A revision of *Clematis* sect. *Meclatis* (Ranunculaceae)

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**Abstract** *Clematis* sect. *Meclatis* is revised in this paper. Brief taxonomic history and geographical distribution of the section are given, its systematic position and the relationships among the species are discussed, and the evolutionary trends of some characters in the section are evaluated. *Clematis akebioides* (Maxim.) Veitch and *C. tangutica* (Maxim.) Korsh. are considered the primitive species in the section, whereas *C. caudigera* W. T. Wang and *C. corniculata* W. T. Wang are considered the advanced ones. The western edge of the Qinghai-Xizang (Tibet) plateau with the Pamirs and the adjacent mountains, the highest land mass in the world, where 10 species of the section are concentrated, is regarded as the distribution center, and the eastern edge of the Qinghai-Xizang (Tibet) plateau, where the two primitive species, *C. akebioides* and *C. tangutica*, sympatrically occur, may be the center of origin of the section. The inclusion of *C. ispahanica* Boiss. and *C. graveolens* Lindl. in sect. *Meclatis* by some authors is not accepted, with the former being a member of sect. *Clematis*, and the latter a member of sect. *Brachiatae* Snoeijer. A new variety, *C. intricata* Bunge var. *intrapuberula* W. T. Wang, is described, and two new combinations, *C. tangutica* var. *mongolica* (Grey-Wilson) W. T. Wang and *C. tibetana* Kuntze var. *pamiralaica* (Grey-Wilson) W. T. Wang, is proposed. As a result, 13 species and 13 varieties are recognized in sect. *Meclatis*. They are keyed, described, and illustrated.

**Key words** *Clematis*, *Clematis* sect. *Meclatis*, taxonomic revision.

1 Brief taxonomic history

Linnaeus (1753) described *C. orientalis* L., the first species of *Clematis* sect. *Meclatis*. In the first revision of the genus *Clematis*, de Candolle (1818) placed the two species of sect. *Meclatis*, *C. orientalis* L. and *C. glauca* Willd., in the first group of his sect. *Flammula*, which is characterized by “pedunculis ramoso-paniculatis, foliis pinnatim sectis”.

In his account of the tribe *Clematideae* of the Ranunculaceae, Spach (1839) established the new genus *Meclatis* on the basis of *C. orientalis* and *C. glauca*. In his classification of the *Clematis*, Baillon (1867) correctly sunk Spach’s new genus to sectional rank. However, this treatment had long been overlooked by many authors working on the taxonomy of *Clematis* until Brandenburg (2000) recognized this section.

In his monograph on the genus *Clematis* published by Kuntze (1885), one species of the *C. orientalis* group, *C. orientalis*, was included in his sect. *Scandentes aperulatae*, and one other species of that group, *C. tibetana* Kuntze, in his sect. *Escandentes*. Here, *C. orientalis* was treated in so broad a sense that two species (*C. intricata* Bunge and *C. daurica* Pers.) belonging to the *C. orientalis* group and five species (*C. massoniana* DC., *C. graveolens* Lindl., *C. brachiata* Thunb., *C. wightiana* Wall., and *C. simensis* Fresen.) belonging to the *C. brachiata* group were all treated as infraspecific taxa of *C. orientalis*.

In his classification of the genus *Clematis*, Prantl (1888) established a new subsection, subsect. *Orientales*, under sect. *Flammula*. This subsection, consisting of *C. orientalis*, *C. glauca* and *C. ispahanica* Boiss, was afterwards accepted by Schneider (1906), and by Rehder.
and Wilson (1913), and by Rehder (1951) who relegated it to the series rank. The inclusion of *C. ispahanica*, which has white, spreading sepals, glabrous stamens, and linear filaments, and thus should belong to sect. *Clematis*, in the *C. orientalis* group was adopted by Brandenburg (2000, see below).


Grey-Wilson (1989) published a revision of the *C. orientalis* group, and recognized 10 species, in which he followed Schneider (1906) to include the western Himalayan *C. graveolens* Lindl., a member of sect. *Brachiatae* (Wang, 2004). In the analytical key, the absence or presence of hairs on the adaxial surface of sepal is used as a character for the primary subdivision of the species. In his book entitled *Clematis the Genus*, Grey-Wilson (2000) followed Tamura (1987) to place sect. *Meclatis* in subgen. *Campanella* but behind sect. *Campanella* Tamura (i.e. the *C. connata* group) and sect. *Bebaeanthera* Edgew., and transferred subsect. *Africanae*, a subsection established by Johnson (1997) on the basis of the *C. brachiata* group, from sect. *Clematis* to sect. *Meclatis* and placed it before subsect. *Meclatis* (i.e. the *C. orientalis* group). In subsect. *Meclatis* 14 species are recognized, and the leaf colour is used as an important character for distinguishing them.


Brandenburg (2000) carried out an intensive study on the taxonomy of sect. *Meclatis*, in which the evolutionary trends of most of the characters in this section were analysed, and on the basis of the results of analysis, a cladogram was reconstructed as follows:

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Clematis ispahanica
   "orientalis"
   C. intricata
   C. graveolens
   C. serratifolia
   C. tibetana ssp. tibetana
   C. tibetana ssp. tangutica
   C. tibetana ssp. vernayi
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Kaval, and C. sarezica Ikonn. were reduced to synonymy under C. intricata; C. akebioides (Maxim.) Veitch to those under C. tibetana ssp. tibetana and ssp. tangutica; C. ladakhiana Grey-Wilson to that under C. tibetana ssp. tibetana; C. pamiralaica Grey-Wilson to that under C. tibetana ssp. tangutica; none of the varieties of C. orientalis were recognized. Besides, C. ispanhanica, a member of sect. Clematis subsect. Angustifoliæ (Wang, 2003), and C. graveolens, a member of sect. Brachiatae (Wang, 2004), were both misplaced in sect. Meclatis. So, sect. Meclatis defined by Brandenburg (2000) is a heterogeneous group.

2 Systematic position

Sect. Meclatis is closely related to sect. Brachiatae in the similar floral structure (Wang, 2004), but differs by having usually ascending and yellow sepals, and stamen filaments widened in the lower part. In fact, as mentioned above, Kuntze (1885), Tamura (1995), and Grey-Wilson (2000) have all associated the C. orientalis group with the C. brachiata group, in which the sepals are always spreading and white in colour, and the stamen filaments are narrowly linear in outline, not widened in the lower part. Section Brachiatae with floral structure showing striking resemblance to that of sect. Clematis is closely related to and may be derived from sect. Clematis. Being a close ally of sect. Brachiatae, sect. Meclatis may also be derived from sect. Clematis, and should be a member of subgen. Clematis (Wang, 2003; Wang & Li, 2006).

3 Relationships among the species

The 13 species of sect. Meclatis are so closely related to each other that no subdivision of the section can be made (Grey-Wilson, 1989, 2000; Tamura, 1995; Johnson, 1997; Brandenburg, 2000). After analysing the variational patterns of the various morphological characters in the section, the evolutionary trends of some characters may be revealed as follows: (1) the leaf colour may have changed from green to grey-green due to adaptation to the arid climate; (2) the ovate or broadly ovate, palmately lobed and dentate leaflets may represent the primitive condition, and the lanceolate to linear, undivided and entire leaflets may represent the derived condition; (3) the solitary, terminal flower without a peduncle and two opposite bracts may be derived from the pedunculate, 2-bracteate, few- to many-flowered cyme (Wang, 2002); (4) the evolutionary trend of the sepal shape is somewhat like that of the leaflet shape, i.e. from ovate to lanceolate and linear; (5) the sepals glabrous inside may represent the primitive condition, and the sepals hairy inside may represent the derived condition; (6) the sepals without any apical projections may represent the primitive condition, and those with apical projections may represent the derived condition; (7) the anthers may have changed from oblong, narrowly oblong to linear in outline. According to the evolutionary trends of characters mentioned above, the two species, C. akebioides and C. tangutica, in which the leaflets are green, ovate or oblong, dentate or crenate, the cymes are several-flowered (in C. tangutica the flowers are often singular and terminal), the sepals are ovate and glabrous inside, and the anthers are narrowly oblong or oblong, seem to be the primitive species of sect. Meclatis, and the two species, C. caudigeræ W. T. Wang and C. corniculata W. T. Wang, in which the leaflets are grey-green, and deeply divided or lanceolate, the flowers are singular and terminal, and the sepals are oblong-lanceolate, and caudate or corniculate, are considered the advanced ones. Besides, the species C. orientalis, in which the leaflets or leaflet lobes are grey-green, often lanceolate, or oblong-lanceolate, the sepals are puberulous inside, and the anthers are usually linear, may also be an advanced one.

4 Geographical distribution

In the present revision, 13 species and 13 varieties of sect. Meclatis are recognized. They
are widespread in southeastern Europe and western, central, and northeastern Asia (Fig. 1). Ten species (C. tangutica, C. tibetana, C. ladakhiana, C. glauca, C. zandaensis W. T. Wang, C. hilariae, C. sarejica, C. orientalis, C. caudigera, and C. corniculata) and 10 varieties are concentrated in the western edge of the Qinghai-Xizang (Tibet) plateau with the Pamirs and the adjacent montane regions, the highest land mass in the world. Of them, the typical variety of C. orientalis extends from this high land mass westward via the arid regions of western Asia to the Aegean Islands of Greece and eastward to the arid regions of Xinjiang and north-western Gansu of China and Mongolia. C. tangutica extends from this land mass eastward to the western Loess plateau and the arid regions of the western Loess plateau and Mongolia (Fig. 2), C. glauca extends from this land mass northeastward to eastern Siberia, and the remaining seven species are endemic to this land mass proper. On the eastern Qinghai-Xizang plateau and in the arid regions of northern Gansu, Ningxia, and Nei Mongol of China and Mongolia occur four species (C. akebioides, C. tangutica, C. intricata, and C. glauca), with C. akebioides and C. intricata extending eastward to the eastern Loess plateau, northern Hebei and western Liaoning (Fig. 2). In northern Korea, northeastern China, Far East Region of Russia, and northern Japan is distributed one species (C. serratifolia). The western edge of the Qinghai-Xizang (Tibet) plateau with the Pamirs and the adjacent montane regions, where 10 species of sect. Meclatis are concentrated, therefore, may be regarded as the distribution center of the section, and the eastern edge of the Qinghai-Xizang plateau, where the two primitive species in the section, C. akebioides and C. tangutica, sympatrically occur (Fig. 2), may be regarded as the center of origin of the section.

Fig. 1. Map showing the distribution of the section Meclatis.
5 Taxonomic treatment


Woody vines, rarely dwarf erect shrubs or subshrubs. Seedling leaves alternate (Essig, 1991). Cauline leaves opposite, 1–2-pinnate or 2-ternate. Flowers bisexual, in pedunculate, 2-bracteate, few- to many-flowered cymes, sometimes solitary, terminal, and only pedicellate. Sepals 4, yellow, sometimes purple or red, ascending, rarely spreading, ovate, lanceolate, or narrowly oblong, glabrous or puberulous on both surfaces, velutinous on margin. Stamens numerous; filaments narrowly lanceolate or lanceolate-linear, pubescent; anthers oblong, narrowly oblong, or linear, apex obtuse or minutely apiculate. Carpels numerous, with long villous styles. Achenes compressed, ovate or elliptic, with elongate, plumose persistent styles.

Thirteen species with thirteen varieties mostly occurring in central and northern Asia, only one species extending from central Asia westward via western Asia to the Aegean Islands of Greece.

**Key to species and varieties**

1. Sepals glabrous inside.
2. Sepals not corniculate; flowers usually in axillary cymes, sometimes solitary and terminal (*C. tangutica*).
3. Leaflet margin crenate or entire; flowers usually in axillary cymes.
4. Sepals ovate or narrowly ovate.
   5. Leaflets blue-green, broadly oblong, elliptic or ovate, margin crenate or entire…1. *C. akebioides*
   6. Leaflets grey-green, usually lanceolate to lanceolate-linear, margin usually entire…………3. *C. intricata*
5. Leaflets grey-green, usually lanceolate to lanceolate-linear, margin usually entire,………………3. *C. intricata*
6. Leaflets all lanceolate or lanceolate-linear; sepals yellow………………3a. var. *intricata*
7. Terminal leaflet lanceolate or elliptic-lanceolate, lateral leaflets elliptic or long elliptic; sepals purple……………………………………3b. var. *purpurea*
4. Sepals narrowly oblong……………………………………………………………………6. *C. glauca*
6. Sepals outside below apex corniculate; flowers solitary, terminal; leaflets grey-green, linear-lanceolate, margin entire or 1-denticulate……………………………13. *C. corniculata*
3. Leaflet margin usually regularly dentate or denticulate; flowers solitary, terminal, sometimes in 1–3-flowered cymes………………………………2. *C. tangutica*
4. Sepals outside below apex corniculate; flowers solitary, terminal, leaflets grey-green, linear-lanceolate, margin entire or 1-denticulate……………………………13. *C. corniculata*
5. Leaflets ovate to lanceolate, with up to 7 teeth per side; usually woody vines, occasionally dwarf erect shrubs……………………………………………………………………2a. var. *tangutica*
6. Leaflets narrowly lanceolate, with 8–13 teeth per side; woody vines………………2b. var. *mongolica*
2. Sepals outside below apex corniculate; flowers solitary, terminal; leaflets grey-green, linear-lanceolate, margin entire or 1-denticulate……………………………13. *C. corniculata*
1. Sepals inside puberulous.
8. Dwarf erect subshrubs……………………………………………………………………4d. *C. tibetana* var. *pamiralaica*
8. Woody vines.
9. Flowers solitary, terminal, or also in lateral, axillary cymes.
10. Sepal without tail-like projection at apex; flowers solitary, terminal, or also in lateral, axillary, 1–3-flowered cymes.
11. Leaflet margin regularly dentate…………………………………………………2c. *C. tangutica* var. *pubescens*
11. Leaflet margin usually entire, sometimes few-dentate…………………………4. *C. tibetana*
12. Leaflets narrowly ovate, elliptic, lanceolate, or linear, margin usually entire.
13. Sepals lanceolate, apex attenuate………………………………………………4a. var. *tibetana*
13. Sepals ovate, apex acute………………………………………………4b. var. *vernayi*
12. Leaflets rhombic-ovate, 2–3-lobed and few-dentate…………………………4c. var. *laciniifolia*
10. Sepal with tail-like projection 3–6 mm long at apex; flowers only solitary and terminal, never in axillary cymes.......................... 12. C. caudigera
9. Flowers usually in lateral, rarely also in terminal cymes, never solitary and terminal.
14. Sepals brown-purple, outside below apex shortly corniculate; leaflets lanceolate, margin with 1–2 teeth per side...................................................... 10. C. sarezica
15. Leaflet margin regularly dentate or serrate.
16. Sepals glabrous outside.
17. Leaflets usually narrowly ovate or lanceolate, undivided, apex attenuate, margin serrate............................................................................. 8. C. serratifolia
17. Leaflets broadly ovate or ovate, 2–3-lobed, apex acute, margin irregularly dentate.
18. Sepals ovate or narrowly ovate; anthers narrowly oblong, 1.4–3.2 mm long........
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18. Sepals oblong-lanceolate; anthers linear, ca. 4 mm long....................
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16. Sepals puberulous outside.
19. Leaflets green, narrowly ovate or lanceolate, undivided or 3-lobed........... 9. C. hilariae
19. Leaflets grey-green, ovate or broadly ovate, 3-lobed to 3-sect........................
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15. Leaflet margin entire or with 1–2 teeth per side.
20. Leaflets ovate, narrowly ovate, or elliptic.............................................. 6. C. glauca
20. Leaflets lanceolate to linear.
21. Peduncles short, robust, up to 2 mm in diam., 2–5 mm long, 1-flowered; pedicels 4–8 cm long......................................................... 11g. C. orientalis var. robusta
21. Peduncles usually slender, 0.6–1.8 mm rarely 2 mm (C. hilariae) in diam., up to 1–12 cm long, usually 3–many-flowered.
22. Sepals glabrous outside.
23. Leaflets green, lanceolate-linear, apex attenuate; sepals narrowly ovate or broadly lanceolate.............................................. 5. C. ladakiana
23. Leaflets grey-green, linear-lanceolate, apex acute; sepals narrowly oblong-lanceolate.................................................. 11c. C. orientalis var. tenuifolia
22. Sepals puberulous outside.
24. Sepals narrowly ovate or broadly lanceolate.
25. Leaflets usually entire; peduncles 2–4 mm long, 1–1.2 mm in diam.; pedicels 2.2–3 cm long; sepals narrowly ovate, outside glabrescent........
.............................................................................................................. 3b. C. intricata var. intrapuberula
25. Leaflets below sparsely dentate or serrate; peduncles 0.4–6 cm long, 1.8–2 mm in diam.; pedicels 3–10 cm long; sepals narrowly ovate or lanceolate, puberulous outside.............................................. 9. C. hilariae
26. Leaflets (0.4–)0.6–4.5 cm broad.
27. Peduncles 1.4–6.5 cm long; sepals 6.5–15 mm long; persistent styles 2.5–5.5 cm long........................................ 11a. C. orientalis var. orientalis
27. Peduncles 6–12 cm long; sepals 16–21 mm long; persistent styles up to 8 cm long........................................ 11c. C. orientalis var. robusta
26. Leaflets linear, 1–4(–5) mm broad... 11f. C. orientalis var. baluchistanica

Woody vine. Branches shallowly 6–10-sulcate, sparsely puberulous or subglabrous. Leaves 1–2-pinnate; leaflets green, thinly papery or herbaceous, oblong, elliptic, or ovate, occasionally lanceolate, 1.2–4×0.6–3 cm, apex obtuse, rounded, or slightly acute, base broadly cuneate or rounded, margin crenate or entire, undivided or 2–3-lobed, adaxially glabrous, abaxially glaucous, on veins sparsely puberulous or glabrous, basal veins flat; petioles 3–7.8 cm long. Cymes axillary, 1–3(–5)-flowered; peduncles 0.2–3.5(–6) cm long; bracts leaflet-like, 1–1.5 cm long. Flower 2–3.4 cm in diam.; pedicel 2.5–7 cm long, sparsely puberulous or subglabrous. Sepals 4, yellow, greenish-yellow, or sometimes tinged with purple, ascending, thinly to thickly papery, narrowly ovate or ovate-oblong, 1.6–2.7×0.6–1.1 cm, apex acute or apiculate, inside glabrous, on margin velutinous, outside glabrous or above sparsely puberulous. Stamens 7–12 mm long; anthers narrowly oblong or oblong, 2–3 mm long, glabrous, apex obtuse or minutely apiculate. Ovaries densely puberulous; styles 7–12 mm long, densely villous. Achenes obovate or elliptic, 2–3×1–1.8 mm, pubescent, margin rimmed; persistent styles 2.5–3 cm long, plumose. Fl. Jul.–Sept.

China (SW Gansu, SW Nei Mongol, S & E Qinghai, Shaanxi, Shanxi, W Sichuan, E Xizang, NW Yunnan). On grassy slopes, in bushes, or by streams; alt. 1200–3600 m.

Additional specimens examined:

China. Gansu (甘): Huating (甘), S. Q. Zhong (甘) 110 (PE); Huining (甘), Huanghe River Exped. (甘) 56-5100 (PE); Jonê (甘), W. Y. Hsia (甘) 8499 (NAS, PE); Ka-tian-ko, Hummel 4137, 5050 (S); Lanzhou (甘), Y. Q. He (甘) 4284, 5759 (PE); Liancheng (甘), Y. Q. He (甘) 4961, 5310 (PE); Lianhua Shan (甘), Rock 13228 (NAS); Lichen, R. C. Ching (甘) 286 (US); Low Rwen, Purdom 1022 (GH, US); Min Xian (甘), Hummel 5382a (S); Têwo (甘), P. C. Kuo (甘) 5656 (WUK); Xiahui (甘), R. C. Ching (甘) 775 (GH, US); T. P. Wang (甘) 7089 (NAS, PE); Yuzhong (甘), Huanghe River Exped. (甘) 56-3125 (PE); Zhangye (甘), P. C. Tsoong (甘) 8770 (PE).

Hebei (河): Zhuru (河), C. G. Yang (河) 1410 (PE); Nei Mongol (内蒙): Datong (内蒙), K. C. Kuan (内蒙) 77-303 (PE); Huzhu (甘), P. C. Kuo (甘) 9279, 9501 (PE); Menyuan (甘), K. M. Liou (甘) 6861, 6933 (PE); Minhe (甘), T. N. Ho (甘) 809 (PE); Qilian (甘), P. C. Tsoong (甘) 8532 (PE); Qilian Shan (甘), P. C. Kuo (甘) 12565 (PE); Xining (甘), K. S. Hao (甘) 853, P. C. Tsoong (甘) 8187 (PE).

Shaanxi (陕): Without precise locality, K. T. Fu (陕) 930 (NAS); Shanxi (晋): Guandi Shan.
Fig. 3.  A–C, *Clematis akebioides* (Maxim.) Veitch.  A, flowering branch; B, stamen (from X. Li 75478); C, leaf (from T. P. Wang 7089).  D, E, *C. intricata* Bunge var. *intricata*.  D, flowering branch; E, stamen (from K. K. Tsoong s.n.).

**C. orientalis** L. var. tangutica Maxim., Fl. Tangut. 3. 1889; et Enum. Pl. Mongol. 4. 1889.


This species consists of three varieties widespread in west China and adjacent countries.

2a. var. tangutica

Woody vine, occasionally dwarf erect shrub. Branches shallowly 6–8-sulcate, puberulous, glabrescent. Leaves 1–2-pinnate; leaflets green, papery, rhombic-ovate, narrowly ovate, or lanceolate, 1–6×0.5–2.8 cm, apex acute or slightly obtuse, base broadly cuneate, rounded, or subcordate, margin usually dentate or denticulate, with up to 7 teeth per side, near base 2–3-lobed or undivided, sparsely puberulous on veins on both surfaces, basal veins abaxially nearly flat; petioles 2–6 cm long. Flower solitary, terminal, or sometimes also in axillary 1–3-flowered cymes; peduncle 0.3–3 cm long; bracts shortly petiolate, leaflet-like; pedicels 3.5–16.5 cm long, puberulous or subglabrous. Sepals 4, yellow, sometimes tinged with purple, ascending, papery or submembranous, ovate, oblong, or lanceolate, 1.5–4×0.6–1.4 cm, apex acuminate, long acuminate, or acute, inside glabrous, on margin velutinous, outside sparsely puberulous. Stamens 5–11 mm long; anthers narrowly oblong, 2–3 mm long, glabrous, apex obscurely apiculate or subobtuse. Ovaries puberulous; styles 9–15 mm long, densely villous. Achenes rhombic-ovate, ca. 4.5×2.2 mm, puberulous; persistent styles up to 5 cm long, plumose. Fl. Jun.–Sept.

E Afghanistan, China (Gansu, SW Nei Mongol, Ningxia, Qinghai, S Shaanxi, W Sichuan, Xinjiang, Xizang), Kashmir Region, E Kazakhstan, Mongolia, and E Tadzhikistan. On grassy slopes, in bushes, or on gravelly river banks; alt. 1370–4900 m.

Additional specimens examined:

**Afghanistan.** Badakhshan, alt. 3650–4100 m, Anders 7381, 7615, 7718 (G).

**China.** Gansu (甘南): Dangchang (宕昌), Hummel 5237 (S), Q. E. Yang (杨亲二) 92006 (PE); Gannan (甘南), Qinghai-Gansu Exped. (甘青调查队) 62-3201, Q. E. Yang (杨亲二) 92003 (PE); Huining (会宁), Z.

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Fig. 4: A, B; Fig. 5: C, D
Mongolia. Bogd Somon, Norlindh 10221 (S); South-Gobi: Aimak, Norlindh 10303 (S); Ulaanbaatar, Lavrenko 19153, Kalinina s.n. (LE); Urga, Krascheninikov 24 (LE); Urzu, Klementz s.n. (LE).

Tadzhikistan. Bai-Kara River, Brohesisky s.n. (LE); Central Pamir: Murgal Valley, Tolmacheva 4367 (G, S, US); Pamir, Fedtschenko s.n. (MO).

Of the specimens cited above, the vast majority are woody vines, and only two, C. Y. Yang 1145 and Geobot. Group Exped. 1393, collected from Qinghai Province, China, are dwarf erect shrubs. The dwarf shrubby habit appears to be derived from scandent habit due to adaptation to adverse environmental conditions. In sect. Meclatis, the phenomenon of derivation from scandent habit to erect habit also occurs in C. tibetana, an ally of C. tangutica. In the latter case, the dwarf suffrutescent form with sepals puberulous outside represents one of the varieties of C. tibetana (var. pamiralaica), and might be derived from the woody scandent variety tibetana with sepals glabrous outside (see below) (Fig. 3).


This variety differs from var. tangutica in its narrowly lanceolate, long attenuate leaflets with (5–)8–13 teeth per side.

Woody vine. Leaflets 2.2–5.2 × 0.6–1.1 cm. Sepals submembranous or thinly papery, broadly ovate, inside glabrous, apex long acuminate. Fl. Jul.–Aug.

China (C & S Gansu) and N Mongolia. In bushes on slopes; alt. 1450–3100 m.

Additional specimens examined:

China. Gansu: in valle Drakana (near Joné), Hummel 4637 (S); Tianzhu, X. Z. Han 621127 (NAS).

Mongolia. Ulaanbaatar, Gorbunova 4, Ikonnikov-Galtzky 384 (LE); Urga to Lake Ihe-tuhumnol, Krascheninikov 4 (GH).

The formation of the scattered distribution areas of var. mongolica and var. pubescens (see below) (Fig. 2) might be caused by the strong impact of the Quaternary glaciers (Wang, 1989).


This variety differs from var. tangutica only in its sepals puberulous inside.


China (SW Gansu, S Qinghai, W Sichuan, SW Xinjiang, E Xizang) and Mongolia. On grassy slopes or gravelly river banks, or in bushes; alt. 3100–3600 m.
Fig. 4. *Clematis tangutica* (Maxim.) Korsh.  A, B, var. tangutica. A, flowering branch; B, stamen (from D. D. Tao 10894).  C, D, var. pubescens M. C. Chang & P. P. Ling. C, flowering branch; D, stamen (from Anonymous 519); E, var. mongolica (Grey-Wilson) W. T. Wang leaf (from Hummel 4637).
Additional specimens examined:

**China.** Qinghai (青海): Yushu (玉树), Anonymous 519 (PE); Sichuan (四川): Dêgê (德格), S. X. Jia (贾慎修) s.n., Y. W. Tsui (崔友文) 5146 (PE); Garzê (甘孜), Q. S. Zhao et al. (赵清盛等) 111219 (PE); Xinjiang (新疆): Wuqia (乌恰), Inst. Northwest Bot. Exped. (西北植物所队) 1849, 2073 (PE).

**Xizang (西藏):** Jomda (江达), Qinghai-Xizang Exped. (青藏队) 76-12463 (PE); Qamdo (昌都), Qinghai-Xizang Exped. (青藏队) 73-70 (PE).

**Mongolia.** Near Sandensu, Gusev 121 (S).

While var. *pubescens*, published in 1980, and var. *dentata*, published in 1989, are proved to represent the same taxon, the earlier name, var. *pubescens*, has priority at the varietal rank regardless of that this taxon is treated as a variety of *C. tangutica* or of *C. tibetana* ssp. *vernayi*, according to Article 11 of the International Code of Botanical Nomenclature (Greuter et al., 2000).

### 3. Clematis intricata


**C. orientalis auct. non L.: Franch., Pl. David. 1: 12. 1884.**


This species consists of three varieties widespread on the Loess plateau and adjacent provinces of China and extending northward to the desert regions of Mongolia.

### 3a. var. *intricata* Fig. 3: D, E

Woodly vine. Branches shallowly 6–8-sulcate, sparsely puberulous or subglabrous. Leaves 1–2-pinnate; leaflets often grey-green, papery, lanceolate, linear-lanceolate or linear, 1–4 × 0.2–2 cm, apex attenuate, base cuneate, margin entire or 1–2-denticate, undivided or 2–3-lobed, on both surfaces very sparsely puberulous, glabrescent, midrib flat; petioles 1.6–5.5 cm long. Cymes axillary, 1–3(–5)-flowered; peduncles 0.1–3 cm long; petioles 1.6–5.5 cm long. Cymes axillary, 1–3(–5)-flowered; peduncules 0.1–3 cm long; bracts petiolate, lanceolate, undivided or 2–3-lobed. Flower 2–4 cm in diam.; pedicel 2–3.8 cm long, sparsely puberulous or subglabrous. Sepals 4, yellow, ascending, papery, narrowly ovate, ovate, suboblong, or lanceolate, 1.2–2.3 × 0.5–0.8 cm, apex acuminate, on both surfaces glabrous, occasionally outside above very sparsely puberulous, on margin velutinous. Stamens 5–9.5 mm long; anthers narrowly oblong or linear, 2.5–4 mm long, glabrous, apex obtuse.
Ovaries puberulous; styles 8–10 mm long, densely villous. Achenes elliptic or rhombic-ovate, 2.5–3.2 × 2–2.5 mm, puberulous, margin rimmed; persistent styles 2.5–4 cm long, plumose. Fl. Jun.–Sept.

China (Beijing, Gansu, Hebei, Henan, W Liaoning, Nei Mongol, Ningxia, E Qinghai, N Shaanxi, Shanxi, W Sichuan) and Mongolia. On slopes or sandy hills, in sandy places, in bushes, or by streams; alt. 500–2600(–3200) m.

Additional specimens examined:

China, Beijing (1): W. T. Wang, var. nov. Type: China. Gansu (1): David 399 (K, LE, P), 2904 (P), Breitnecneider 24 (K, LE), Tatarinow s.n. (LE), K. T. Fu s.n. (K), M. L. Liu s.n. (K), T. P. Wang s.n. (K); Inner Mongolia (1): Tsong (1), Tatarinow s.n. (LE), A. V. Krylov s.n. (LE), Chalcha, Lisovski s.n. (LE); Ningxia (1): Y. Q. Ma, Z. W. Zhang s.n. (HIMC), X. Z. Lang s.n. (HIMC), Y. Y. Pai s.n. (HIMC), T. P. Wang s.n. (K), K. T. Fu s.n. (K), H. K. Li s.n. (K), Henan (1): Yiyang (1), Henan Exped. (1) 59–6351 (IBSC), Nei Mongol (1): Dengkou (1), T. P. Wang (1) 2404 (PE), Fengzhen (1), Y. W. Tsui (1) 926 (PE), Helan Shan (1), Przewalski 243 (LE), Y. Q. Ma (1) 265 (HIMC), Hohhot (1), Y. Q. Ma (1) s.n. (HIMC), Liangcheng (1), Y. Q. Ma (1) 50 (HIMC), Ordos (1), Przewalski s.n. (K, LE), Licent 6920 (K, TIE), 6851, 6873, 6880, 6932 (TIE), W. Y. Hsia (1) 3769 (PE), Kundu (1), X. Z. Lang (1) 323 (PE), Zhuozi (1), Y. Q. Ma & Q. R. Wu (1) 188 (HIMC), Ningxia (1): Guyuan (1), Huanghe Exped. (1) 56–2356 (PE), Haiyuan (1), Huanghe Exped. (1) 56–5501 (PE), Helan Shan (1), Y. Y. Pai (1) 173 (PE), Pingluo (1), Z. W. Zhang (1) 391 (PE), Tongxin (1), Huanghe Exped. (1) 56–8666 (PE), Zhongning (1), Z. W. Zhang (1) 306 (PE), Qinghai (1): Datong (1), Przewalski s.n. (LE), K. M. Liu (1) 6504 (PE), Guide (1), T. N. Ho (1) 1027 (PE), Huangyu (1), P. C. Tsoong (1) 8921 (PE), Huzhu (1), K. M. Liu (1) 5881 (PE), Minhe (1), T. N. Ho (1) 715 (PE), Qilian (1), P. C. Kuo (1) 12568 (PE), Regio Tangut, Przewalski s.n. (LE), S., Xinjiang (1), K. M. Liu (1) 5904 (PE), Shaanxi (1): Hengshang (1), K. T. Fu (1) 7105 (IBSC, PE), Huanglong (1), K. T. Fu (1) 3097 (NAS, PE), Jingbian (1), K. T. Fu (1) 7390 (IBSC, PE), Suide (1), K. T. Fu (1) 6748 (PE), Wuqi (1), Huanghe Exped. (1) 56–8253 (PE), Yulin (1), Huanghe Exped. (1) 56–7010 (PE), Shanxi (1): Datong (1), Licent 200 (TIE), Shanxi Exped. (1) 53–770 (PE), Fenyang (1), K. M. Liu (1) 2724 (PE), Jiaoche (1), Licent 2163 (IBSC, K), Jiecuiu (1), K. M. Liu (1) 1340 (PE), Lingchuan (1), K. M. Liu (1) 7488, 7513 (PE), Lishi (1), Y. W. Tsui (1) 10310 (NAS), Taiyuan (1), Licent 10857 (G), Limpricht 680 (S), Yabe s.n. (NAS), Wutai Shan (1), Hancock 10, Licent 2036, K. M. Liu (1) 2643 (K), T. P. Wang (1) 1053 (NAS, PE), K. C. Kuan & Y. L. Chen (1), 2239 (PE), Xi Xian (1), T. P. Wang (1) 3156 (PE), Sichuan (1): Kangding (1), Zhonggu (1), K. C. Kuan et al. (1) 389 (PE).

Mongolia, Chulcha, Lisovski s.n. (LE); Gobi, Glajolev 194 (S), Hara Usu, Mashalaseba 20 (LE); Lake Nehaituhim-nor, Polynov & Lebedev 253 (LE); Shabarakh Usu, R. W. Chaney 583 (LE).

3b. var. intrapraerula W. T. Wang, var. nov. Type: China. Gansu (1): Heshui (1),
Jiajia Valley (贾家沟), in shady places near road, woody vine, flowers yellow, 1954-07-07, Huanghe Exped. (黄队) 54-461 (holotype, PE; isotype, IBSC).

A var. intricata differt sepalis intus puberulis.

This variety differs from var. intricata by having sepals puberulous inside.

China (E Gansu).


This variety differs from var. intricata by having lanceolate terminal leaflets and elliptic lateral leaflets, and purple sepals. Fl. Jul.–Sept.

China (SW Nei Mongol). In Betula forests.


This form, described from a cultivated plant, is similar to C. intricata in the lanceolate or linear-lanceolate leaflets and ascending lanceolate sepals, but differs mainly by having “dull violet” (Rehder, 1920, l.c.) sepals. In the protologue, Rehder (1920) pointed out that “of the origin of this form nothing is known to” him. After its publication, forma phaeantha was firstly mentioned by Handel-Mazzetti (1939) in the enumeration of the Chinese species of the Clematis, but with no specimen being cited for this form and its origin not indicated. Grey-Wilson (1989, 2000) reduced C. intricata var. purpurea to the synonymy under forma phaeantha, for which no specimen was cited and the origin was not indicated either. However, the former with lanceolate terminal leaflets and elliptic lateral leaflets is different from the latter. Johnson (1997) reported the occurrence of forma phaeantha in Gansu Province, China. However, the specimen, Hummel 4137, on which his record was based, is in fact C. akebioides, in which the leaflets are oblong, narrowly ovate, or elliptic in outline, and the sepals are yellow in colour. In the two books entitled Meclatis in Clematis by Brandenburg (2000) and An Illustrated Encyclopedia of Clematis by Toomey & Leeds (2001), forma phaeantha was not included. So, this curious cultivar is only known from the one type gathering, and its origin still remains unclear.


This species consists of four varieties occurring in the western Himalayas, the Pamirs and adjacent mountains.
4a. var. tibetana Fig. 6: A, B

Woodly vine. Branches shallowly 6–10-sulcate, sparsely puberulous, often glabrescent. Leaves 1–2-pinnate; leaflets green, papery, broadly lanceolate, narrowly ovate, ovate, or elliptic, 1–4.2×0.5–2.4 cm, apex acute or attenuate, base broadly cuneate or rounded, margin usually entire, undivided or near base 2–3-lobed, sparsely puberulous on both surfaces or adaxially subglabrous, basal veins abaxially nearly flat; petioles 1.2–6 cm long. Flowers solitary, terminal, or also in axillary 1–3-flowered cymes, 2–4.5 cm in diam.; peduncles 0.3–7(–10) cm long; bracts foliaceous or simple, 3-sect; pedicels 2–15(–20) cm long, puberulous or glabrous. Sepals 4, yellow, yellow-brown or brown-purple, ascending, thickly papery, narrowly ovate or lanceolate, 2–2.8(–3.5)×0.6–1.1(–1.4) cm, apex long acuminate, inside puberulous, outside glabrous. Stamens 7–12 mm long; anthers oblong, 1.6–2 mm long, glabrous, apex obtuse or minutely apiculate. Ovaries puberulous; styles 12–15 mm long, densely villous. Fl. May–Jul.

China (SW Xinjiang, W Xizang), N India, Kashmir Region, and Nepal. In bushes or on dry slopes; alt. 2800–5000 m.

Additional specimens examined:


**India.** Garhwal, Osmaston 745 (GH); Mulapa Gadh, Duthie 5246 (G).

**Kashmir Region.** Ladak, Schlagintweit s.n., Thuolou 540 (BM).

**Nepal.** Barbung Khola, Kakkotgon, Polunin, Sykes & Williams 1086 (S, US); Marsidandi Valley, Lowndes 1078 (G); Muktinath, Stainton et al. 1395 (GH), 5646 (G); Ringmo, Shrestha 5315 (US).


Type: China. Xizang: 12 ml NW of Gyantze, alt. 4150 m, Cutting & Vernay 57 (holotype, K; isotype, GH!).


This variety differs from var. tibetana in its sepals often thicker, thickly papery or coriaceous, broadly ovate, ovate, or oblong in outline, with acute apexes, and in its longer anthers (2.4–3.5 mm).

Woodly vine. Leaflets or their terminal lobes lanceolate, narrowly ovate, or linear, margin entire or subentire. Fl. May–Sept.
Fig. 6.  A, B, *Clematis tibetana* Kuntze var. *tibetana*. A, flowering branch; B, stamen. Drawn from Shrestha 5315.  
China (SW Xinjiang, S Xizang), Kashmir Region, and W & N Nepal. In bushes, on slopes or on gravely river banks; alt. 1850–4800 m.

Additional specimens examined:

**China. Xinjiang** (新疆): Jarkand-Serek-kol, Norstedt 4 (S). **Xizang** (西藏): Bainang (白朗), J. W. Zhang 2405 (PE); Gyaca (吉察), Qinghai-Xizang Exped. 2662 (PE); Mainling (米林), Med. Pl. Exped. 72-4321 (PE); Namling (南木林), Med. Pl. Exped. 72-850 (PE); Nang Xian (郎县), Med. Pl. Exped. 72-4246 (PE); Sa’gya (萨迦), Xizang Exped. 61-1647 (PE).

Kashmir Region.

Purig, Koelz 6071 (GH).

Nepal.

Barbung Khola, Grey-Wilson & Philips 751 (K); Kali Kandaki, Lange 34 (K); Muktinath, 12000 ft., Stainton, Sykes & Williams 1395 (GH); Mt. Everest, Hingston 48 (BM); Shimen, Grey-Wilson & Phillips 534 (K).


This variety differs from var. tibetana in its dwarf suffrutescent habit and outside puberulous sepals.

Stem 15 to 45 cm tall, indistinctly 6-angulate, not or shallowly 6-sulcate, glabrous or puberulous, simple or branched. Leaves pinnate or ternate; leaflets coriaceous, narrowly to broadly ovate, 1–2 (–3) × 0.5–2 cm, margin entire or 1–4-denticulate per side, below the middle 2–3-lobed or undivided, on both surfaces sparsely puberulous. Fl. Jun.–Jul.

China (SW Xinjiang) and E Tadzhikistan. In grassy places on slopes or on rocky cliffs; alt. 3300–4600 m.

Additional specimens examined:

**China. Xinjiang** (新疆): Akto (阿克陶), Inst. Northwest Bot. Exped. 698 (PE, WUK); Pishan (皮山), B. S. Li & D. Zheng (临县, 富平) 11675 (PE); Suget Karaul, Thundlov 607 (BM); Taxkorgan (塔什干), Inst. Northwest Bot. Exped. 1221 (PE, WUK); Tagdumbash Pamir, Appleton 41 (LE).

**Tadzhikistan.** Koung-Koul, Lacoste s.n. (P); Pamir: Kara Kul, Kuschakewicz s.n., S. Hedin s.n. (S); Pamir Mts., Fedtschenko s.n. (LE); K-Shasal, Kuschakewicz s.n. (LE).

4d. var. laciniifolia Grey-Wilson in Kew Bull. 44: 48, fig. 1: T. 1989; M. Johnson, Klematis 356. 1997; Grey-Wilson, Clematis 170. 2000, Type: Nepal. Kali Gandaki, Yara, S of Mustang, alt. ca. 3900 m, Stainton, Sykes & Williams 2130 (holotype, BM!).

This variety differs from var. *tibetana* in the leaflets being rhombic-ovate in outline, 3-lobed to 3-sect, and acutely dentate.

Woody vine. Branches only on nodes sparsely puberulous, elsewhere glabrous. Leaflets rhombic-ovate, broadly rhombic, or broadly ovate, 1.4–3.8 × 1.2–4 cm, 3-lobed to 3-sect, margin sparsely acutely dentate. Sepals thickly papery or subcoriaceous, narrowly ovate, 1.6–2 cm long, inside puberulous, outside glabrous.

W Nepal.

Additional specimens examined:
Nepal. Bheri Valley, Dunaahi, Polunin, Sykes & Williams 231 (BM); Kali Gandaki, Titre, N of Dana, Stainton, Sykes & Williams 7543 (BM).


Woody vine. Branches 6-angulate or subterete, indistinctly shallowly 6–8-sulcate, on nodes sparsely puberulous, elsewhere glabrous. Leaves 1–2-pinnate; leaflets chartaceous or subcoriaceous, lanceolate-linear or narrowly lanceolate, 1.5–5.5 × 0.2–1 cm, apex attenuate, margin entire or 1–2-dentate, undivided or above base 2–3-lobed, on both surfaces glabrous, occasionally adaxially near base with a few hairs, basal veins nearly flat; petioles 3–6.8 cm long. Cymes axillary, 1–5-flowered; peduncles 0.2–3(–4.7) cm long, glabrous or sparsely puberulous; bracts pinnate. Flower 1.8–3 cm in diam.; pedicel 2.2–9 cm long, glabrous. Sepals 4, yellow, often tinged with purple-brown outside, ascending, papery, narrowly ovate or broadly lanceolate, 1.2–2 × 0.5–0.9 cm, apex attenuate or acuminate, inside puberulous, outside glabrous, on margin velutinous. Stamens 7–9 mm long; anthers narrowly oblong or oblong, 2–2.5(–3) mm long, glabrous, apex obtuse. Ovaries pubescent; styles 7–9 mm long, densely villous. Achenes obovate, ca. 3.5 × 1.8 mm, densely pubescent; persistent styles ca. 3.5 cm long, plumose. Fl. Jul. –Sept.

China (SW Xizang) and Kashmir Region. In bushes or on rocks by river; alt. 2800–3850 m.

Additional specimens examined:
China. Xizang (C!): from Kargyay, to Lingti, Stolczka s.n. (K); from Upschi to Tel, Schlagintweit s.n. (P).
Kashmir Region: Ladakh, Koelz 2537 (GH, LE, S, US), Heber s.n. (US), Stainton 8413 (K); Nubra, Schlagintweit s.n. (US).


Fig. 7.  A–C, Clematis glauca Willd. A, flowering branch; B, sepal outside; C, stamen. Drawn from Skvortsov s.n.  D–G, C. zandaensis W. T. Wang. D, flowering branch; E, F, leaflets; G, stamen. Drawn from Qinghai-Xizang Exped. 76-8160.
Xizang (西藏): Zanda (札达), between Gulang (古浪) and Shibuqi (什布奇), alt. 3500 m, 1976-07-02, Qinghai-Xizang Exped. (青藏队) 76-8160 (holotype, PE!).


Woody vine. Branches shallowly 4–8-sulcate, glabrous. Leaves 1–2-pinnate; leaflets green, papery, ovate or broadly ovate, 1.8–5 × 1.8–4 cm, base subcordate, rounded, or broadly cuneate, 2–3-lobed to 2–3-parted, margin sparsely dentate, terminal lobe larger, ovate-oblong, lateral lobes smaller, glabrous on both surfaces or abaxially on basal veins sparsely puberulous, basal veins abaxially slightly prominent; petioles 4–9.5 cm long, glabrous; bracts shortly petiolate, ternate. Flower 1.4–2 cm in diam.; pedicel 1.5–10 cm long, glabrous. Sepals 4, yellow, ascending, papery, ovate or narrowly ovate, 0.9–1.8 × 0.5–0.8 cm, inside puberulous, on margin velutinous, outside glabrous, apex acute. Stamens 3.5–10 mm long; anthers narrowly oblong, 1.4–3.2 mm long, glabrous, apex obtuse. Ovaries pubescent; styles 7–10 mm long, densely villous. Fl. Jun.–Jul.

China (SW Xizang) and Kashmir Region. In thickets on slopes or on river banks; alt. 3500 m.

Additional specimen examined:

**China. Xizang** (西藏): Zanda (札达), Qinghai-Xizang Exped. Vegetation Group (青藏植被队) 12914 (PE).

**Kashmir Region.** Chitral: Tirich Gol, Stainton 2789 (BM).


Woody vine. Branches shallowly 6–8-sulcate, sparsely puberulous or glabrous. Leaves 2-ternate; leaflets green, papery, lanceolate, narrowly ovate, or ovate, 3–6–8 × 1–2.5–3 cm,
apex attenuate, base broadly cuneate or rounded, margin serrate or denticulate, sparsely puberulous on both surfaces, glabrescent, basal veins abaxially nearly flat; petioles 3.5–6 cm long. Cymes axillary, 1–3-flowered; peduncles 0.5–1.5 cm long; bracts petiolar or sessile, lanceolate or linear, 0.4–1.5 cm long. Sepals 4, yellow, ascending, papery or submembranous, oblong, elliptic-lanceolate, or narrowly ovate, 1.5–2.5 × 0.5–0.8 cm, inside puberulous, outside glabrous, margin velutinous, apex attenuate or caudate-cuspidate. Stamens 8–12 mm long; anthers narrowly oblong, 1.2–2.6 mm long, glabrous, apex minutely apiculate. Ovaries pubescent; styles 7–9 mm long, densely villous. Achenes elliptic, ca. 3 × 2 mm, pubescent; persistent styles ca. 3 cm long, plumose. Fl. Jul.–Sept.

China (E Jilin, Liaoning), N Japan, N Korea, and Russia (Far East Region). In forests, on slopes or on gravelly river banks. alt. ca. 400 m.

Additional specimens examined:

China. Jilin (吉林): Antu (安图), T. N. Liou (刘慎谔) 3785, 4336 (LE, PE); Changbai Shan (長白山), J. J. Chien (錢家驹) 799 (PE); Helong (和龍), Yanbian Exped. (延辺队) 59-792 (PE); Hunchun (珲春), P. Y. Fu et al. (傅沛云等) 338, 798 (PE); inter Kirin et Omosa, Komarov 703 (LE, P), 710 (1896-08-28, K); Linjiang (臨江), S. X. Li (李書心等) 1092 (PE); Wangqing (汪清), P. Y. Fu et al. (傅沛云等) 989 (PE).

Liaoning (辽宁): Benxi (本溪), C. Q. Lin (林長清) 1218 (PE); Caohekou (草河口), Yabe s.n. (NAS); Kuandian (寬甸), S. C. Tsui (崔順昌) 338 (PE); Youyan (岫岩), W. Wang et al. (傅沛云等) 1487 (PE).

Korea. Bakuho, Uchiyama s.n. (NAS); He-chun, Mills s.n. (PE); Kangkai, Mills s.n. (PE); Kapsan, Komarov s.n. (PE); Lyonergam, Mills s.n. (PE); Prov. Hengkyo: Tumen-Yalu divide, E. H. Wilson 8927 (GH, US); Prov. Kogen: Kongo-san, E. H. Wilson 10 711 (GH, US); Taebak-san, Hagman 272 (UPS); Un-hu-cheng-gen, Komarov 710 (1897-07-01, GH, K).


C. orientalis L. var. roschanica Korsh. in Bull. Acad. Sci. St.-Petersb., ser. 5, 9: 399. 1898. Type: Iter Turkistanicum, 1897-08, Korshinsky 2772, 3790 (syntypes, LE!).


C. chrysantha Ulbr. var. monantha Tamura in l.c. Type: Afghanistan. Wakhlan, Ishkashim, Yosii 801 (holotype, ?).


Woody vine. Branches shallowly 8–12-sulcate, puberulous. Leaves 1–2-pinnate; leaflets green, papery, narrowly ovate or lanceolate, 1–3.5 × 0.3–1.2 cm, apex attenuate, base cuneate, undivided or 2–3-lobed, margin regularly or only below sparsely dentate or serrate, adaxially subglabrous, abaxially on veins sparsely puberulous, basal veins abaxially slightly prominent; petioles 1.5–4 cm long. Cymes axillary and terminal, 1–7-flowered; peduncles 0.4–6 cm long; bracts pinnate or simple. Flower 2.8–4 cm in diam.; pedicel 3–10 cm long, puberulous. Sepals 4–5, yellow, spreading, subcoriaceous, narrowly ovate or lanceolate, 13–22(–25) × 5–8(–9) mm, inside puberulous, outside sparsely puberulous, on margin velutinous, apex attenuate. Stamens 7–9 mm long; anthers narrowly oblong or linear, 2.5–3(–3.5) mm long, glabrous, apex obtuse or obscurely apiculate. Ovaries puberulous; styles ca. 9 mm long, densely villous. Achenes elliptic, ca. 2.5 × 1.2 mm, puberulous, narrowly rimmed; persistent styles 3–3.8 cm long, plumose. Fl. Jul.–Sept.
NE Afghanistan and E Tadzhikistan. On borders of cultivated fields or by rivers; alt. ca. 3000 m.


Woodly vine. Branches subterete, shallowly 10-sulcate, only on nodes sparsely puberulous, elsewhere glabrous. Leaves 1–2-pinnate; leaflets green, subcoriaceous or chartaceous, narrowly lanceolate or lanceolate, 1.6–4.6×0.3–1.2 cm, apex attenuate, base cuneate, undivided or 2–3-lobed or 2–3-sect (the terminal lobe larger, lanceolate, the lateral ones smaller, obliquely lanceolate or long elliptic), adaxially below on veins sparsely puberulous, abaxially glabrous, midrib adaxially impressed, abaxially slightly prominent; petioles 4–5.4 cm long. Cymes axillary, 1-flowered; peduncles 0.2–8 cm long, glabrous; bracts petiolate, simple or ternate, 1.8–2.5 cm long. Flower ca. 3 cm in diam.; pedicel 2–4.5 cm long, glabrous. Sepals 4, brownish-purple, ascending, thickly papery, narrowly ovate or lanceolate, 15–19×5–8 mm, outside below apex short corniculate, inside puberulous, outside glabrous, on margin velutinous. Stamens 7–9.5 mm long; anthers narrowly oblong, ca. 2.5 mm long, glabrous, apex minutely apiculate. Ovaries pubescent; styles ca. 9 mm long, densely villous. Achenes ovate, ca. 2.5×1.5 mm, pubescent; persistent styles ca. 3 cm long, plumose. Fl. Aug.

E Tadzhikistan. On grassy banks of lake; alt 3350 m.

Fig. 9.  A, B, *Clematis sarezica* Ikon. A, flowering branch; B, stamen. Drawn from Ikonnikov 5830.  C, D, *C. hilariae* Koval. C, flowering and fruiting branch; D, stamen. Drawn from Kovalevskaja 5541.
Clematis longecaudata Ledeb., Fl. Ross. 1: 3. 1841.—C. orientalis ssp. wightiana (Wall.) Kuntze var. longecaudata (Ledeb.) Kuntze in l.c. 125. Type: Without field notes (holotype, LE!).


This species consists of seven varieties occurring in southeastern Europe (Aegean Islands of Greece) and western and central Asia.

**11a. var. orientalis** Fig: 8: C, D

Woody vine. Branches shallowly 6–10-sulcate, puberulous, sometimes subglabrous. Leaves 1–2-pinnate; leaflets grey-green, thickly papery or subcoriaceous, variable in shape and division, ovate, narrowly ovate, or lanceolate, 1.5–5×0.5–5 cm, appressed-puberulous on both surfaces, sometimes subglabrous, usually below 2–3-lobed to 2–3-sect, sometimes undivided, terminal lobe larger, narrowly ovate, lanceolate, linear-lanceolate, or narrowly obovate, 0.4–1.8 cm broad, margin entire or 1–2-dentate per side, midrib adaxially flat, abaxially slightly prominent, lateral lobes smaller; petioles 2.8–6.5 cm long. Cymes axillary and terminal, few- to many-flowered, often panicle-like; peduncles 1.4–6.5 cm long, 1–1.2 mm thick; bracts petiolate, leaflet-like. Flower 1.4–2.8 cm in diam.; pedicel 1–2.5 cm long, appressed-puberulous, usually above densely hairy. Sepals 4, yellow, spreading or reflexed, oblong-lanceolate or narrowly oblong, 6.5–15×3–5 mm, puberulous on both surfaces, on margin velutinous, apex acute. Stamens 5–9 mm long; anthers linear or narrowly oblong, 2–4 mm long, glabrous, apex obtuse, sometimes minutely apiculate. Ovaries pubescent; styles 6–8 mm long, densely villous. Achenes narrowly elliptic, ca. 2.8×1.2 mm, puberulous, slightly rimmed; persistent styles 2.5–5.5 cm long, plumose. Fl. Jun.–Sept.

Greece (Aegean Islands), Afghanistan, Armenia, Azerbaijan, China (NW Gansu, SW Nei Mongol, Xinjiang), Georgia, Iran, N Iraq, Kashmir Region, Kazakhstan, Kirghizstan, Mongolia, N Pakistan, Palestine, Russia (?SW Siberia), Tadzhikistan, Turkey, Turkmenistn, and Uzbekistan. On slopes, in bushes or thickets, or by streams or rivers; alt. 20–2600 m.

Additional specimens examined:

**Afghanistan.** Bamian, Podlech 18872 (G); Doab, Pabot 1230 (G); Helmund Valley, Long 443 (US); Kunar, Podlech 16638 (G); Lashkari Basar, Frumkin 54 (G).

**Armenia.** Amassia, Manissadjian 639 (P); Without precise locality, Safier s.n. (K), Schischkin s.n. (LE), Sintenis 2998 (G, P), 3390 (LE).

**Azerbaijan.** Kuba, Karjajev s.n. (S).

**China.** Gansu (甘) : Anxi (安西), Anonymous 308 (PE); Jiuan (嘉) , Qinghai-Gansu Exped. (青) 2696 (PE); Minqin (民) , Y. Q. He (何) ) 3332 (PE). Xinjiang (新) : Alataw Shan (阿) 2667 (PE); Altay Shan (阿尔) 2813 (PE); Aksu (阿) , Z. N. Feng (冯) ) 417 (PE); Fuyun (福) , R. C. Ching (秦) ) 1892 (PE); Gongliu (巩) , Xinjiang Exped. Inst. Northwest Bot. (新疆队) 122 (PE); Hoxud (霍) , A. J. Li & J. N. Zhu (李安仁, 朱家柟) 7705 (PE); Korla (库) , A. J. Li & J. N. Zhu (李安仁, 朱家柟) 8641 (PE); Lop Nur (罗) , Xinjiang Exped. (新疆队) 59-10120 (PE); Manas (玛) , K. C. Kuan (关) 1339 (PE); Nioka (尼) , K. C. Kuan (关) 3885 (PE); Qira (奇) , Xinjiang Exped. (新疆队) 56-129 (PE); Shanshan (鄯) , A. J. Li & J. N. Zhu (李安仁, 朱家柟) 6692 (PE); Shawan (沙) , G. L. Zhu (朱) ) 5517 (PE); Tacheng (塔) , Y. R. Ling (令) ) 74-1363 (PE); Tian Shan (天) , T. N. Liou (刘) ) 2689 (PE); Toksun (托) , A. J. Li & J. N. Zhu (李安仁, 朱家柟) 7288 (PE); Turpan (吐) , Z. M. Zhang (张) ) 294 (PE); Ürümqi (乌) , T. N. Liou (刘) ) 2891, R. C. Ching (秦) ) 3372 (PE); Wenquan (文) , K. C. Kuan (关) ) 4560 (PE); Yicheng (伊) , Qinghai-Xizang Exped. (青藏队) ) 87-764 (PE); Yining (伊) , Z. M. Zhang (张) ) 206, Y. X. Liou (刘) ) 712 (PE); Yiwu (伊) , Q. R. Wang (王) ) 4522 (PE); Zhaosu (昭) , Xinjiang Exped. Inst. Northwest Bot. (新疆队) ) 2593 (PE).

**Georgia.** Caucasus, Vasak s.n. (G).
Iran. Amol, Hewer 1492 (LE); Khorasan, Koelz 16822 (US); Rechinger 1424 (S); Lusistan, Bornmuller s.n. (LE); Nischapur, Bunge s.n. (LE); Ostan, Schmid 6289 (G); Salukhi, Sintenis 1108 (G); Techeran, Acher Eloy 4025 (P).

Kashmir region. Jacqueumont 1162 (P), Stewart 2015 (G).

Kazakhstan. Dzhambul, Raikova 2915 (G, KH, K, PE, S); Kungej-Alatau, Roldugin 5367 (K); Western Tianshan, Mekerov 400 (PE).

Kirghizstan. Chatkal Range, Skvortsov s.n. (GH); Kurdiich, Petrova s.n. (GH).

Mongolia. Shabarakh Usu, Chaney 583 (US).

Pakistan. Karakorum, Polunin 6414 (G).

Tadzhikistan. Ashabad, Litwinow 23 (G), Stewart 2015 (G).

Turkey. Camardi, Nydegger 15449 (G); Kalecik, Guichard s.n. (LE); Malatya, Godfrey & Taysi SH-386 (US); Mrgrp, Kotte s.n. (K); Paphlagonia: Wilajet Kastanbuli, Sintenis 4881 (S); Tortum, Davis 47565 (K), Winter 369 (US).

Turkmenistan. Taskent, Ellas, Murray & Newcomb 9873 (PE), Korovina s.n. (G).


This variety differs from var. *orientalis* by having leaflets ovate or broadly ovate, 2–3-lobed to 2–3-sect and dentate.

Branches puberulous. Leaflets grey-green, ovate or broadly ovate, 1.2–3.8 × 1–4 cm, 2–3-lobed to 2–3-sect, terminal lobe rhombic, often 3-lobulate, margin dentate or incised-dentate, lateral lobes smaller. Cymes 3–9-flowered; peduncles 1.5–5.5 cm long, 1 mm in diam. Sepals oblong-lanceolate, ca. 14 mm long, puberulous on both surfaces.

N Pakistan and probably SW Afghanistan and Kashmir region.

Additional specimens examined:


This variety differs from var. *orientalis* by having leaflets green, ovate, 3-parted, and dentate, and sepals glabrous outside. It shows striking resemblance to var. *albida*, but differs by having green leaflets and sepals glabrous outside.

Branches puberulous or glabrous. Leaflets green, ovate, 1.5–3.0 × 0.7–3 cm, 2–3-parted, terminal lobe rhombic or rhombic-ovate, often 3-lobulate, margin dentate, lateral lobes smaller. Cymes 3–many-flowered; peduncles 1.5–6(–9) cm long, 1–1.8 mm in diam. Sepals oblong-lanceolate, 10–13(–16) mm long, inside puberulous, outside glabrous.

SE Afghanistan, N India, and Kashmir Region.

Additional specimens examined:

Afghanistan. Kunar, Bashgal Tal, Podlech 32143 (S).

India. Kunawar, Thomson s.n. (GH).


This variety differs from var. *orientalis* by having larger leaflets and sepals, and longer peduncles and persistent styles.

Branches puberulous. Leaflets grey-green, ovate, 3–7×1–4.5 cm, usually above base 3-parted, terminal lobe lanceolate or rhombic-obovate, 0.7–2 cm broad, 1-dentate per side or entire, sparsely puberulous on both surfaces, lateral lobes usually much shorter. Cymes 7–many-flowered; peduncles 6–12 cm long, 1–1.8 mm in diam. Sepals lanceolate, 16–21 mm long, puberulous on both surfaces. Persistent styles up to 8 cm long.

NE Afghanistan and probably Kashmir region.

Additional specimen examined:


Kashmir region. Songono, 1851, Tatarinov s.n. (S).


This variety differs from var. *orientalis* by having glabrous branches and leaflets, and sepals glabrous or subglabrous outside.

Branches glabrous. Leaflets up to 4 cm long, glabrous, undivided or 2–3-parted, terminal lobe linear-lanceolate, 3–6 mm broad, entire or 1-dentate per side, lateral lobes much smaller. Cymes 3–many-flowered; peduncles 1.5–6.7 cm long, 0.8–1 mm in diam. Sepals oblong-lanceolate, 13–16 mm long, inside puberulous, outside glabrous or subglabrous. Persistent styles 2.5–3.8 cm long.

Afghanistan, China (SW Xinjiang), and Kashmir region.

Additional specimens examined:

Afghanistan. Without precise locality, Griffith 1381, 1382, 1383 (K).

China. Xinjiang (新疆): Pamir (帕米尔), C. Persson 228, 522 (S).


This variety differs from var. *orientalis* by having leaflets with terminal lobe linear or linear-lanceolate, 1–4(–5) mm broad.

Branches sparsely puberulous. Leaflets up to 3 cm long, 2–3-sect, terminal lobe linear or linear-lanceolate, 1–4(–5) mm broad, entire or 1-dentate per side, lateral lobes much smaller. Cymes 3–9-flowered; peduncles 1–6.4 cm long, up to 2 mm in diam. Sepals narrowly oblong, 8–11 mm long, puberulous on both surfaces. Persistent styles 2–4 cm long.

N Pakistan and possibly SW Afghanistan.

Additional specimen examined:

Pakistan. Without precise locality, Aitchison 772 (GH).


This variety differs from var. *orientalis* by having 1-flowered axillary cymes with short, thick, robust peduncles.

Branches only on nodes sparsely puberulous, elsewhere glabrous. Leaflets linear-lanceolate, 3–7 cm long, 0.4–0.8 cm wide, entire, undivided or above base 3-lobed, terminal lobe much longer than lateral ones, subglabrous. Cymes axillary, 1-flowered; peduncles 2–5 mm long, up to 2 mm in diam. Persistent styles 2–2.8 cm long.

China (SW Xinjiang).
An unclear variety:

_Clematis orientalis_ L. var. _obtusifolia_ Hook. f. & Thoms., Fl. Ind. 9. 1855. Type: no type specimen designated.

While visiting the Herbarium K in 1999, I failed to find out any specimen identified as this variety by Hooker & Thomson. Hence the identity of this variety cannot be yet determined.

China. Xinjiang (新疆): Yutian (于田), Fulu (甫鲁), 1988-06-25, B. S. Li (李勃生) 11741 (holotype, PE!).

Woody vine. Branches shallowly 4-sulcate, glabrous. Leaves pinnate, 5-foliolate; leaflets grey-green, thickly papery or coriaceous, triangular in outline, 0.8–2×0.4–1.6 cm, base cordate-truncate or subcordate, near base 3-parted or 3-sect, terminal lobe narrowly rhombic-lanceolate or linear-lanceolate, 1–6 mm broad, margin 1–2-denticate per side, seldom entire, lateral lobes smaller, obliquely cuneate, unequally 2-lobate, axially glabrous, abaxially sparsely appressed-puberulous, basal veins nearly flat, inconspicuous; petioles 2.2–4.5 cm long, sparsely puberulous. Flowers solitary, terminal, 3.5–6 cm in diam.; pedicels 9–21.5 cm long, glabrous or sparsely puberulous. Sepals 4, yellow, ascending, papery, oblong-lanceolate, 2.3–4.2×0.8–1.1 cm, inside densely appressed-puberulous, on margin velutinous, outside glabrous, apex attenuate with tail-like projections 3–6 mm long. Stamens 8–12 mm long; anthers oblong or narrowly oblong, 2.4–3 mm long, glabrous, apex obtuse. Ovaries pubescent; styles 11–13 mm long, densely villous. Fl. Jun.

Additional specimen examined: China (SW Xinjiang). On slopes in valley; alt. 3000–3700 m.


Woody vine. Branches shallowly 6-sulcate, glabrous. Leaves pinnate, glabrous; leaflets grey-green, coriaceous, lanceolate, narrowly ovate or narrowly lanceolate, 1.5–3×0.3–0.8 cm, base broadly cuneate or cuneate, margin usually entire, sometimes 1-denticate, undivided or 2–3-lobed or 2–3-sect, terminal lobe larger, linear-lanceolate, 2–4 mm broad, lateral lobes much smaller, narrowly ovate, 0.3–1 cm long, midrib abaxially slightly prominent; petioles ca. 7 cm long. Flowers solitary, terminal, ca. 4 cm in diam.; pedicels 14–20 cm long, glabrous. Sepals 4, yellow, ascending, papery, oblong, 2.3–2.6×0.7–0.9 cm, outside below apex cornicate (horn-like projections ca. 2.5 mm long), glabrous on both surfaces, outside on margin velutinous. Stamens 8–9 mm long; anthers oblong, ca. 2 mm long, glabrous, apex minutely apiculate. Ovaries pubescent; styles ca. 10 mm long, densely villous. Fl. Aug.–Sept. China (SW Xinjiang). On grassy slopes; alt. 2800–2930 m.

Acknowledgements I would like to express my sincere thanks to the directors and curators of BM, G, GH, HIMC, K, LE, MO, NAS, P, S, TI, TIE, UPS, US, and WUK for kindly inviting me to visit their herbaria and/or sending herbarium material on loan; to David E. Boufford & Zhu Guang-Hua for sending me the book An Illustrated Encyclopedia of Clematis as a gift; to LI Liang-Qian, QIN Hai-Ning, ZHANG Zhi-Yun, ZHU Xiang-Yun, WANG Zhong-Tao, BAN Qin, and XIE Lei for various kinds of help in the course of research; and to SUN Ying-Bao for making the drawings.

References


统位置和组内诸种的亲缘关系进行了讨论；还写出了此组的分种、分变种检索表，以及各种植物的形态描述、地理分布、生长环境等，并附有各种的插图。此组的花构造与对枝铁线莲组 sect. Brachiatae 的近似，与后者在亲缘关系上相近，区别在于此组的萼片通常斜上方开展，呈黄色，被毛的花丝下部变宽，呈狭披针形，而在对枝铁线莲组 sect. Clematis subsect. Clematis，萼片水平开展，呈白色，被毛的雄蕊花丝呈狭条形，下部不变宽；二组可能均起源于欧洲铁线莲组的 sect. Clematis subgen. Clematis，因此，均应是隶属欧洲铁线莲亚属 subgen. Clematis 的成员。根据对此组植物形态特征的分析，观察到以下演化趋势：(1) 叶的颜色由于适应干旱气候，由绿色变为灰绿色；(2) 卵形或宽卵形、掌状分裂、边缘具齿的小叶可能是原始的特征，而披针形或条形、不分裂、全缘的小叶是衍生的特征；(3) 单独、顶生、只是花梗的花是由具花序梗和二苞片的聚伞花序发生减化（reduction）而衍生的；(4) 萼片形状的演化趋势与小叶形状的演化趋势近似，也由卵形演变到披针形或条形；(5) 萼片内面无毛是原始现象，而被毛则是衍生现象；(6) 萼片顶端无突起是原始现象，出现突起则为衍生现象；(7) 花药形状由长圆形演变到狭长圆形和条形。根据上述演化趋势，推测具较多原始特征的甘川铁线莲 C. akebioides 和甘青铁线莲 C. tangutica 为此组的原始种，而具较多衍生特征的尾尖铁线莲 C. caudigera 和角萼铁线莲 C. corniculata 为此组的进化种。组成世界屋脊的青藏高原西缘、帕米尔高原和邻近山地集中分布有此组 10 种（包括 7 特有种），当是此组的分布中心；而甘川铁线莲和甘青铁线莲二种分布区的主要重叠部分所在的青藏高原东缘则可能是此组的起源中心。过去，一些铁线莲属专家将属于欧洲铁线莲组的 C. ispahanica Boiss. 和属于对枝铁线莲组的 C. graveolens Lindl. 误置于黄花铁线莲组中，对此，本文予以纠正。