435	2013
L&S 3082	1937	BLM 231	1971	KCSH 032X	2003	TDA 436	2013
L&S 3217	1937	BLM 281	1971	AC 5456	2004	TDA 437	2013
L&S 3400	1937	BLM 332	1971	AC 5457	2004	TDA 732	2014
LS&T 3861	1938	SCH 2171	1976	AC 5496	2004	TDA 733	2014
LS&T 4781	1938	SCH 2259	1977	BE 05-44	2005		

Nathaniel Wallich found *R. anthopogon* during 1820 on the slopes of Gosainthan, an 8,000m high mountain now known more correctly by its Tibetan name Shishapangma, the fourteenth-highest peak in the world, Gosainthan being the alternative translation from Nepali Devanagari script. For although Wallich believed he was in Nepal, the mountain lies entirely within Tibet, if very close to the border. He introduced the species into British gardens that same year and it was described by David Don when writing in Volume 3 of the *Memoirs of the Wernerian Natural History Society,* which was published during 1821.

The nature of the leaf bud scales are the key to separating *R. anthopogon* from its now subspecies associate *R. hypenanthum,* as these are deciduous, so quickly lost on the former, but persistent on the latter. From the rest of the Section, the abaxial scale colour, the number of stamens - usually 6 to 8, but occasionally 5, 9 or 10 - and the tissue-paper-like consistency of the corollas are the differentiating characteristics. Most closely related to *R. collettianum,* the smaller leaves of *R. anthopogon* and its darker-coloured scales are the principal identifiers, with the pale yellow, pink or deep rose forms providing further confirmation. The number of stamens present can occasionally be useful for those clones of *R. anthopogon* where there are 5, 6 or 7 per corolla, as *R. collettianum* will always have between 8 and 10.

The white-flowered form of the species, previously listed as *R. anthopogon* var. *album,* is now considered synonymous, succinctly removing the nomenclature problem with the illegal terminator. It was found at Dzongri in Sikkim during August 1913 by Rohmoo Lepcha (this area now part of the Biosphere reserve of the Khangchendzonga National Park), and first introduced into UK cultivation from seed collected by Ludlow, Sherriff and Hicks, during their 1949 Bhutan expedition. The variety received its short-lived botanic description in 1980, the botanic text, penned by H. H. Davidian, appearing in the *Quarterly Bulletin of the American Rhododendron Society,* Volume 34, Number 4.

While fully hardy in cultivation, *R. anthopogon* has proved quite difficult to grow well, requiring some shade and protection from strong winds, taking nearly a decade to flower from seed, with its small and delicate corollas swiftly damaged by rain. As with the other Section *Pogonanthum* species, hot and dry positions in the garden are not appreciated, nor is the application of any fertiliser. Peter and Kenneth Cox, writing in their 1997-published *Encyclopedia of Rhododendron Species,* report that the species is also prone to dying off just as it reaches flowering age.

The aromatic leaves are used as incense in Tibetan monasteries.



R. anthopogon



R. anthopogon



R. anthopogon (L&S 1091)

R. fragrans

Hardiness:
H4-6.
Flowering Period:
April-May.
Distribution in the wild:
Lake Baikal, Siberia, Russia; Altai Mountains, Mongolia.
Growing in thickets on mountain slopes, at elevations of *c.* 3,000-3,500m.

Identification:
Semi-dwarf shrub to 0.5m high.
Leaf bud scales deciduous.
Leaves oblong-elliptic through oblong-ovate,
1 to 2cm long by 0.5 to 1cm wide;
upper surface moderately revolute;
lower surface scales uniform, dense, in 2 or 3 overlapping tiers,
the upper tier pale yellowish-brown, the lowest tier golden yellow,
sometimes plastered.
Inflorescence 7-10-flowered, fragrant.
Calyx lobes 1-3mm long,
their margins ciliate.
Corolla white to pink, often with darker veins,
the outer surface elepidote,
the tube villous-pilose within,
the lobes pilose within towards the tube throat.
Stamens 5-6.
Ovary lepidote.
Capsule lepidote.

Seed Collections:
No documented introductions have been published to date.

It is not known who discovered *R. fragrans,* but the species was first described by Karl Maximovich in 1870, from an earlier text by Michael Adams, both men being Russian botanists based in St. Petersburg, though not contemporaries. Post its conception, the *R. fragrans* epithet was also used to describe plants that have now been placed in synonymy under three other species - *R. arborescens, R. maximum* and *R. trichostomum* - but only that designated *R. fragrans* (Adams) Maximowicz 1870, is legitimate within the genus, all those other sobriquets being illegal.

The species is very similar to *R. primuliflorum,* differing only in the uniform size of the scales on the abaxial leaf surface - with the upper tier coloured yellowish-brown instead of brown - and the pilose nature of the inner surface of the corolla lobes and its tube. Indeed, a number of authorities regarded *R. fragrans* to be simply a northern variant of *R. primuliflorum*, with which - like *R. adamsii* - it was once made synonymous (the sunk *R. adamsii* has now been transferred across to *R. fragrans*).

Josef Halda introduced the species into cultivation around 1997-1998, collecting seed from plants on the Mongol Altai Mountains of northern Mongolia, yet to date, it remains a very rare find in British gardens. It is also one of the hardest rhododendrons to successfully cultivate in the UK.



R. fragrans

R. anthopogonoides

Hardiness:
H4.
Flowering Period:
April-May.
Distribution in the wild:
Qinghai, Gansu & N Sichuan, China.
Growing on exposed slopes, in scrub and spruce forests,
at elevations of 3,000-3,350m.

Identification:
Erect and upright shrub to 1.8m high;
branchlets densely lepidote and slightly pubescent.
Leaf bud scales deciduous.
Leaves broadly elliptic through oblong-elliptic,
2 to 4.7cm long by 1.4 to 2.3cm wide;
lower surface scales sparse to dense,
in a single tier which is plastered to the leaf surface,
pale through dark brown, overlapping, with domed centres and lacerate rims.
Inflorescence very dense, 10-20-flowered;
bud scales persistent,
strongly fragrant.
Pedicel 1-2mm long, elepidote and pubescent.
Calyx 3-5mm long,
the lobe outer surface elepidote,
their margins erose.
Corolla white, greenish-white through greenish-yellow, rarely pink,
the outer surface not scaly.
Stamens 5.
Ovary pubescent.

Seed Collections:

Farrer 584	1914
R 13279	1925/1926
R 13597	1925/1926
R 13610	1925/1926
R 13636	1925/1926

Nicolai Przewalski discovered *R. anthopogonoides* during 1872 in Kansu (now Gansu), China, and it was described five years later in 1877 by Karl Maximovich when writing in Volume 23 of the *Bulletin of the Saint-Petersburg Imperial Academy of Sciences*.

The lack of scales on the pedicel and calyx, along with the irregularly toothed calyx margins, make the species distinctive, as do the tightly-packed, intensely fragrant flowers in trusses of 10-20. Yet despite seed of *R. anthopogonoides* being introduced by both Reginald Farrer and Joseph Rock, the holders of the NCCPG Section *Pogonanthum* collection at Glendoick, Peter and Kenneth Cox, report that specimens growing under this name in UK gardens have been misidentified and that the true species is likely no longer to be in cultivation (*The Encyclopedia of Rhododendron Species,* 1997).

R. collettianum

Hardiness:
H3-4.
Flowering Period:
May.
Distribution in the wild:
Afghanistan; Pakistan.
Growing on stony slopes, often with juniper, at elevations of 3,000-3,900m.

Identification:
An upright, bushy dwarf shrub to 1m.
Leaf bud scales deciduous.
Leaves lanceolate through elliptic,
3 to 6cm long by 1.1 to 2.3cm wide;
upper surface pale to bright green, elepidote,
the margins slightly recurved;
lower surface scales dense,
in a single tier, which is plastered to the leaf surface,
golden-brown to creamy-yellow, overlapping,
the margins lacerate.
Inflorescence 5-20-flowered, capitate;
bud scales deciduous or persistent.
Calyx lobes 3-5.5cm long,
their margins densely ciliate.
Corolla narrowly tubular-funnel-shaped,
white, often with a rose tint.
Stamens 8-10, unequal, 6-9mm long.
Ovary densely lepidote.

Seed Collections:

H&W 8975	1969

During the Second Anglo-Afghan war, which ran from 1878 to 1880, one of the attacking manoeuvres carried out was the Kurram Valley Expedition under the command of Major-General Sir Frederick Roberts. This saw a combined force of British and Indian army regiments enter and proceed through the valley, skirmishing all the way, to eventually capture Kabul, the Afghan capital, after a pitched battle at Char Asiab. Now, as astounding and crazy as it may sound today, in addition to the artillery, cavalry and infantry, the Field Force also had an official botanist in the ranks: Fellow of the Royal Society, James Edward Tierney Aitchison.

A member of the Bengal Medical Service, Doctor Aitchison's primary responsibilities were clearly saving the lives of any wounded troops, but he was also able to spend time examining the area's plant life, collecting specimens and gathering seed, as outlined in an article he wrote for the Linnaean Society entitled "*On the flora of Kurram Valley, etc... Afghanistan*". It was in 1879, while he was botanising on the Safēd Kōh Mountains, which flanked the valley, assisted by Lieutenant-Colonel Henry Collett, an East India Company army officer and staff quartermaster-general, who also had an interest in the native flora, that *R. collettianum* was encountered.

The species superficially resembles *R. anthopogon* and is probably its closest relative, but the larger, dagger-shaped leaves are an easy identifier. Equally, the lower leaf surface scale colour and the higher stamen number will also cleave the two rhododendrons apart. From *R. cephalanthum* ssp. *platyphyllum,* with which it can also be confused, stamen number and the deciduous nature of the leaf bud scales are the morphological quirks that will quickly key out *R. collettianum*.

The botanic description for the species, written jointly by Doctor Aitchison and William Botting Hemsley, appeared in Volume 18 of the *Journal of the Linnaean Society,* which was published in 1881.

R. collettianum is a difficult plant to grow in British gardens. The Aitchison 1880 introduction, which flowered in the rock garden at the Royal Botanic Garden, Kew, during 1888, died off a few years later, and the species was for a time lost to cultivation until Ian Hedge and Per Wendelbo re-introduced it in 1969. Their collection has to date, proved to be a more robust form, still requiring excellent drainage and a sheltered spot, but succeeding well, certainly at Edinburgh Botanic. Relatively fast growing, the combination of lanceolate-shaped leaves and white flowers (with a slight pink flush in some forms) has produced one of the gems of Section *Pogonanthum*.

The prospect of any future collections of seed being made is currently unlikely, not because of the Nagoya Protocol restrictions, although these still apply, but because the species distribution is restricted to the frontier regions between Afghanistan and Pakistan, which is home not only to the Taliban, but also to a rather large scattering of Al-Qaeda militants, who are not at all partial to Western botanic expedition teams nosing about on their hillsides, however innocent those explorations may be.


R. collettianum (H&W 8975)


R. collettianum (H&W 8975)


R. collettianum (H&W 8975)

R. cephalanthum

R. cephalanthum* ssp. *cephalanthum

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
S & SE Tibet; E Arunachal Pradesh, India; N Myanmar; Yunnan, China.
Growing on moorland and rocky slopes, on cliffs and crags,
in bamboo brakes, by swamp margins, and on limestone, at elevations of 2,700-4,900m.

Identification:
Near prostrate to upright shrub, 0.1 to 1m high.
Leaf bud scales persistent.
Leaves oblong-elliptic through oval,
1 to 2.6cm long by 0.5 to 1.7cm wide;
upper surface margins recurved;
lower surface scales dense, in 2 or 3 overlapping tiers,
the upper tier fawn through rusty-brown, rarely dark brown,
the lowest tier golden, or at least paler than those above.
Inflorescence 5-12-flowered, the truss often rounded;
bud scales persistent.
Calyx lobes 3-7mm long,
their margins ciliate.
Corolla white to pink to deep rose, or yellow,
the outer surface elepidote,
the tube 0.6 to 1.3cm long.
Stamens 5-8.
Ovary densely lepidote.

Seed Collections:

F 6756	1910	R 11322	1923/1924	L&S 1583	1936	KW 20929	1953
F 14055	1917/1919	R 11455	1923/1924	Yu 8660	1937	KW 21078	1953
F 14344	1917/1919	F 24571	1924/1925	Yu 19803	1937	SBEC 751	1981
F 16363	1917/1919	F 27122	1924/1925	Yu 20817	1937	Cox 6053	1992
KW 3365	1919	F 27501	1924/1925	LS&T 4755	1938	CNW 861	1994
F 19492	1921/1922	KW 6914	1926	LS&T 4781a	1938	CV 9513 *	1995
F 20062	1921/1922	KW 6967	1926	LS&T 5240 *	1938	CC 7504	1996
F 21923	1921/1922	KW 8337	1927/1928	LS&E 13124	1946/1947	CC 7521	1996
R 6323	1923/1924	F 28302	1930/1931	LS&E 15071	1946/1947	CCHH 8178	1997
R 10545	1923/1924	KW 9591	1931	LS&E 15078	1946/1947	DGEY 196	2001
R 10924	1923/1924	KW 9641	1931	LS&E 15109	1946/1947	TARRVS 174	2002
R 10935	1923/1924	R 23559	1932	LS&E 15113	1946/1947	BE 15-39	2015
R 11019	1923/1924	R 23633	1932	LS&E 15241 *	1946/1947		
R 11089	1923/1924	R 25440	1932	LS&E 15286 *	1946/1947		

Abbé Jean-Marie Delavay was the first Westerner to discover *R. cephalanthum,* encountering a population of the plants while exploring around Lankong and Hokin, in Yunnan Province, during 1884. His specimens and seed arrived back in Paris the following year, where Adrien Franchet wrote the botanic description that appeared in Volume 32 of the *Bulletin de la Société Botanique de France*. The taxon's introduction into British gardens had to wait until 1908, when seed from Ernest Wilson's first Arnold Arboretum-sponsored expedition apparently arrived via America (although the species epithet is absent from that venture's published field number listings). An earlier George Forrest gathering from his 1904-1906 China trip, under F 2182, was probably just dried material for the herbarium, as no living plants traceable to that gathering now exist, although rhodophiles can look forward to the prospect of quizzing A. K. Bulley on the subject should the prophesied abode of God and his angels actually exist. The species was however, soon well represented in UK cultivation, with Forrest returning seed in 1910 and subsequently, and then Frank Kingdon-Ward, Joseph Rock and Te-Tsun Yu all adding to the pot, although just ten collections have been made in the forty years since 1981.

R. cephalanthum is split into two subspecies - *cephalanthum* and *platyphyllum* - with the chief difference between them one of size, the latter having bigger leaves, a longer corolla tube, and larger leaf bud scales than the former. The species as a whole is very similar to *R. primuliflorum,* with the two endemic distributions known to overlap. The key character difference between them is the leaf bud scales, these very quickly lost in *R. primuliflorum,* but persistent in *R. cephalanthum*. However, that distinction has recently been shown to be not quite so clear-cut, field studies finding plants intermediate between the two species that shed a large proportion of these scales, yet retain some. DNA sequencing will illuminate the true relationship and probably allow the synonymy Aurors to strike once more.

Leaf bud scale persistence is also one of the principal distinguishing features when identifying the species from *R. anthopogon,* but here, the lower leaf scale colours will also help, as will the corolla texture and the number of stamens, especially when separating yellow flowered plants of *R. cephalanthum* ssp. *cephalanthum* Nmaiense Group from *R. anthopogon* ssp. *hypenanthum*.

Three rhododendron species have been made synonymous with *R. cephalanthum* ssp. *cephalanthum* - *R. chamaetortum, R. crebreflorum* and *R. nmaiense,* all of which were Kingdon-Ward discoveries. Two have been given RHS Group status.

Firstly, the prostrate plants previously classified as *R. crebreflorum* were allowed to retain that distinctiveness within Crebreflorum Group. These were found in June 1926 at Seinghku Wang, in Upper Myanmar, usually have pink flowers and are often stoloniferous.

Secondly, those plants with mostly yellow coloured corollas (as well as pink and white) are now resident in Nmaiense Group. These were first discovered in eastern Upper Myanmar, on the Naung Chaung ridge, some twelve years earlier during July of 1914, although populations have also been found in southeast Tibet (the known collections are asterisked in the table opposite).

Kingdon-Ward wrote the original botanic descriptions for all three species, working with Sir Isaac Bayley Balfour on that for *R. chamaetortum,* and John Hutchinson for *R. crebreflorum* and *R. nmaiense.*

The more compact forms of *R. cephalanthum* are undoubtedly the best for cultivation in the UK, forming neat mounded domes, well filled with foliage, and often completely covered in pink, white or yellow flowers in April-May. They have proved to be perfect gems for a rock garden placement or indeed, a well-drained pot.

R. trichostomum

Hardiness:
H3-5.
Flowering Period:
May-June.
Distribution in the wild:
C & SW Sichuan, N & NW Yunnan, China.
Growing in oak and pine forests, in thickets and scrub,
on open pasture and alpine meadows amongst rocks, at elevations of 2,400-4,600m.

Identification:
Dwarf compact or low upright shrub, 0.2 to 1.2m high, rarely to 1.5m or 2m.
Leaf bud scales usually deciduous, but occasionally persistent.
Leaves linear through linear-lanceolate to oblanceolate,
0.8 to 3.4cm long by 0.2 to 0.8cm wide;
upper surface matt, lepidote or not,
the margins strongly revolute;
lower surface scales dense, in 2 or 3 overlapping tiers,
the lowest tier pale golden yellow, those above pale brown.
Inflorescence 8-20-flowered, the truss globose; bud scales persistent.
Calyx lobes 0.5-2mm long,
their margins usually ciliate.
Corolla 0.8 to 1.6cm long,
white, pink or rose,
the outer surface lepidote or not.
Stamens 5.

Seed Collections:

W 1328	1908	F 17165	1917/1919	R 24544	1932
F 10278	1912/1914	KW 3998	1921	SBLE 299	1987
F 11246	1912/1914	KW 4465	1921	CLD 1016	1990
F 12505	1912/1914	F 20476	1921/1922	CEE 468	1991
F 15087	1917/1919	F 20480	1921/1922	SICH 712	1991
F 15096	1917/1919	F 21253	1921/1922	SSNY 230	1992
F 15137	1917/1919	F 21299	1921/1922	SSNY 285	1992
F 15259	1917/1919	R 11260	1923/1924	KGB 153	1993
F 15262	1917/1919	R 11401	1923/1924	AC 1850	1996
F 15449	1917/1919	F 29250	1930/1931	AC 3006	1996
F 15452	1917/1919	F 29271	1930/1931	KR 4049a	1996
F 16311	1917/1919	R 24321	1932	JN 944	1999
		R 24439	1932		

R. trichostomum was another Jean-Marie Delavay discovery. It was made close to Lankong, in western Yunnan, during May 1887, and described by Adrien Franchet from the dried specimens the priest sent back to the Muséum National d'Histoire Naturelle in Paris, his text appearing in Volume 9 of the *Journal de Botanique,* published in 1895. The species is easily identified from its closest relative, *R. primuliflorum,* by the leaves - these being near linear, with recurved margins, which are always four to five times as long as they are wide - and by the much smaller calyx lobes. In flower, the clearly rounded truss is also a useful identifier.

R. radinum, which was discovered by George Forrest in June of 1913 while exploring western Yunnan's Lichiang mountain range and then described by Isaac Bayley Balfour and William Wright Smith in 1916's Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh,* was first made a variety of *R. trichostomum* by John MacQueen Cowan and H. H. Davidian in the 1947 edition of the RHS's *Rhododendron Year Book,* and then deemed completely synonymous with the species by the Edinburgh Revision's lead botanists in 1979 (*A Preliminary Synopsis of the Genus Rhododendron,* Part 2, by James Cullen and David Chamberlain, *Notes,* Volume 37). Morphological differences between the two taxa were confined to the presence or not of scales on the leaf upper surface, and the corolla tube and its lobes, with this deemed insufficient to maintain either specific or varietal status.

A rogue seedling in a pan of otherwise normal *R. sargentianum* juveniles, raised at Edinburgh Botanic from Wilson 1208, was given specific status in 1916 courtesy of an Isaac Bayley Balfour botanic description, which named it *R. hedyosmum*. Cowan and Davidian compounded the mistake by re-assessing it as a variety of *R. trichostomum* in 1947. At the time of course, natural hybrids were considered verboten by the in-vogue Balfourian classification system, so this probable *R. sargentianum* x *R. trichostomum* cross, which has never been found in the wild, was allowed to continue its true species masquerade until the steely eyes of Cullen and Chamberlain, working to much more stringent rules for the 1996 taxonomy, weeded it out.

Ernest Wilson was the first plant hunter to introduce *R. trichostomum* into British gardens, the seed coming from his 1908 expedition to western Sichuan, with many other gatherings from Forrest himself, Frank Kingdon-Ward and Joseph Rock following along in subsequent years. It was a plant from a Forrest collection that flowered first, in 1917, and the Scotsman might have beaten Wilson to the introduction credit if a dried specimen from his 1904-1906 expedition - under the field number F 5070 - could be linked to any seed distributed or germinated by the trip's commercial sponsor, the oft-mentioned and decried A. K. Bulley. But unfortunately, records of such no longer appear to exist.

Hardiness and form vary considerably, as would be expected from the altitudinal range across which the species can be found, with a sheltered position required for plants to do best, especially those from the hillsides lower down the mountains of Sichuan and Yunnan that are being attempted in gardens along the UK's eastern coast. Bloom quality varies considerably too, so clones displaying the best pink or white corollas and trusses should be sought out whilst they are in flower.

R. trichostomum

R. trichostomum (F 20476)



R. trichostomum (CLD 1016)



R. trichostomum (CLD 1016)



R. trichostomum



R. trichostomum (F 20476)

R. cephalanthum* ssp. *platyphyllum

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
NW, W & C Yunnan, China; NE Myanmar.
Growing on cliffs and crags, in open alpine pasture and bamboo brakes,
at elevations of 3,050-4,000m.

Identification:
Dwarf to upright shrub, 0.1 to 1m high.
Leaf bud scales persistent, large, broadly ovate to obovate, 'leafy'.
Leaves oblong-elliptic through oval,
2.6 to 5cm long by 1.5 to 2.8cm wide;
upper surface margins recurved;
lower surface scales dense, in 2 or 3 overlapping tiers,
the upper tier fawn through rusty-brown, rarely dark brown,
the lowest tier golden, or at least paler than those above.
Inflorescence 5-12-flowered, the truss often rounded; bud scales persistent.
Calyx lobes 3-7mm long,
their margins ciliate.
Corolla white to pink to pale rose,
the outer surface elepidote,
the tube 1.3 to 2cm long.
Stamens 5-8.
Ovary densely lepidote.

Seed Collections:

F 13526	1914	CNW 835	1994	CNW 864	1994
F 18041	1917/1919	CNW 839	1994	CNW 1285	1994
F 28241	1930/1931	CNW 850	1994	AC 1926	1996
SSNY 350	1992	CNW 853	1994	JN 784	1999
		CNW 862	1994		

R. cephalanthum ssp. *platyphyllum* has larger leaves, corollas and leaf bud scales than its subspecies sister, but is otherwise identical. Abbé Jean-Marie Delavay discovered it on the Tali Range (now the Cangshan), in Yunnan, during June of 1887, but unlike most of the Jesuit missionary's other finds, the species did not receive an Adrien Franchet botanic description because for whatever reason, that task fell to Isaac Bayley Balfour and William Wright Smith who, working from George Forrest-collected specimens, wrote the appraisal that appears in 1916's Volume 9 of *Notes from the Royal Botanic Garden, Edinburgh*.

It was seed from that same 1914 Forrest collection, F 13526, which introduced the species into British gardens, as only herbarium material can now be linked to an earlier 1904-1906 collection, though capsules with viable seed may also have been gathered at the time, but then entrusted to the less than competent hands of those employed by A. K. Bulley at Bees Seeds Ltd. In fairness, the 1914 seedlings, and those from two other subsequent gatherings, proved difficult to maintain and for many years *R. platyphyllum* was lost to cultivation. However, when Western botanists were once more able to venture onto Chinese hillsides, a joint expedition in 1992 between the Kunming Institute of Botany and the Royal Botanic Garden, Edinburgh, saw the species re-introduced from Yunnan under the field number SSNY 350, with an additional bevy of seed lots later secured by Alan Clark, Jens Nielsen and Murray Wilson two years later. The species has not been recollected since late 1999.



R. platyphyllum

R. platyphyllum

R. primuliflorum

R. primuliflorum

Hardiness:

H4-5.

Flowering Period:

April-May.

Distribution in the wild:

S & SE Tibet; N & NW Yunnan, SW to N Sichuan, & Gansu, China; E Siberia, Russia.
Growing at forest margins and by swamps, on rocks and boulders,
in clefts and on ledges of limestone cliffs,
and in open rocky alpine moorland, at elevations of 2,900-5,000m.

Identification:

Matted, compact, prostrate cushion to broadly upright leggy shrub, 0.05 to 2.8m high;
branchlets densely lepidote.
Leaf bud scales quickly deciduous.
Leaves lanceolate-elliptic through oblong-elliptic to elliptic and oblong,
0.8 to 3.5cm long by 0.5 to 1.4cm wide;
upper surface shiny, dark green,
densely lepidote at first, but often elepidote at maturity,
the margins slightly recurved;
lower surface scales dense, in 2 or 3 overlapping tiers,
the lowest tier golden yellow, those above fawn to dark brown.
Inflorescence 5-10-flowered;
bud scales deciduous or persistent.
Calyx lobes 2-6mm long,
their outer surface often lepidote,
their margins sometimes ciliate.
Corolla 1 to 1.6cm long,
white through pink,
sometimes with a wholly yellow tube, but often just yellow-orange at the base,
the outer surface glabrous,
sometimes lepidote on the lobes, rarely pilose,
but densely pilose within the tube, especially at the mouth.
Stamens 5.
Capsule densely lepidote.

Seed Collections:

F 5866	1910	F 29267	1930/1931	SSNY 148	1992
F 10312	1912/1914	F 29283	1930/1931	SSNY 161	1992
F 13841	1917/1919	F 29293	1930/1931	SSNY 164	1992
F 14334	1917/1919	R 23322	1932	SSNY 248	1992
F 15077	1917/1919	R 23400	1932	KEG 319	1993
F 15079	1917/1919	R 24285	1932	KEG 332	1993
F 15080	1917/1919	R 24304	1932	KGB 136	1993
F 15086	1917/1919	R 24489	1932	KGB 295	1993
F 15088	1917/1919	R 24540	1932	KGB 447	1993
F 15092	1917/1919	R 25350	1932	AGS 1572	1994
F 15093	1917/1919	R 25376	1932	AGS 1706	1994
F 15126	1917/1919	L&S 1796	1936	CNW 333	1994
F 15127	1917/1919	Yu 10984	1937	CNW 440	1994
F 15155	1917/1919	Yu 14647	1937	CNW 1230	1994
F 15166	1917/1919	Yu 15139	1937	CNW 1231	1994
F 15169	1917/1919	Yu 15629	1937	CNW 1232	1994
F 15245	1917/1919	LS&T 3601	1938	CNW 1235	1994
F 15271	1917/1919	LS&T 4139	1938	CNW 1236	1994
F 15399	1917/1919	L&S 8654	1942	CNW 1237	1994
F 15466	1917/1919	L&S 8825	1942	CNW 1254	1994
F 16295	1917/1919	L&S 9538	1943	CNW 1313	1994
F 16306	1917/1919	L&S 9574	1943	CNW 1314	1994
F 16308	1917/1919	L&S 9980	1944	SICH 1425	1994
F 16312	1917/1919	LS&E 12428	1946/1947	CV 9501	1995
F 16356	1917/1919	LS&E 13698	1946/1947	AC 1589	1996
F 16436	1917/1919	LS&E 13699	1946/1947	CC 7559	1996
F 16595	1917/1919	LS&E 15030	1946/1947	AC 3489	1997
F 20196	1921/1922	CHM 2630	1986	AC 3510	1997
F 20429	1921/1922	SBLE 61	1987	JN 842	1999
F 20452	1921/1922	SBLE 206	1987	AC 4362	2000
F 20465	1921/1922	SICH 143	1988	AC 4382	2000
F 22320	1921/1922	CCH 4034	1989	AC 4692	2000
KW 4160	1921	CCH 4103	1989	AC 4805	2001
KW 5384	1922	CLD 857	1990	AC 4824	2001
R 11468	1923/1924	Cox 5071	1990	AC 4890	2001
R 18181	1929	Cox 6136	1992	AC 4953	2001

R. primuliflorum was first encountered and collected by Pierre Gabriel Édouard Bonvalot and Prince Henri d'Orléans during their 1889-1890 expedition to the Tibetan plateau, the find occurring somewhere between Lhasa and Batang. It was described in 1891 by Louis Bureau and Adrien Franchet in their treatise for the *Journal de Botanique,* "Plantes nouvelles du Thibet et de la Chine occidentale: recueillies pendant le voyage de M. Bonvalot et du Prince Henri d'Orléans en 1890". The species was introduced into British gardens twenty years later in 1910, the seed coming from a George Forrest collection made on the Lichiang Range in Yunnan.

As would be expected from the wide endemic distribution, the altitudinal range and the differing habitats it occupies, *R. primuliflorum* varies enormously in form, height, leaf size and other characteristics, and on Chinese hillsides can be seen to merge with *R. cephalanthum, R. kongboense* and *R. laudandum* var. *laudandum*. Only the deciduous leaf bud scales reliably separate *R. primuliflorum* from *R. cephalanthum*, though a not always consistent preference for different niche growing sites in the wild aids identification on the ground, even when both plants are present on the same mountain slopes. From the other two species, the morphology is far less clear-cut, especially when growth form and flower colour are near identical. The colour of the abaxial leaf scales and the number of tiers they occupy can key out the species when plants from separate locales conforming to type are compared, but this breaks down as adjacent populations merge.

R. primuliflorum is also closely related to *R. fragrans*. Here, the species differs only in the non-uniform size of the abaxial leaf surface scales (with the upper tiers coloured fawn through brown instead of yellowish-brown), and a lack of any hairs on the inner surface of the corolla lobes, although many experts would argue that these characteristics are not sufficient of themselves to justify the specific status that *R. fragrans* currently enjoys, so while not yet voiced, a better alternative might be to consider all five rhododendrons as varieties of the same species.

DNA analysis to support such a proposition is currently lacking, but it would certainly be able to show how close the relationship between the quintet is and when any changes in their genetic coding took place. Results showing very few differences between the species, and these of recent occurrence, would provide the evolutionary evidence to justify such a varietal re-classification (specifically, if the sequence changes occurred in one or two base pairs at the opposite end of a DNA chain to the alignment point). But if the sequences showed major differences that were much closer to the alignment point - indicating that they had occurred at a much earlier time in the plant's evolution - then the five would be confirmed as individual specific species that environmental factors had forced to develop similar characteristics in order to survive.

R. cephalanthoides was found by George Forrest during May 1906 while he was exploring the eastern flank of the Lichiang mountain range in northwest Yunnan. The plant was given specific status when first described by Isaac Bayley Balfour and William Wright Smith in 1916 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 9) but then reduced to a variety of *R. primuliflorum* by John Cowan and H. H. Davidian in the 1947 edition of *The Rhododendron Year Book*. As the only listed difference between the two was the presence of hairs on the outer surface of the corolla, the Edinburgh Revision botanists decided synonymy was the better approach and *R. cephalanthoides* was sunk, though the epithet is maintained via Cephalanthoides Group.

In cultivation, *R. primuliflorum* is one of the 'easier' Section *Pogonanthum* species to grow, this especially true of the taller forms, but all will still require the good drainage provided by a rock garden or a raised peat bed, though aspect placement within the garden appears immaterial. The propensity to flower well does not extend to all the clones grown in UK gardens, with some producing very few blooms each season, while others are literally swamped with pink or white clusters. Note too that the time taken to reach flowering size can also amount to many years, despite most specimens being quite vigorous.



R. primuliflorum (Yu 15629)

R. primuliflorum



R. sargentianum

R. sargentianum

Hardiness:
H4-5.
Flowering Period:
April-June.
Distribution in the wild:
C & W Sichuan, China.
Growing on exposed rocks and cliffs, at elevations of 3,000-4,300m.

Identification:
Compact dwarf shrub, often dense, 0.3 to 0.6m high;
annual growth short.
Leaf bud scales persistent.
Leaves elliptic through oval, sometimes oblong-elliptic,
0.8 to 2.3cm long by 0.5 to 1.1cm wide;
upper surface shiny, elepidote,
the margins recurved;
lower surface scales dense, in 2 or 3 overlapping tiers,
the lowest tier pale golden yellow, those above coloured brown to rust.
Inflorescence 5-12-flowered;
bud scales persistent or deciduous.
Calyx lobes 2-4mm long,
their margins ciliate.
Corolla 1.2 to 2.3cm long,
pale yellow to creamy white,
the outer surface lepidote, densely so on the tube, moderately so on the lobes,
and pubescent.
Stamens 5.

Seed Collections:

W 1888	1903
W 1208	1908
W 3454	1908
W 4237	1910
AC 4829	2001
AC 4834	2001

R. sargentianum was discovered and first collected by Ernest Wilson in July of 1903 while on his second expedition for the Veitch Nurseries, and he found the plants at Washan, in western Sichuan. On later expeditions, sponsored by the Arnold Arboretum - the species is named for its first director, Charles Sprague Sargent - Wilson made three further gatherings of seed, two in 1908, and the last, at Mupin, in 1910, and to this day, he would remain the only Western plant hunter to have encountered the species had not Alan Clark discovered a population of plants on Zheudo Shan, to the west of Kangding, in Sichuan's Ganzi Prefecture (now the Garzê Tibetan Autonomous Prefecture), during September, 2001. Ernest Wilson co-authored the *R. sargentianum* botanic description with Alfred Rehder when the two were writing the first part of *Plantae Wilsonianae,* this published in 1913.

The very compact and often symmetrical growth habit of *R. sargentianum,* densely filled with foliage, plus the persistent leaf bud scales, the small elliptic to oval leaves, and the lemon-yellow to white flowers - scaly and hairy outside - quickly identify the species and it is rarely confused with any other member of Section *Pogonanthum*. There is a rather fleeting resemblance to the more prostrate forms of *R. cephalanthum* and of course, to the yellow-flowered plants of Nmaiense Group, but stamen number and the decidedly lepidote corollas will soon correctly identify any unlabelled plants.

R. sargentianum is purpose-made for the rock garden, flowering from a young age, and perfectly hardy in UK gardens if given a moderately sheltered position, though it requires excellent drainage. And the plants look good even when out of bloom. In short, it is simply one of the finest dwarf rhododendrons able to be grown in UK cultivation.



R. sargentianum (W 1208)



R. sargentianum



R. sargentianum



R. sargentianum (W 1208)

R. sargentianum

R. anthopogon ssp. *hypenanthum*

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
Nepal; Kashmir to Uttar Pradesh, & Sikkim, India; Bhutan.
Growing amongst rocks, on open hillsides and moorland, in scrub and open birch woods, at elevations of 3,350-4,500m.

Identification:
Prostrate through to upright shrub, 0.3 to 1.5m high.
Leaf bud scales persistent.
Leaves strongly aromatic,
ovate through orbicular,
1.3 to 3.8cm long by 0.8 to 2.5cm wide;
lower surface scales dense, in 2 to 3 overlapping tiers,
the upper tier dark reddish-brown, rarely pale brown,
the lowest tier as dark as those above, or more so.
Inflorescence 5-9-flowered;
bud scales persistent.
Corolla white or pale yellow, sometimes pink or deep rose,
resembling crumpled tissue paper,
not lepidote outside.
Stamens 5 to 9, only rarely 10.

Seed Collections:

Cooper 5738	1916	PS&W 4629	1952
L&S 661	1934	SSW 822	1954
L&S 7384	1939	SSW 1316	1954
L&S 7660	1940	SSW 2971	1954
L&S 9145	1943	SSW 6096	1954
LS&H 16099	1949	SSW 7913	1954
LS&H 21170	1949	SSW 9090	1954
PS&W 2057	1952	McBeath 1183	1981
PS&W 4061	1952	McBeath 1548	1983

It is not known who first discovered *R. hypenanthum,* but the plant was described from herbarium specimens by Sir Isaac Bayley Balfour in 1916 (*Notes from the Royal Botanic Garden, Edinburgh,* Volume 9). The species had been introduced into UK cultivation as early as 1820, with first flowering recorded as taking place during 1842, in the garden at Dysart House, Fife, the home of the Countess of Rosslyn.

Morphologically, apart from having persistent leaf bud scales, *R. hypenanthum* is identical to *R. anthopogon,* because the yellow or lemon-green - as opposed to pink, rose or reddish - corolla colour difference listed by H. H. Davidian in *The Rhododendron Species,* Volume 1, 1982, is no longer regarded as significant. So it was made a subspecies of the latter in Part 2 of the Cullen-Chamberlain-authored *Preliminary Synopsis* paper published in 1979 (*Notes,* Volume 37). This ranking was determined by the biogeography, Doctor Cullen describing *R. hypenanthum* as 'essentially a western vicariant of subsp. *anthopogon,* but with a distinct outlier in Bhutan' in his full Subgenus *Rhododendron* text (*Notes,* Volume 39, Number 1, 1980). Both subspecies can be identified from the other members of Section *Pogonanthum* by their reddish-brown lower leaf surface scales, and the crumpled tissue paper nature of their corollas.

Two forms of *R. anthopogon* ssp. *hypenanthum* are in cultivation: a lax but upright shrub, to around 1m high; and a dwarf compact shrub, which is never more than 0.5m tall. The dwarf form comes from the Adam Stainton, William Sykes and John Williams 1954 Nepal gathering under their field number SSW 9090, which is graced with much smaller leaves - like those of *R. sargentianum,* in fact - and a propensity to flower freely from a much younger age. Cultural requirements match exactly those detailed for *R. anthopogon* ssp. *anthopogon*.



R. hypenanthum (SSW 9090)

R. hypenanthum (SSW 9090)

R. kongboense

Hardiness:
H4-5.
Flowering Period:
March-May.
Distribution in the wild:
S Tibet.
Growing in rhododendron and oak forest, on moorland, rocky slopes and limestone cliffs,
at elevations of 3,200-4,700m.

Identification:
Upright but spindly, much-branched, low shrub, 1 to 1.5m high.
Leaf bud scales deciduous.
Leaves strongly aromatic,
oblong through oblong-elliptic to oblong-lanceolate,
0.9 to 2.8cm long by 0.4 to 1.2cm wide;
upper surface matt, usually densely lepidote,
the margins flat or slightly recurved;
lower surface scales dense, in a single tier that is plastered to the leaf surface,
fawn through brown, sometimes chocolate, cinnamon or rust-coloured,
often overlapping, the majority with well-developed domed centres.
Inflorescence 6-12-flowered;
bud scales persistent or deciduous.
Calyx lobes 3-5mm long, large compared to the flower.
Corolla 0.8 to 1.1cm long,
pink, deep strawberry red or reddish-purple,
the outer surface densely pilose, not lepidote,
the tube densely to moderately pilose inside, especially at the mouth.
Stamens 5.
Ovary densely lepidote.
Capsule sparsely lepidote.

Seed Collections:

KW 5700	1924	LS&E 13535	1946/1947	AC 3157	1997	AC 4343	2000
KW 5850	1924	LS&E 13633	1946/1947	AC 3193	1997	AC 4397	2000
KW 6020	1924	LS&E 13672	1946/1947	AC 3194	1997	AC 4626	2000
KW 6021	1924	LS&E 15008	1946/1947	AC 3271	1997	AC 4627	2000
KW 10842	1933	LS&E 15258	1946/1947	AC 3346	1997	AC 4653	2000
LS&T 3629	1938	LS&E 15751	1946/1947	AC 3417	1997	AC 4656	2000
LS&T 3802	1938	LS&E 15752	1946/1947	AC 3502	1997	AC 4685	2000
LS&T 3933	1938	CV 9540	1995	AC 3504	1997	AC 4687	2000
LS&E 13269	1946/1947	CC 7575	1996	AC 3634	1997	AC 4694	2000
LS&E 13527	1946/1947	AC 3125	1997	AC 3676	1997		
LS&E 13534	1946/1947	AC 3133	1997	AC 3689	1997		

Frank Kingdon-Ward discovered *R. kongboense* during June 1924 while exploring the mountainous Doshong La area of southern Tibet, and just over a decade later in 1937, John Hutchinson composed the description for the new-to-science species, his text appearing in Volume 160 of the *Botanical Magazine*.

On the hillsides of Tibet, the taxon has been documented from field study as merging with *R. primuliflorum,* but *R. kongboense* can be distinguished from the former by its single tier of lower leaf surface scales, rather than the two or three tiers present on the blades of its neighbour. The distinct form of those scales, specifically their well-developed domed centres, are also telling. Equally, the flower colour is deeper in tone, the habit more open and often less densely packed with foliage, and the leaves are particularly aromatic, giving off a pervasive, almost strawberry-like scent, which is near unique for a member of Genus *Rhododendron*. Those forms of *R. kongboense* with pink, or more rarely, white-flushed-pink flowers, are the closest to *R. primuliflorum* and the hardest to differentiate.

Kingdon-Ward's 1924 collections of *R. kongboense* were the first to be introduced into British gardens and the species soon proved to be like so many of its Section *Pogonanthum* cohorts: difficult in the extreme; hard to establish; and when that hurdle was jumped, problematic to maintain. And that remains true for the more recently introduced forms as well. But rhodophiles who succeed in cultivating the shrub - whether through good luck or horticultural judgement - will be graced with a plant covered in deep red bloom that is a knockout addition to any peat bed or rock garden.



R. kongboense (KW 6020)

R. kongboense

R. laudandum* var. *laudandum

Hardiness:
H4-5.
Flowering Period:
April-May.
Distribution in the wild:
SE Tibet.
Growing on steep open alpine slopes, hillsides and moraines,
at elevations of 2,900-4,700m.

Identification:
Rounded and spreading shrub, sometimes compact,
but often upright and leggy, to 1m high.
Leaf bud scales persistent, but not conspicuous.
Leaves oblong through ovate,
0.9 to 1.8cm long,
less than half as wide as they are long, retained for 2-3 years;
upper surface matt to shiny, greyish to dark green;
lower surface scales dense, in 2 or 3 overlapping tiers, chocolate-brown,
the lower tier as dark or darker than those above.
Inflorescence 5-8-flowered, the truss dense.
Calyx lobes 5-6mm long.
Corolla usually pink, rarely yellowish,
the outer surface densely pilose,
the tube 0.5 to 1.2cm long, its inner surface densely pilose at the mouth.
Stamens 5-6.
Ovary lepidote, sometimes sparsely puberulent.
Capsule very small, 2-4mm long,
enclosed by the persistent calyx lobes.

Seed Collections:

KW 5733	1924	AC 3474	1997
L&S 2160	1936	AC 3486	1997
LS&T 3900	1938	AC 3503	1997
LS&T 5042	1938	AC 3505	1997
LS&E 13133	1946/1947	AC 3511	1997
CC 7545	1996	AC 3665	1997
AC 3238	1997	AC 4498	2000
AC 3298	1997		

R. laudandum* var. *temoense

Hardiness:
H4-5.
Flowering Period:
March-April.
Distribution in the wild:
SE Tibet.
Growing on steep open alpine slopes, hillsides and moraines,
at elevations of 2,900-4,700m.

Identification:
as var. *laudandum* except:
Usually compact, to 0.6m high.
Leaves oblong through ovate to near orbicular,
0.6 to 1cm wide,
less than twice as long as they are wide, retained for 3-4 years.
Corolla usually white,
the outer surface laxly pilose.

Seed Collections:

KW 5848	1924
KW 5849	1924
LS&E 13166	1946/1947
LS&E 14023	1946/1947
CC 7546	1996
CC 7581	1996
CV 9565	1995

Frank Kingdon-Ward was also the first Western collector to discover *R. laudandum*. He did so in June 1924 while exploring the Temo La in southern Tibet, and in the same month, encountered *R. temoense* on the Doshong La. The botanic description for the former was written by John Cowan in 1937, appearing in Volume 19 of *Notes from the Royal Botanic Garden, Edinburgh,* while the latter - based on Kingdon-Ward's original description, which for some reason had failed to meet the accepted rules for valid publication, so was revised by John MacQueen Cowan and H. H. Davidian - featured in the 1947 edition of the Royal Horticultural Society's *Rhododendron Year Book*.

Kingdon-Ward introduced both plants into UK cultivation, but the *R. laudandum* seed under KW 5733 appears not to have germinated or was quickly lost, while the *R. temoense* lots - KW 5848 and 5849 - though successful, ultimately proved to be natural hybrids. These plants - still to be seen in gardens today - were very free flowering, easy to grow and, for a Section *Pogonanthum* species, remarkably simple to propagate from cuttings. Unfortunately however, the scales on the abaxial leaf surface were coloured green instead of dark chocolate-brown and the corollas were in shades of lavender-pink, which failed to match with the type herbarium specimens. A re-introduction had to wait for China to re-open its occupied Tibetan hillsides to Western plant hunters and for the plants themselves to be re-discovered, but in 1995 Kenneth Cox and Scott Vergara found a population of the true *R. temoense,* and a year later, this time teamed with his father Peter, Kenneth brought back seed of both varieties.

On-the-ground field study has now documented large and distinct populations of both plants, although some reports suggest that on a number of hillsides, var. *laudandum* merges with *R. primuliflorum*. The view has been expressed that var. *laudandum* should therefore be regarded as an extreme form or variant of *R. primuliflorum,* though for the moment - until more is known and the conflicting information resolved - that position is not adopted herein. *R. laudandum* var. *temoense* has also been confirmed as a distinct entity, deserving of its current status, with some doyens suggesting that specific ranking should be applied, as identical forms have been found on four separate Himalayan passes in the southeast of Tibet. Again, until its relationship with var. *laudandum* is really understood, with DNA evidence documenting the depth and complexity of that linkage available for perusal, no change to the status ranking should be implemented.

The especially dense covering of dark chocolate-brown, almost black, scales on the under surface of the leaves of both varieties, along with the three, four or more years over which those blades are retained, identify the pair from all of their Section *Pogonanthum* sisters. Cultivation requirements have proven to be demanding, but where successful, a compact dark-foliaged dome covered in pure white or pink flowers is likely to become a rock garden sensation.

R. radendum

Hardiness:
H4.
Flowering Period:
April-May.
Distribution in the wild:
W Sichuan, China.
Growing in thickets and on boulders, at elevations of 3,000-4,100m.

Identification:
Semi-dwarf shrub, 0.5 to 1m high;
branchlets densely lepidote and setose.
Leaf bud scales deciduous.
Leaves oblong-lanceolate through obovate-lanceolate to ovate-lanceolate,
1 to 1.8cm long by 0.3 to 0.6cm wide;
upper surface shiny, lepidote and setose,
the margins revolute;
lower surface lepidote and setose, the scales dense,
in 2 or 3 overlapping tiers, the lowest tier pale yellowish-brown, those above dark brown.
Petiole setose.
Inflorescence 8-10-flowered.
Pedicel setose.
Calyx small, the lobes 1-2mm long,
their outer surface lepidote and setose,
their margins ciliate.
Corolla pink, purplish-white or pale rose-purple,
the outer surface densely lepidote.
Stamens 5.
Style very short, as long as the ovary.

Seed Collections:

Cox 6145a	1992

R. radendum was discovered near Tatsienlu (Kangding) in western Sichuan by Cheng Wan-Chun in May 1930. The botanic description was written by Fang Wen-Pei in 1939 and appeared in Volume 12 of *Contributions of the Biological Laboratory of the Chinese Association for the Advancement of Sciences*.

Bristles on the branchlets, petioles, leaf upper and lower surfaces, pedicels and calyx, are the unique characteristic of this species and they immediately identify it from all the other members of the Section. Until 1992, it was only known from the original 1930 find, which was not introduced into UK cultivation, but Peter Cox then rediscovered the species in its type location on the north side of the Zheduo Pass and seed was collected under Cox 6145a. However, examination of nearby plants showed variations from the original dried specimens, as well as with each other, these having far fewer bristles, which were also not consistent with the botanic description. The leaf margins too were only slightly recurved. Peter's conclusion therefore was that *R. radendum* was simply a very hairy form of *R. trichostomum,* a population of which was growing nearby (*Seeds of Adventure,* co-authored with Peter Hutchison, 2008).

However, until genetic evidence is available, specific status is maintained herein.

Photographic Acknowledgements:

As previously, the details of where each of the plant portraits was photographed is set out below, along with the website details of those collections visited. Thanks is again extended to each establishment for allowing images taken in a private-use capacity, to be reproduced herein. Gratitude is also due the institutions, organisations and individuals who allowed the portrait photographs of historical and noted figures associated with the genus to appear alongside the text.

Key: AL - above left; AC - above centre; AR - above right; BL - below left; BC - below centre; BR - below right; L - left; R - right.

Arduaine Garden, Oban, Argyll:
https://www.nts.org.uk/visit/places/arduaine-garden
p. 10-AL; p. 16-R; p. 41; p. 67-R; p. 94-AL; p. 98-BR; p. 123-BR; p. 126; p. 137; p. 139; p. 180-L, R; p. 181; p. 185-BL; p. 188; p. 189-AL, Bl, R; p. 216-BR; p. 273-AR, BL; p. 279-AL, BL, R; p. 280-BR; p. 285-BR; p. 290-BR; p. 293-L, R; p. 295-AR; p. 325-R; p. 326-BR; p. 327; p. 337-R; p. 346-BL; p. 350-R; p. 358-AL, BL; p. 362-AL, BL; p. 432; p. 434-BR; p. 457-BL; p. 462; p. 464-L; p. 467-AL, BL, R; p. 579-R; p. 609.

Benmore Botanic Garden, Argyll:
https://www.rbge.org.uk/visit/benmore-botanic-garden/
p. 50-AL; p. 68; p. 70-L, R; p. 71; p. 74-L; p. 76; p. 87-AL, BL, R; p. 102; p. 120-AL; p. 122-BR; p. 124-BR; p. 133-AL, BL; p. 135-AR; p. 147-AR, BR; p. 149; p. 155; p. 159-BR; p. 166-BR; p. 342-AL, BL, BR; p. 343; p. 365-L, AR, BR; p. 388; p. 393-BL, R; p. 436; p. 445-BR; p. 481-R; p. 483-L, AR; p. 485; p. 486-L, BR; p. 487; p. 492-AL, BL, R; p.493; p. 497-BL; p. 498; p. 500-BR; p. 510; p. 525-BL, R; p. 526-BR; p. 538; p. 541-L, BR; p. 556-L; p. 557-BR; p. 559-BR; p. 561-AL; p. 566-BR; p. 569-BR; p.573-BL; p. 582; p. 583-BR; p. 584-BR; p. 585; p. 623-AL, AR.

Branklyn Garden, Perth:
https://www.nts.org.uk/visit/places/branklyn-garden
p. 55; p. 99-L; p. 134; p. 136-L; p. 185-R; p. 224; p. 227-L; p. 428-BR; p. 537; p. 593-AL, AR; p. 613-AL; p. 626; p. 633; p. 634-BR; p. 635.

Brodick Castle Garden, Isle of Arran:
https://www.nts.org.uk/visit/places/brodick-castle-garden-country-park
p. 5-Title Page; p. 78-AR; p. 114-AL; p. 119; p. 121-R; p. 346-AL; p. 348-L; p. 349; p. 440-L; p. 441-AR; p. 442-AL; p. 464-AR, BR; p. 474; p. 536-BR.

Dawyck Botanic Garden, Stobo, Peebles:
https://www.rbge.org.uk/visit/dawyck-botanic-garden/
p. 431-R; p. 568-BR; p. 573-AL.

Exbury Gardens, Hampshire:
https://www.exbury.co.uk/
p. 117-BL; p. 40-AR; p. 80-BL; p. 161; p. 390-BR; p. 435-AL.

Glenarn Gardens, Rhu, Helensburgh:
https://www.discoverscottishgardens.org/garden/glenarn-glorious-gardens-of-argyll-and-bute/
p. 254-AL; p. 269-BL; p. 295-BL; p. 475; p. 521.

Glendoick Gardens Ltd, Perth:
https://glendoick.com/
p. 25-BL; p. 33-BR; p. 34-R; p. 35; p. 40-BR; p. 43-BR; p. 49; p. 146-L; p. 148; p. 196-L; p. 197-AR, BR; p. 204-AL, AR; p. 219; p. 268; p. 269-BR; p. 272-AL; p. 378; p. 380-R; p. 381; p. 384-BR; p. 423-BL; p. 435-BL, R; p. 451-R; p. 455; p. 536-AR; p. 553-BR; p. 555-L; p. 598-L; p. 599-BR; p. 613-BL, R; p. 614-BR; p. 618; p. 623-BR; p. 629; p. 632-L; p. 637; Back Cover-BL.

Howick Hall Gardens & Arboretum, Alnwick, Northumberland:
https://howickhallgardens.com/
p. 88-AL; p. 89-R; p. 170; p. 171-BR; p. 395-BR; p. 550-BR.

Inverewe Gardens, Poolewe, Wester Ross:
https://www.nts.org.uk/visit/places/inverewe
p. 31-BR; p. 333-BR; p. 338-R; p. 377-BR; p. 496-BR.

Lakeland Horticultural Society, Holehird Gardens:
https://holehirdgardens.org.uk/the-society
p. 52; p. 56-BR; p. 202; p. 240-R; p. 241; p. 244-BR; p. 407; p. 419-L; p. 422; p. 423-AL; p. 507; Back Cover-AL.

Leonardslee Gardens, Horsham, West Sussex:
https://www.leonardsleegardens.co.uk/about-us
p. 37-AL.

Logan Botanic Garden, Stranraer:
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Nymans Garden, Handcross, West Sussex:
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Royal Botanic Garden, Kew:
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Royal Botanic Garden, Wakehurst Place:
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Royal Horticultural Society, Wisley:
https://www.rhs.org.uk/gardens/wisley
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John Sanders, Somerset:
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Savill Garden, Windsor Great Park:
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Sir Harold Hillier Gardens, Ampfield, Romsey:
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Trengwainton Garden, Madron, Penzance, Cornwall:
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Valley Gardens, Windsor Great Park:
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About the author:



Julian Taylor-Whall was born in Lowestoft at the end of November, 1957. He received a grammar school education before beginning a three-decades-long career with the BBC at Television Centre in West London. During that time he worked on many of the now classic shows made in the production facilities there, the studios at Lime Grove and Elstree, and at the Television Theatre. He retired early in 2008, moving to a small village in West Cumbria, just outside the Lake District National Park.

Twenty years earlier, in late April 1988, on a day when the hills of Torridon and Applecross were hidden in cloud, a visit to the nearby Inverewe Gardens offered an alternative distraction. By chance it took place at the peak of the flowering season, during a particularly profligate year for bloom, and turned into an encounter never to be forgotten. Thus did the species and hybrids of Genus *Rhododendron* become yet another enduring passion, along with music, film, photography, and concocting the occasional science fiction novel.

- above -
Observed in the woodland at Muncaster,
any resemblance to the author is comprehensively denied.

- back cover -

R. campylogynum	*R. edgeworthii*
R. sargentianum	*R. leucaspis* (KW 7171)







