

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. ispanhanica* 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 the 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. *Orientalis*, under sect. *Flammula*. This subsection, consisting of *C. orientalis*, *C. glauca* and *C. ispanhanica* Boiss, was afterwards accepted by Schneider (1906), and by Rehder

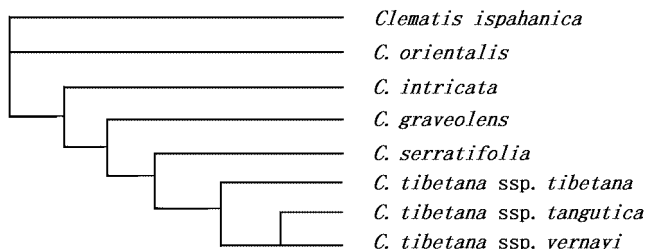
and Wilson (1913), and by Rehder (1951) who relegated it to the series rank. The inclusion of *C. ispanhica*, which has white, spreading sepals, glabrous stamens, and linear filaments, and thus should belong to sect. *Clematis*, in the *C. orientalis* group was adopted by Brandenburg (2000, see below).

Tamura (1955) recognized Prantl's subsect. *Orienteles*, but transferred it from sect. *Flammula* DC. to sect. *Viorna* (Reichb.) Prantl. Possibly having ignored or overlooked Baillon's work on *Clematis*, Tamura (1967) also reduced Spach's genus *Meclatis* as a section of *Clematis*, and classified the species of the section into subsect. *Orienteles*, which is characterized by having flowers in axillary and terminal inflorescences, and into subsect. *Tanguticae*, which is characterized by having solitary and terminal flowers. In his revised classification of the genus *Clematis*, Tamura (1987) placed sect. *Meclatis* in his new subgenus *Campanella* between sect. *Atragene* (L.) DC. and sect. *Pseudanemone* Prantl, and still maintained his previous subdivision of sect. *Meclatis* (Tamura, 1967). However, Grey-Wilson (1989) considered that there are variations in the characters for distinguishing the two subsections, and thus that the subdivision proposed by Tamura should not be recognized. Tamura (1995) accepted Grey-Wilson's opinion, and abandoned his previous subdivision of sect. *Meclatis*, and at the same time added the African species of the *C. brachiata* group into sect. *Meclatis*.

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.

Johnson (1997), in his monograph of the genus *Clematis*, placed sect. *Meclatis* just behind sect. *Connatae* (Koehne) M. Johnson (i.e. the *C. connata* group), and recognized 13 species in sect. *Meclatis*, with the species, like those in other sections, being arranged alphabetically. He misplaced *C. graveolens*, a member of sect. *Brachiatae* as mentioned above, in sect. *Meclatis*, as Schneider (1906) and Grey-Wilson (2000) did.

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:



The arrangement of the six species he recognized is as follows: *Clematis orientalis* L., *C. graveolens* Lindl., *C. intricata* Bunge, *C. ispanhica* Boiss., *C. serratifolia* Rehd., and *C. tibetana* Kuntze with three subspecies, ssp. *tibetana*, ssp. *tangutica* (Maxim.) Brandenb., and ssp. *vernayi* (C. E. C. Fisch.) Grey-Wilson. In his treatment of sect. *Meclatis*, *C. hilariae*

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. *Angustifoliae* (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. caudigera* 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. sarezica*, *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 Aegian 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 eastern edge of the Qinghai-Tibet Plateau and the arid regions of the western Loess plateau and Mongolia (Fig. 2), *C. glauca* extends from this land mass northeastward to southern 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.

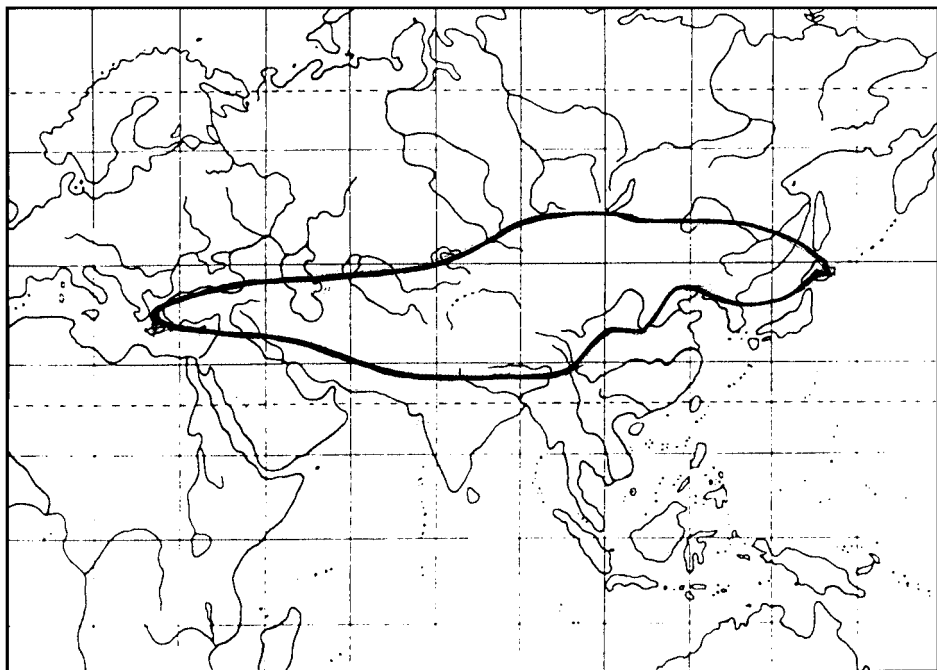


Fig. 1. Map showing the distribution of the section *Meclatis*.

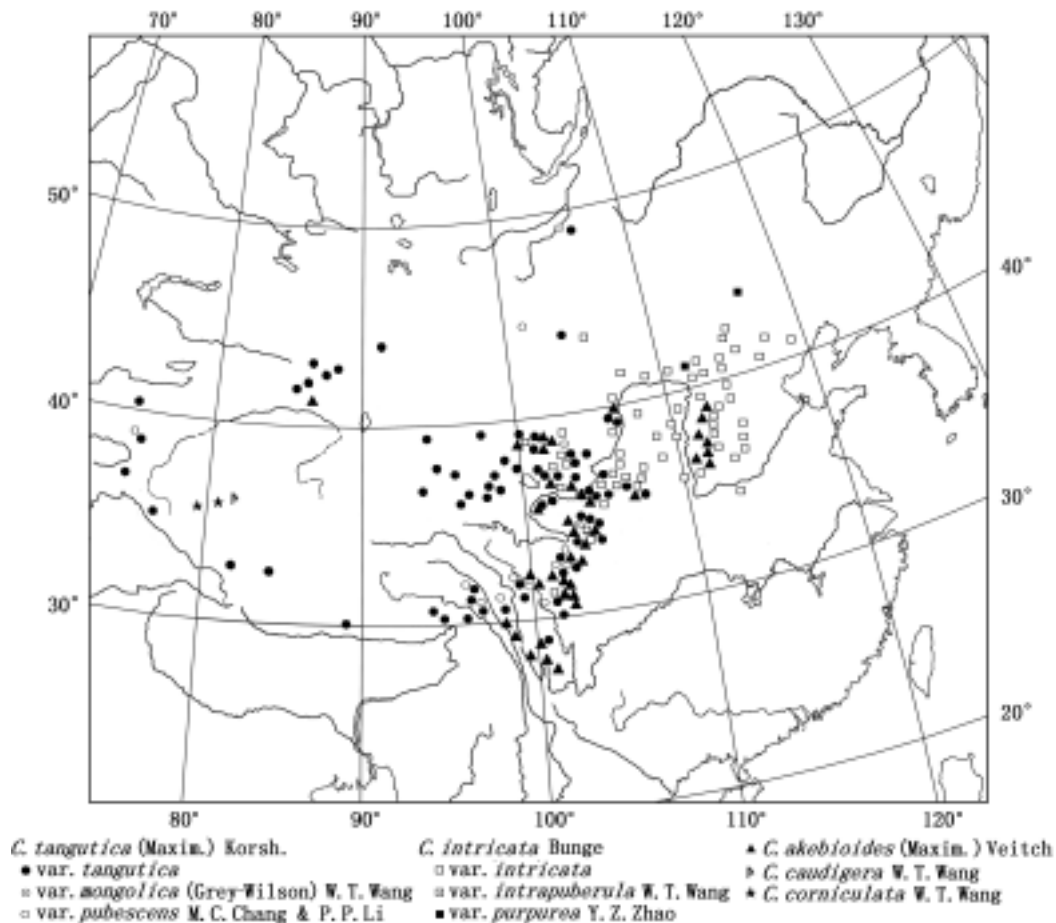


Fig. 2. Map showing the distribution of *Clematis akabioides*, *C. tangutica*, *C. intricata*, *C. caudigera*, and *C. corniculata*.

5 Taxonomic treatment

***Clematis* L. sect. *Meclatis* (Spach) Baillon, Hist. Pl. 1: 57. 1867; Brandenb., *Meclatis* in *Clematis* 100. 2000, p.p. excl. *C. ispananicam* Boiss. et. *C. graveolentem* Lindl.—*Meclatis* Spach, Hist. Nat. Veg. Phan. 7: 272. 1839.—Sect. *Meclatis* (Spach) Tamura in Sci. Rep. Osaka Univ. 16: 32. 1967; P. P. Ling in Fl. Reip. Pop. Sin. 28: 139. 1980; Tamura in Acta Phytotax. Geobot. 38: 39. 1987; et in Heipko, Engler's Nat. Pflanzenfam., Zwei. Auf., 17a (4): 375. 1995. p.p. excl. pl. Afric.; Grey-Wilson in Kew Bull. 44: 33. 1989, p.p. excl. *C. graveolentem*; Snoeijer in *Clematis* 1992: 11. 1992; M. Johnson, *Klematis* 329. 1997, p.p. excl. *C. graveolentem*; Grey-Wilson, *Klematis* 155. 2000, p.p. excl. subsect. *Africanas* et *C. graveolentem*. Lectotype: *Meclatis orientalis* (L.) Spach (= *C. orientalis* L.).**

Sect. *Flammula* DC. subsect. *Orientalis* Prantl in Bot. Jahrb. 9: 261. 1888, p.p., excl. *C. ispananicam*; Schneid., Ill. Handb. Laubh. 1: 293. 1906. p.p., excl. *C. graveolentem*.—Sect. *Flammula* ser. *Orientalis* (Prantl) Rehd. & Wils. in Sarg., Pl. Wils. 1: 342. 1913; Rehd., Man. Cult. Trees & Shrubs, ed. 2, 219. 1940.—Sect. *Viorna* (Reichb.) Prantl subsect. *Orientalis* (Prantl) Tamura in Sci. Rep. Osaka Univ. 4: 48. 1955; et in Acta Phytotax. Geobot. 16: 80. 1956; et in Sci. Rep. Osaka Univ. 16: 32. 1967; et in Acta Phytotax. Geobot. 38: 40. 1987; Grey-Wilson in Kew Bull. 44: 34. 1989. Lectotype: *C. orientalis* L.

Sect. *Flammula* subsect. *Tanguticae* Schneid., Ill. Handb. Laubh. 1: 294. 1906.—
Sect. *Viorna* subsect. *Tanguticae* (Schneid.) Tamura in Sci. Rep. Osaka Univ. 4: 48. 1955; et in
Acta Phytotax. Geobot. 16: 80. 1956.—Sect. *Meclatis* subsect. *Tanguticae* (Schneid.)
Tamura in Sci. Rep. Osaka Univ. 16: 33. 1967; et in Acta Phytotax. Geobot. 38: 40. 1987.
Lectotype: *C. tangutica* (Maxim.) Korsh.

Sect. *Meclatis* subsect. *Meclatis* Grey-Wilson, Clematis 29: 162. 2000, p.p., excl. *C. graveolentem*.

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***
 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***
 6. Terminal leaflet lanceolate or elliptic-lanceolate, lateral leaflets elliptic or long elliptic; sepals purple.....3b. var. ***purpurea***
 4. Sepals narrowly oblong.....6. ***C. glauca***
 3. Leaflet margin usually regularly dentate or denticulate; flowers solitary, terminal, sometimes in 1–3-flowered cymes.....2. ***C. tangutica***
 7. Leaflets ovate to lanceolate, with up to 7 teeth per side; usually woody vines, occasionally dwarf erect shrubs.....2a. var. ***tangutica***
 7. 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**
14. Sepals yellow (in *C. ladakhiana* sometimes tinged with purple-brown), not corniculate.
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.....7. **C. zandaensis**
18. Sepals oblong-lanceolate; anthers linear, ca. 4 mm long.....11b. **C. orientalis** var. **latifolia**
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.....11b. **C. orientalis** var. **albida**
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. ladakhiana**
23. Leaflets grey-green, linear-lanceolate, apex acute; sepals narrowly oblong-lanceolate.....11e. **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**
24. Sepals oblong-lanceolate.
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–(–)5 mm broad...11f. **C. orientalis** var. **baluchistanica**

1. Clematis akebioides (Maxim.) Veitch, New Hardy Pl. West China 19. 1912; P. P. Ling in Fl. Reip. Pop. Sin. 28: 145, pl. 42. 1980; M. Y. Fang in Fl. Xizang. 2: 89. 1985; Grey-Wilson in Kew Bull. 44: 43. 1989; Y. Z. Zhao in Fl. Intramongol., ed. 2, 2: 533, pl. 215, figs. 4–6.

1990; L. Q. Li in Vasc. Pl. Hengduan Mount. 1: 523. 1993; L. H. Zhou in Fl. Qinghai. 1: 348. 1997; M. Johnson, *Clematis* 333. 1997; Grey-Wilson, *Clematis* 166, fig. 120. 2000; J. Q. Fu in Fl. Loess Plat. 1: 441. 2000; W. T. Wang in Fl. Yunnan. 11: 238. 2000; W. T. Wang & Barth. in Fl. China 6: 336. 2001.—*C. orientalis* L. var. *akebioides* Maxim. in Acta Hort. Petrop. 11: 6. 1890.—*C. glauca* Willd. var. *akebioides* (Maxim.) Rehd. & Wils. in Sarg., Pl. Wils. 1: 342. 1913; Rehd. in J. Arn. Arb. 4: 191. 1923; et Man. Cult. Trees & Shrubs 229. 1927; Hand.-Mazz. in Acta Hort. Gotob. 13: 218. 1939; C. Y. Wu, Ind. Fl. Yunnan. 109. 1984. Type: China. Sichuan: Heishui, 1885-07-22, *Potanin s.n.* (holotype, LE!).

C. tangutica auct. non (Maxim.) Korsh.: Kozlov in Publ. Mus. Hoangho Paiho Tien Tsin 22: 14. 1933.

C. glauca auct. non Willd.: P. P. Ling in Fl. Reip. Pop. Sin. 28: 143. 1980, p.p., quoad pl. Qinghai., Gansu., Shaanxi. et Shanxi.; Y. J. Ling et al. in Fl. Shanxi. 1: 633. 1992; L. H. Zhou in Fl. Qinghai. 1: 347. 1997; W. T. Wang & Barth. in Fl. China 6: 366. 2001, p.p., quoad pl. Qinghai., Gansu., Shaanxi., et Shanxi.

C. tibetana auct. non Kuntze: Brandenb., *Meclatis* in *Clematis* 165. 2000, p.p., quoad syn. *C. akebioides* (Maxim.) Veitch.

C. tibetana Kuntze ssp. *tangutica* (Maxim.) Brandenb., l.c., p.p., quoad syn. *C. akebioides* (Maxim.) Veitch.

甘川铁线莲 Fig. 3: A–C

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 (甘肃): Huating (华亭), S. Q. Zhong (仲世奇) 110 (PE); Huining (会宁), Huanghe River Exped. (黄河队) 56-5100 (PE); Jonê (卓尼), W. Y. Hsia (夏纬瑛) 8499 (NAS, PE); Ka-tian-ko, Hummel 4137, 5050 (S); Lanzhou (兰州), Y. Q. He (何业祺) 4284, 5759 (PE); Liancheng (莲城); Y. Q. He (何业祺) 4961, 5310 (PE); Lianhua Shan (莲花山), Rock 13228 (NAS); Lichen, R. C. Ching (秦仁昌) 286 (US); Low Rwen, Purdom 1022 (GH, US); Min Xian (岷县), Hummel 5382a (S); Têwo (迭部), P. C. Kuo (郭本兆) 5656 (WUK); Xiahe (夏河), R. C. Ching (秦仁昌) 775 (GH, US), T. P. Wang (王作宾) 7089 (NAS, PE); Yuzhong (榆中), Huanghe River Exped. (黄河队) 56-3125 (PE); Zhangye (张掖), P. C. Tsoong (钟补求) 8770 (PE). **Hebei** (河北): Zhuolu (涿鹿), C. G. Yang (杨朝广) 1410 (PE). **Nei Mongol** (内蒙古): Helan Shan (贺兰山), X. T. Lei (雷喜亭) 840766 (NIMC). **Qinghai** (青海): Datong (大通), K. C. Kuan (关克俭) 77-303 (PE); Huzhu (互助), P. C. Kuo (郭本兆) 9279, 9501 (PE); Menyuan (门源), K. M. Liou (刘继孟) 6861, 6933 (PE); Minhe (民和), T. N. Ho (何廷农) 809 (PE); Qilian (祁连), P. C. Tsoong (钟补求) 8532 (PE); Qilian Shan (祁连山), P. C. Kuo (郭本兆) 12565 (PE); Xining (西宁), K. S. Hao (郝景盛) 853, P. C. Tsoong (钟补求) 8187 (PE). **Shaanxi** (陕西): Without precise locality, K. T. Fu (傅坤俊) 930 (NAS). **Shanxi** (山西): Guandi Shan

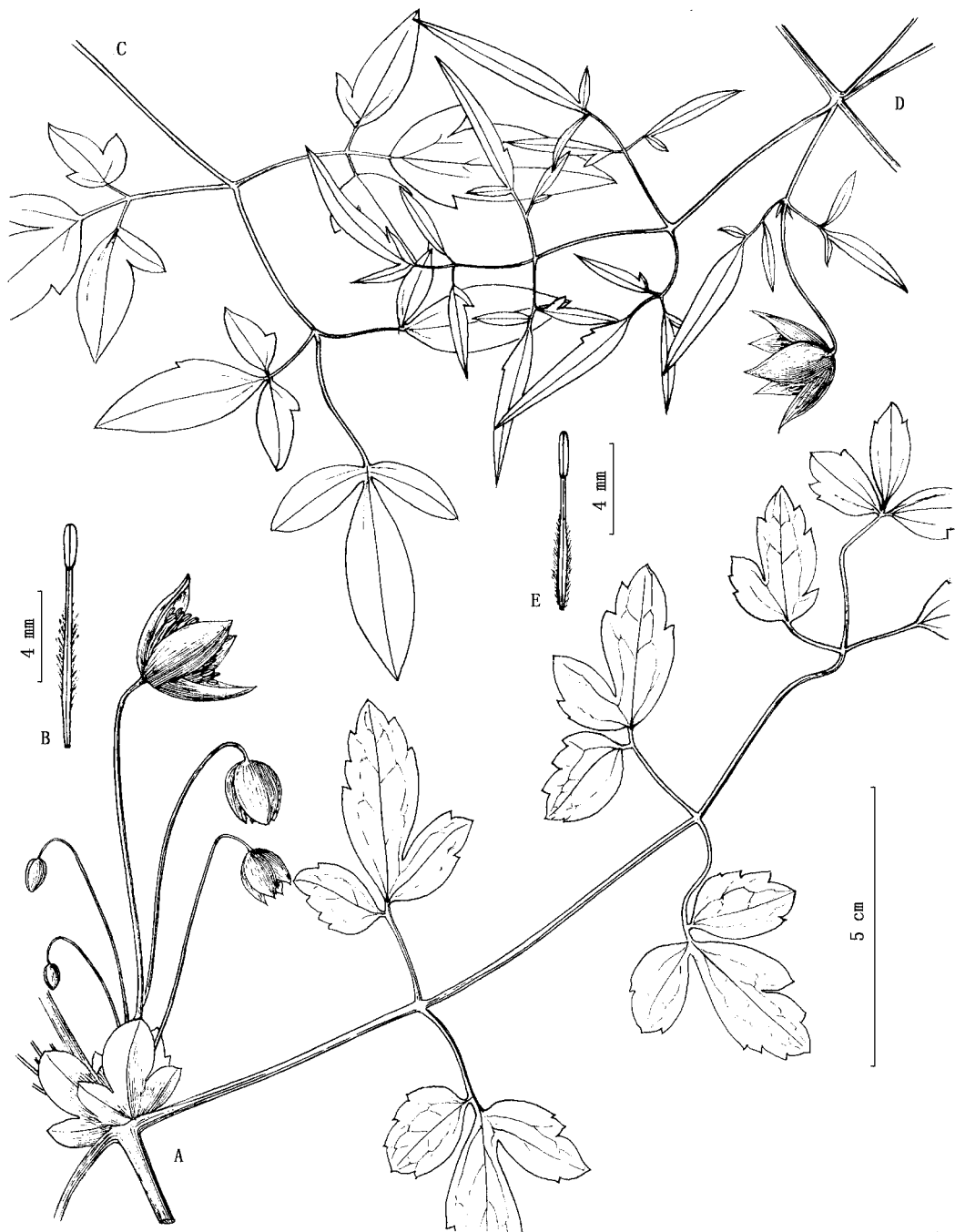


Fig. 3. A–C, *Clematis akebioides* (Maxim.) Veitch. A, flowering branch; B, stamen (from X. Li 75478); C, leaf (from T. P. Wang 7089). D, E, *C. intricata* Bunge var. *intricata*. D, flowering branch; E, stamen (from K. K. Tsong s.n.).

(关帝山), W. Y. Hsia (夏纬瑛) 1226 (PE); Hongdong (洪洞), Y. L. Chen (陈艺林) 825 (PE); Huo Xian (霍县), Shanxi Exped. (山西考察队) 54-469 (PE); Jiaocheng (交城), Licent 2163 (TIE), H. Smith 7214 (GH, S, TIE, UPS), 6893 (PE, UPS, US), Huanghe River Exped. (黄河队) 57-927 (NAS, PE); Luya Shan (芦芽山), H. Smith 8122 (S, UPS); Ningwu (宁武), Shanxi Exped. (山西考察队) 57-1810 (PE); Wuzhai (五寨), Guanqin Shan (管涔山), W. Y. Hsia (夏纬瑛) 1486 (PE); Xiaoyi (孝义), K. M. Liou (刘继孟) 2801 (IBSC, PE); Xi Xian (隰县), Licent 2163 (PE). **Sichuan** (四川): Baoxing (宝兴), K. C. Kuan et al. (关克俭等) 2964 (K, PE); Barkam (马尔康), X. Li (李馨) 71729, 72594, 72767 (NAS, PE), 71886, 72265 (IBSC, NAS); Batang (巴塘), G. Yao (姚淦) 549 (NAS); Dawu (道孚), S. Jiang (姜恕) 2312 (PE); Daocheng (稻城), Sichuan Exped. (四川队) 73-2130 (PE); Garzê (甘孜), Y. W. Tsui (崔友文) 4308, S. Jiang (姜恕) 9126, 9349 (PE); Heishui (黑水), X. Li (李馨) 73482, 73853, 73963 (IBSC, NAS, PE); Hongyuan (红原), Q. S. Zhao (赵清盛) 234 (K, PE, S, UPS); Jinchuan (金川), X. Li (李馨) 75130, 75277, 75845, 78036, 78321 (IBSC, PE); Kangding (康定), Soulié 436 (G, K), Hosie s.n. (K), Mussot 6 (P), E. H. Wilson 3131, 3132 (GH, K), H. Smith 10872 (GH, PE, S, UPS), T. P. Wang (王作宾) 9841, W. K. Hu & C. Ho (胡文光, 何景) 10650, 11347, X. L. Jiang (蒋兴麟) 36960, 37160 (PE); Li Xian (理县), C. L. Wu (吴中伦) 33138 (PE), X. Li (李馨) 46545 (IBSC); Luhuo (炉霍), T. S. Ying (应俊生) 9347 (PE); Mao Xian (茂县), W. P. Fang (方文培) 1521 (K, GH, IBSC, NAS, P, PE); Nanping (南坪), Q. X. Li (李全喜) 2694 (PE); Songpan (松潘), E. H. Wilson 4548 (GH, US), W. P. Fang (方文培) 4267 (GH, NAS), K. T. Fu (傅坤俊) 2201 (PE); Tongolo (东俄洛), Soulié 921 (K, P); Xiangcheng (乡城), T. T. Yu (俞德浚) 13385, Sichuan Exped. (四川队) 73-2980 (PE); Xiaojin (小金), S. S. Chang (张秀实) 6506 (PE), 6945 (NAS), Sichuan Exped. (四川队) 75-9811 (PE); Yanyuan (盐源), Handel-Mazzetti 4601 (P), 5418 (GH, IBSC, US). **Xinjiang** (新疆): Korla (库尔勒), A. J. Li & J. N. Zhu (李安仁, 朱家柁) 8642 (PE). **Xizang** (西藏): Markam (芒康), Qinghai-Xizang Exped. (青藏队) 76-11732 (PE); Zhag'yab (察雅), Qinghai-Xizang Exped. (青藏队) 76-12354 (PE). **Yunnan** (云南): Dêqên (德钦), C. W. Wang (王启无) 70285 (GH), T. T. Yu (俞德浚) 10253, 10444 (PE); Lijiang (丽江), C. W. Wang (王启无) 71589 (NAS), K. M. Feng (冯国楣) 2665 (PE); Without precise locality, Forrest 12861 (K, NAS), 14856, 15636, 16921 (K); Tsekou, Soulié s.n. (P); Zhongdian (中甸), Handel-Mazzetti 4601 (P), T. T. Yu (俞德浚) 12474, 13940, K. M. Feng (冯国楣) 1790 (PE).

In *C. akebioides*, the populations occurring in northwestern Yunnan, western Sichuan, eastern Xizang, and the Mt. Helanshan in Nei Mongol have leaflets which are usually broadly oblong in outline, with obtuse apexes and crenate margins, and those occurring in eastern Qinghai, Gansu, Shaanxi, and Shanxi have leaflets which are usually long elliptic or ovate in outline, with acute apexes and entire or subentire margins (Fig. 1: A, C). However, in western Sichuan, among the populations with oblong and crenate leaflets are scattered some plants with ovate or elliptic and entire leaflets, such as *W. K. Hu & C. Ho 10650* collected from Kangding, *S. Jiang 9349* from Garzê, *Sichuan Exped. 75-9811* from Xiaojin, and *X. Li 78036* from Jinchuan. Unfortunately, the plants occurring in eastern Qinghai, Gansu, and Shanxi have been misidentified as *C. glauca* Willd. by Ling (1980), and by Wang & Bartholomew (2001). Such plants really show remarkable resemblance to *C. glauca*, and differ in their narrowly ovate sepals. In *C. glauca*, the sepals are narrowly oblong in outline and often puberulous inside.

2. Clematis tangutica (Maxim.) Korsh. in Bull. Acad. Sci. St.-Petersb. 9: 399. 1898, p.p., quoad nomen tantum; Andre in Rev. Hort. 1902: 528. 1902; Schneid., Ill. Handb. Laubh. 1: 294, fig. 185: W-Z. 1906; Rehd. & Wils. in Sarg., Pl. Wils. 1: 343. 1913; Rehd. in J. Arn. Arb. 4: 191. 1923; Krasch. in Kom., Fl. URSS 7: 250. 1937; Hand.-Mazz. in Acta Hort. Gotob. 13: 218. 1939; Gamayou. in Fl. Kazakhst. 4: 74. 1961; Anonymous in Iconogr. Corm. Sin. 1: 741, fig. 1481. 1972; Anonymous in Fl. Tsinling. 1 (2): 289, fig. 248. 1974; P. P. Ling in Fl. Reip. Pop. Sin. 28: 145, fig. 17. 1980; Grubov, Key Vasc. Pl. Mongol. 112, t. 52, fig. 238. 1982; M. Y. Fang in Fl. Xizang. 2: 89. 1985; Liou f., Fl. Desert. Sin. 1: 483. 1985; Grey-Wilson in Kew Bull. 44: 53, fig. 4: A-C. 1989; Y. Z. Zhao in Fl. Intramongol., ed. 2, 2: 533, pl. 215, figs. 1-3. 1990; L. Q. Li in Vasc. Pl. Hengduan Mount. 1: 523. 1993; J. G. Liou in Fl. Xinjiang. 2: 290. 1994; L. H. Zhou in Fl. Qinghai. 1: 347. 1997; M. Johnson, Klematis 352. 1997; Grubov et al.,

Cat. Type Specim. Centr. As. Vasc. Pl. Herb. Kom. Bot. Inst. 194. 2000; Grey-Wilson, *Clematis* 171, figs.128–130. 2000; J. Q. Fu in *Fl. Loess Plat.* 1: 441. 2000; Grabovsk. in Grubov, *Pl. As. Centr.* 12: 85. 2001; W. T. Wang & Barth. in *Fl. China* 6: 364. 2001.—*C. orientalis* L. var. *tangutica* Maxim., *Fl. Tangut.* 3. 1889; et *Enum. Pl. Mongol.* 4. 1889.—*C. tibetana* Kuntze ssp. *tangutica* (Maxim.) Brandenb., *Meclatis in Clematis* 169. 2000, p.p., excl. syn. *C. akebiooides* (Maxim.) Veitch et *C. pamiralaica* Grey-Wilson. Type: China. Qinghai (青海): Datong (大通), 1872-07, *Przewalski 105* (lectotype, LE!—Grabovskaya, 2000; isoelectotypes, K!, LE!, P!). Gansu (甘肃): Without precise locality, 1875-07, *Piasezky s.n.* (syntype, LE!).

C. atragenoides Batalin in *Acta Hort. Petrop.* 11: 481. 1891. Type: China. Gansu (甘肃): fl. Gui-dui-scha, 1890-06-21, *Grum-Grshimailo 201* (syntype, LE!). Qinghai (青海): North of Qinghai Lake, 1890-08-01, *Grum-Grshimailo 228* (syntype, LE!).

C. tangutica var. *obtusiuscula* Rehd. & Wils. in *Sarg., Pl. Wils.* 1: 343. 1913; Rehd., *Man. Cult. Trees & Shrubs* 229. 1927; et in *J. Arn. Arb.* 9: 42. 1928; Hand.-Mazz. in *Acta Hort. Gotob.* 13: 218. 1939; W. T. Wang in *Acta Phytotax. Sin.* 31: 225. 1993; M. Johnson, *Klematis* 335. 1997; W. T. Wang & Barth. in *Fl. China* 6: 346. 2001.—*C. tangutica* ssp. *obtusiuscula* (Rehd. & Wils.) Grey-Wilson in *Kew Bull.* 44: 54. 1989; et *Clematis* 172. 2000. Type: China. Sichuan (四川): Kangding (康定), Tapao-shan (大炮山), alt. 2600–3300 m, 1908-07, *E. H. Wilson 2487* (holotype, GH!; isotype, LE!).

? *C. chrysantha* Ulbr. in *Repert. Sp. Nov. Beih.* 12: 374. 1922. Type: China. Sichuan (甘肃): Kanse, *Limpricht 2086* (syntype); Dêgê (德格), *Limpricht 2146* (syntype).

C. orientalis auct. non L.: Kozlov in *Publ. Mus. Hoangho Paiho Tien Tsin* 22: 14. 1933.

甘青铁线莲

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.

甘青铁线莲 Fig. 4: A, B; Fig. 5: C, D

Additional specimens examined:

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

China. Gansu (甘肃): Dangchang (宕昌), Hummel 5237 (S), Q. E. Yang (杨亲二) 92006 (PE); Gannan (甘南), Qinghai-Gansu Exped. (青甘调查队) 62-3201, Q. E. Yang (杨亲二) 92033 (PE); Huining (会宁), Z.

Y. Yu & Y. P. Xu (于兆英, 徐养鹏) 3799 (WUK); Jingtai (景泰), Z. Y. Yu & Y. P. Xu (于兆英, 徐养鹏) 3228 (WUK); Jingyuan (靖远), Z. Y. Yu & Y. P. Xu (于兆英, 徐养鹏) 3047 (WUK); Jiuquan (酒泉), Qinghai-Gansu Exped. (青甘调查队) 60-3057 (PE); Jonè (卓尼), Rock 12917 (GH, NAS, PE), W. Y. Hsia (夏纬瑛) 8503 (PE), *Purdum 1023* (GH, US); Lanzhou (兰州), T. N. Liou (刘慎謩) 2306, Y. Q. He (何业祺) 5956 (PE), Licent 4265 (P, TIE); Lianhua Shan (莲花山), Rock 13615 (P); Lichen, R. C. Ching (秦仁昌) 318 (GH, P, US); Lintan (临潭), C. W. Yao (姚仲吾) 1217 (NAS); Linxia (临夏), K. T. Fu (傅坤俊) 843 (PE); Min Xian (岷县), K. S. Hao (郝景盛) 544, T. P. Wang (王作宾) 5035 (PE), Hummel 3791, 5382 (PE); Pingliang (平凉), Huanghe Exped. (黄河队) 56-1893 (NAS, PE); Shandan (山丹), Y. Q. He (何业祺) 4129 (PE); Subei (肃北), P. C. Kuo (郭本兆) 3355 (PE); Sunan (肃南), Hexi Exped. (河西队) 121, 405 (PE); Tchepou, Licent 4098 (TIE); Tchen-tsiang, Licent 4493 (K, P, TIE); Tianzhu (天祝), Y. Q. He (何业祺) 4638 (PE); Xiahe (夏河), C. W. Yao (姚仲吾) 471, T. P. Wang (王作宾) 5758 (PE); Yongdeng (永登), Loess Plateau Exped. (黄土高原调查队) 4767 (WUK); Yuzhong (榆中), P. G. Wu (吴培根) 651053 (NAS); Zhangye (张掖), Anonymous 191 (PE). **Ningxia** (宁夏): Guyuan (固原), Huanghe River Exped. (黄河队) 56-2372 (PE); Helan Shan (贺兰山), Ningxia Inst. Drug Contr. Exped. (宁夏药检所队) 2372 (PE). **Qinghai** (青海): Burhan Budai Shan (布尔汗布达山), Ladeijin 12 (LE); Da Qaidam (大柴旦), Qinghai-Gansu Exped. (青甘调查队) 59-58 (PE); Datong (大通), Farrer & Purdom 520 (MO), K. M. Liou (刘继孟) 5930, Geobot. Group Exped. (地植物组) 1393 (PE); Delingha (德令哈), P. C. Kuo (郭本兆) 11615 (NAS, PE); Gangca (刚察), P. C. Kuo (郭本兆) 11235 (NAS, PE); Golmud (格尔木), Qinghai-Gansu Exped. (青甘调查队) 59-503 (PE); Gonghe (共和), Z. W. Chang (张振方) 2118 (PE), C. Y. Yao (姚仲吾) 879 (NAS); Guide (贵德), S. W. Liu (刘尚武) 3324 (PE); Guinan (贵南), S. J. Ma (马世骏) 33 (PE); Haiyan (海晏), P. C. Tsoong (钟补求) 8311 (PE); Huangyuan (湟源), S. X. Zheng (郑斯绪) 425 (PE); Huzhu (互助), P. C. Kuo (郭本兆) 9231 (PE); Ledu (乐都), W. W. Hou (侯无危) s.n. (PE); Le Hargue gol, Licent 4829 (TIE); Menyuan (门源), Qinghai-Gansu Exped. (青甘调查队) 60-2718 (PE); Minhe (民和), T. N. Ho (何廷农) 581 (PE); Nangqên (囊谦), Y. C. Yang (杨永昌) 1145, 1554 (PE); Nomhon (诺木洪), Y. X. Liou (刘嫫心) 78, C. Y. Wu et al. (吴征镒等) 75-224 (PE); E Qaidam basin, Ladeijin 159 (LE); Qinghai Lake (青海湖), Ridley 1 (K), Rock 13277 (LE, NAS, S), K. F. Luo (罗开富) 10 (PE); Tianjun (天俊), Qinghai-Gansu Exped. (青甘调查队) 59-1080 (PE); Tongde (同德), T. N. Ho (何廷农) Bartholomev 72, 134 (GH); Ulan (乌兰), P. C. Kuo (郭本兆) 11484 (PE); Xiangride (香日德), Qinghai-Gansu Exped. (青甘调查队) 59-1296 (PE); Xinghai (兴海), T. P. Wang (王作宾) 19593 (WUK), T. N. Ho (何廷农) 64, 465 (NAS); Xining (西宁), S. H. Zheng (郑斯绪) 368 (IBSC), Y. R. Ling (林有润) 74-1451 (PE); Yushu (玉树), C. W. Yao (姚仲吾) 754 (PE), 755 (NAS). **Shaanxi** (陕西): Taibai Shan (太白山), K. T. Fu (傅坤俊) 1518 (NAS). **Sichuan** (四川): Aba (阿坝), S. Jiang (姜恕) 1196 (PE); Baiyu (白玉), W. L. Chen et al. (陈伟烈等) 6827 (PE); Barkam (马尔康), X. Li (李馨) 74740 (IBSC, NAS, PE); Daocheng (稻城), S. Jiang (姜恕) 5354 (PE); Dêgê (德格), Sichuan Exped. (四川队) 74-7031 (PE); Garzê (甘孜), P. C. Kuo (郭本兆) 21094 (NAS); Gongga Shan (贡嘎山), Rock 17616, 17699 (PE); Hongyuan (红原), Q. S. Zhao (赵清盛) 83 (K, GH, PE, S, UPS); Kangding (康定), Pratt 237, 622, Soulié 2771 (K), T. T. Yu (俞德浚) 992, K. C. Kuan et al. (关克俭等) 36231 (PE); Li Xian (理县), Q. S. Zhao (赵清盛) 36 (K, GH, PE, S, UPS); Sêrxü (石渠), S. Jiang (姜恕) 9275 (PE); Shuajingsi (刷经寺), X. Li (李馨) 74654, 74876, 74929 (IBSC, PE); Songpan (松潘), H. Smith 3663 (S, UPS), Beresowsky s.n. (LE), K. T. Fu (傅坤俊) 1858 (PE); Zoigê (若尔盖), Sichuan Exped. (四川队) 75-10290 (IBSC), 75-10377 (IBSC, PE). **Xinjiang** (新疆): Akto (阿克陶), Inst. Northwest Bot. Exped. (西北植物所队) 746 (PE); Barkol (巴里坤), Q. R. Wang (王庆瑞) 4481 (PE); Hejing (和静), Q. R. Wang (王庆瑞) 3796 (PE); Hoxud (和硕), A. J. Li & J. N. Zhu (李安仁, 朱家柁) 6986 (PE); Kunlun Shan (昆仑山), Serpuchov 43, 563, Younatov & Y. F. Yang 230 (LE); Tian Shan (天山), T. Y. Chou et al. (周太炎等) 651317 (IBSC, PE), Merzbacher 1022 (LE), Brocherel 162 (G); Toksun (托克逊), A. J. Li & J. N. Zhu (李安仁, 朱家柁) 7383 (PE); Turpan (吐鲁番), A. J. Li & J. N. Zhu (李安仁, 朱家柁) 5734 (PE). **Xizang** (西藏): Biru (比如), D. D. Tao (陶德定) 11316 (PE); Gar (噶尔), Qinghai-Xizang Exped. (青藏队) 76-8316, 76-8587 (PE); Gêrzê (改则), F. Z. Li (李法曾) 23 (PE); Gonjo (贡觉), Qinghai-Xizang Exped. (青藏队) 76-12581 (PE); Qamdo (昌都), Qinghai-Xizang Exped. (青藏队) 76-12694 (PE); Riwoqê (类乌齐), Qinghai-Xizang Exped. (青藏队) 76-12943 (PE); Sog Xian (索县), D. D. Tao (陶德定) 10894 (PE); Xainza (申扎), D. D. Tao (陶德定) 10712 (PE).

Kashmir Region. Rupshu, Koelz 22886 (GH, LE, S).

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)

2b. var. mongolica (Grey-Wilson) W. T. Wang, st. nov.—*C. tangutica* (Maxim.) Korsh. ssp. *mongolica* Grey-Wilson in Kew Bull. 44: 54, fig. 1: W. 1989; M. Johnson, *Clematis* 355. 1997; Grey-Wilson, *Clematis* 173. 2000, syn. nov. Type: Mongolia, Tula River, ca. 25 km NE of Ulaanbaatar, alt. ca. 1450 m, 1970-07-30, *Jeffrey 1436* (holotype, K!; isotype, PE!).

C. tibetana Kuntze ssp. *tangutica* (Maxim.) Brandenb., *Meclatis* in *Clematis* 169. 2000, p.p., quoad syn. *C. tangutica* ssp. *mongolica* Grey-Wilson.

多齿甘青铁线莲 Fig. 4: E

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 (甘肃): in valle Drakana (near Jonê (卓尼)), Hummel 4637 (S); Tianzhu (天祝), X. Z. Han (韩学俊) 621127 (NAS).

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

2c. var. pubescens M. C. Chang & P. P. Li in Fl. Reip. Pop. Sin. 28: 356. 1980; M. Y. Fang in Fl. Xizang. 2: 89. 1985; L. Q. Li in Vasc. Pl. Hengduan Mount. 1: 523. 1993; L. H. Zhou in Fl. Qinghai. 1: 347. 1997; W. T. Wang in Acta Phytotax. Sin. 38: 327. 2000; W. T. Wang & Barth. in Fl. China 6: 364. 2001. Type: China. Xizang (西藏): Zhag'yab (察雅), 1976-09-20, *Qinghai-Xizang Exped. (青藏队) 76-13014* (holotype, PE!).

C. tibetana Kuntze ssp. *vernayi* (C. E. C. Fisch.) Grey-Wilson var. *dentata* Grey-Wilson in Kew Bull. 44: 48, fig. 1: Z. 1989; M. Johnson, *Clematis* 356. 1997; Grey-Wilson, *Clematis* 170. 2000. Type: China. Gansu (甘肃): Radja, alt. 3300 m, 1926-06, *Rock 14124* (holotype, K; isotypes, GH!, NAS!, P!, S!).

C. tibetica Kuntze ssp. *vernayi* auct. non (C. E. C. Fisch.) Grey-Wilson: Brandenb., *Meclatis* in *Clematis* 175. 2000, p.p., quoad syn. *C. tibetana* ssp. *vernayi* var. *dentata* Grey-Wilson et *C. tangutica* var. *pubescens* M. C. Chang & P. P. Ling.

毛萼甘青铁线莲 Fig. 4: C, D

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

Woody vine. Fl. Jun.–Sept.

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.

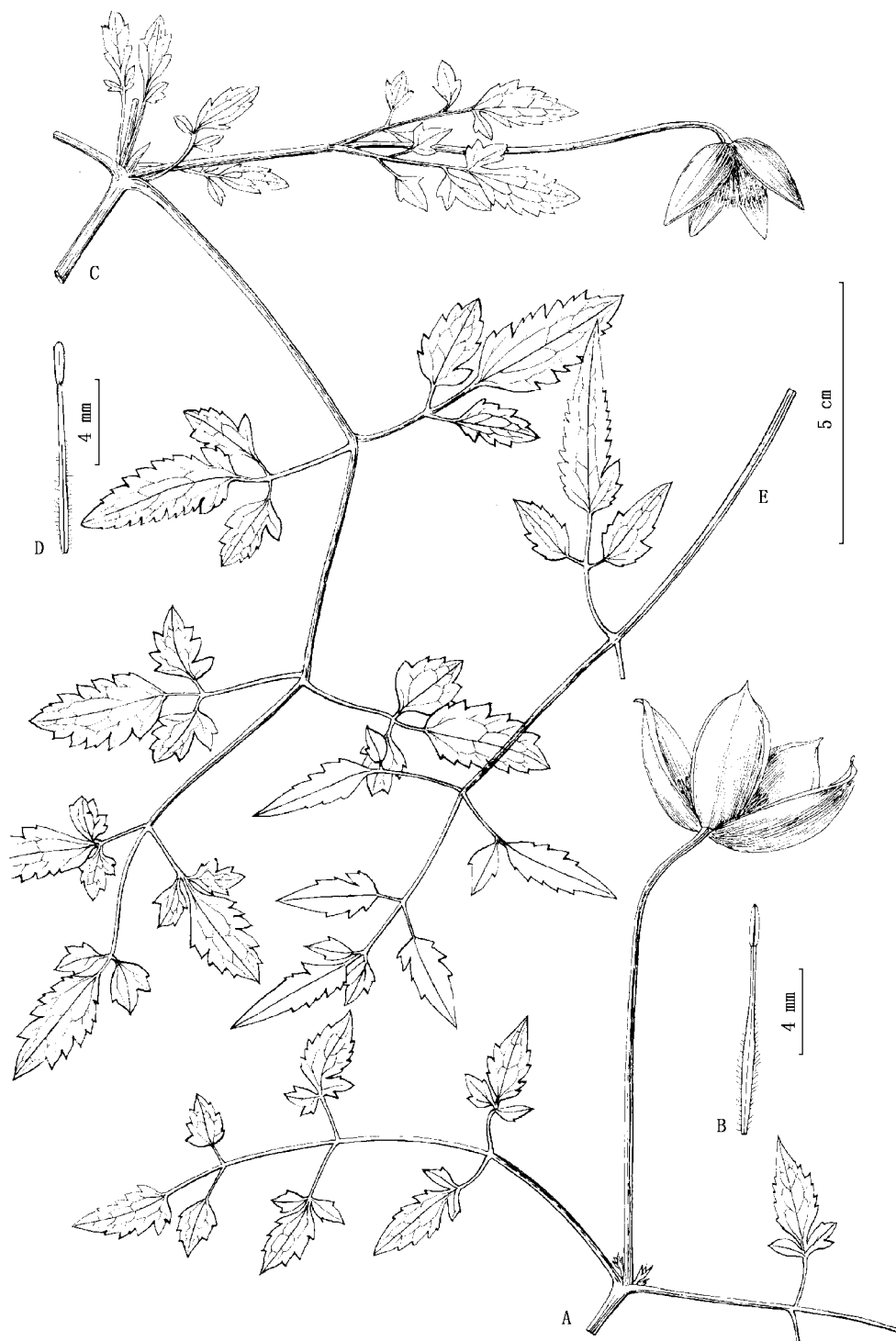


Fig. 4. *Clematis tangutica* (Maxim.) Korsh. A, B, var. *tangutica*. A, flowering branch; B, stamen (from D. D. Tao 10894). C, D, var. *pubescens* M. C. Chang & P. P. Ling. C, flowering branch; D, stamen (from Anonymous 519); E, var. *mongolica* (Grey-Wilson) W. T. Wang leaf (from Hummel 4637).

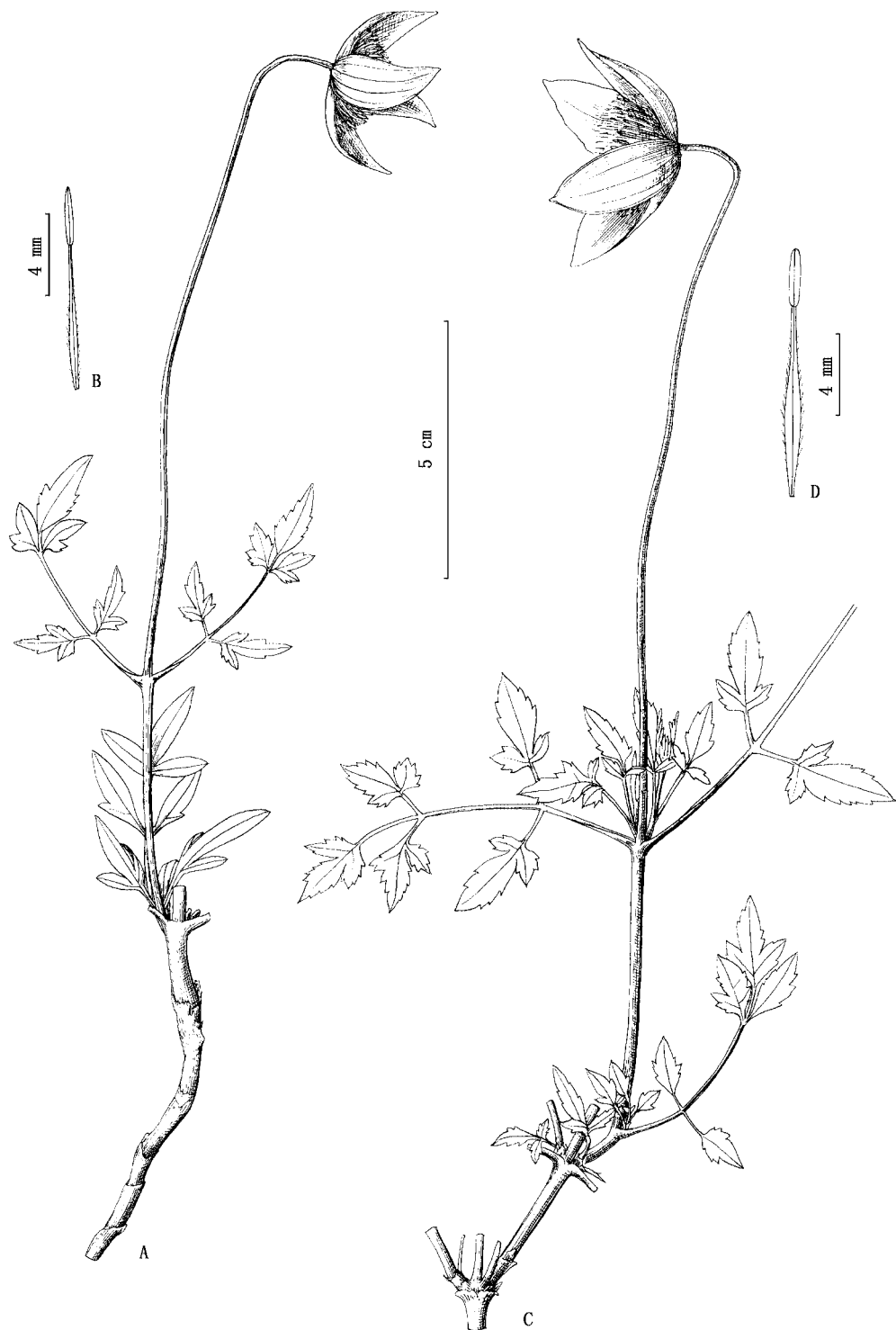


Fig. 5. A, B, *Clematis tibetana* Kuntze var. *pamiralaica* (Grey-Wilson) W. T. Wang. A, habit; B, stamen (from Tolmatcheva 4367). C, D, *C. tangutica* (Maxim.) Korsh. var. *tangutica*. C, habit; D, stamen (from Y. C. Yang 1145).

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); Hongyuan (红原), Longriba (龙日坝), C. L. Wu (吴中伦) 32918 (PE); Queer Shan (雀儿山), Y. T. Zhang & K. Y. Lang (张永田, 郎楷永) 147 (PE); Yajiang (雅江), Y. W. Tsui (崔友文) 4327 (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), Qing hai-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 Bunge in Mém. Sav. Etrang. Acad. Sci. St.-Petersb. 2: 75. 1833; Maxim., Prim. Fl. Amur. Suppl. 1. 1858; Kom. in Acta Hort. Petrop. 22: 288. 1903; Kitag., Lineam. Fl. Mansh. 217. 1939; Anonymous in Iconogr. Corm. Sin. 1: 740, fig. 1480. 1972; Anonymous in Fl. Tsinling. 1 (2): 290. 1974; Liou et al., Fl. Pl. Herb. Chinae Bor.-Or. 3: 173, pl. 75, fig. 5. 1975; P. P. Ling in Fl. Reip. Pop. Sin. 28: 142, fig. 15. 1980; Grubov, Key Vasc. Pl. Mongol. 112, t. 52, fig. 237. 1982; He, Fl. Beijing, rev. ed., 1: 250. 1984; J. W. Wang in Fl. Hebei. 1: 474. 1986; Grey-Wilson in Kew Bull. 44: 45. 1989; Y. Z. Zhao in Fl. Intramongol., ed. 2, 2: 531. 1990; Y. J. Ling et al. in Fl. Shanxi. 1: 633. 1992; L. H. Zhou in Fl. Qinghai. 1: 346. 1997; M. Johnson, Klematis 337. 1997; Grey-Wilson, Clematis 167, fig. 121. 2000; J. Q. Fu in Fl. Loess Plat. 1: 440. 2000; Brandenb., *Meclatis* in *Clematis* 151. 2000, p.p., excl. syn. *C. hilariae* Koval., *C. sarezica* Ikonn. etc.; Grabovsk. in Grubov, Pl. As. Centr. 12: 81. 2001; W. T. Wang & Barth. in Fl. China 6: 367. 2001.—*C. orientalis* L. ssp. *thunbergii* (Steud.) Kuntze var. *intricata* (Bunge) Kuntze in Verh. Bot. Ver. Brand. 26: 125. 1885, p.p., excl. pl. Himal.—*C. orientalis* L. var. *intricata* (Bunge) Maxim. in Bull. Acad. Sci. St.-Petersb. 22: 210. 1877; et in Mém. Biol. 9: 583. 1877; Forbes & Hemsl. in J. Linn. Soc. Bot. 23: 6. 1886; Maxim., Fl. Tangut. 3. 1889; Enum. Pl. Mongol. 4. 1889; et in Acta Hort. Petrop. 11: 5. 1890. Type: China borealis, 1831, *Bunge s.n.* (holotype, LE!; isotypes, G!, P!, PE!).

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

C. glauca Willd. var. *angustifolia* auct. non Ledeb.: Rehd. in J. Arn. Arb. 4: 190. 1923; Hand.-Mazz. in Acta Hort. Gotob. 13: 217. 1939; Anonymous in Fl. Beijing 1: 305. 1962.

C. orientalis L. var. *aethusaefolia* Kozlov in Publ. Mus. Hoangho Paiho Tien Tsin 22: 14. 1933, nom. illegit., non *C. aethusaefolia* Turcz.

黄花铁线莲

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

Woody 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-denticulate, 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; 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(–2.5) × 0.5–0.8(–1) 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** (北京): David 399 (K, LE, P), 2904 (P), Bretschneider 24 (K, LE), Tatarinow s.n. (LE), K. K. Tsoong (钟观光) s.n., T. N. Liou (刘慎谔) s.n., T. F. King (金德福) 346 (PE). **Gansu** (甘肃): Dingxi (定西), Huanghe Exped. (黄河队) 56-10129 (PE); Huan Xian (环县), C. Hou & P. L. Yang (侯昌, 杨平礼) 154 (PE); Huining (会宁), Huanghe Exped. (黄河队) 56-5800 (PE); Jingyuan (靖远), Licent 6158 (K); Minqin (民勤), Hexi Exped. (河西队) 2022 (PE); Min Xian (岷县), T. P. Wang (王作宾) 4990 (PE); Pingliang (平凉), Z. Y. Li (李宗英) 115 (PE); Sunan (肃南), Qinghai-Gansu Exped. (青甘调查队) 60-3292 (PE); Tianzhu (天祝), Y. Q. He (何业祺) 4395 (PE); Wuwei (武威), P. C. Kuo (郭本兆) 3520 (NAS); Yongchang (永昌), F. M. Xu s.n. (PE); Yuzhong (榆中), P. G. Wu (吴培根) 651043 (NAS); Zhenyuan (镇原), T. P. Wang (王作宾) 17246 (IBSC, PE); Zhugqu (舟曲), W. Y. Hsia (夏纬瑛) 6411 (PE). **Hebei** (河北): Dongling (东陵), Licent 9266 (TIE); Fuping (阜平), K. M. Liou (刘继孟) 3279 (NAS, PE); Huailai (怀来), Meyer 1047 (K), T. F. King (金德福) 257 (PE, S); Laiyuan (涞源), K. M. Liou (刘继孟) 2573, 2820 (PE); Neiqiu (内丘), Y. Liou (刘瑛) 13008 (NAS, PE); Pingshan (平山), Chanet 671 (TIE); Xiaowutai Shan (小五台山), Hancock s.n. (LE), Limpricht 501 (S), H. Smith 297 (S, UPS), H. W. Kung (孔宪武) 1118, T. P. Wang (王作宾) 617 (PE); Xingtai (邢台), H. F. Chow (周汉藩) 43371 (PE); Xuanhua (宣化), Licent 9711 (G); Zhangbei (张北), X. L. Huang et al. (黄秀兰等) 2494, 3481 (PE); Zhangjiakou (张家口), Y. W. Tsui (崔友文) 447 (PE); Zhuolu (涿鹿), C. G. Yang (杨朝广) 1149 (PE). **Henan** (河南): Yiyang (宜阳), Henan Exped. (河南队) 59-6351 (IBSC, PE). **Liaoning** (辽宁): Lingyuan (凌源), C. S. Wang (王崇书) 3022 (IBSC). **Nei Mongol** (内蒙古): Dengkou (磴口), T. P. Wang (王作宾) 2404 (PE); Fengzhen (丰镇), Y. W. Tsui (崔友文) 926 (PE); Helan Shan (贺兰山), Przewalski 243 (LE), Y. Q. Ma (马毓泉) 265 (HIMC); Hohhot (呼和浩特), Y. Q. Ma (马毓泉) s.n. (HIMC); Liangcheng (凉城), Y. Q. Ma (马毓泉) 50 (HIMC); Ordos (鄂尔多斯), Przewalski s.n. (K, LE), Licent 6920 (K, TIE), 6851, 6873, 6880, 6932 (TIE), W. Y. Hsia (夏纬瑛) 3769 (PE); Urad Qianqi (乌拉特前旗), X. Z. Lang (郎学忠) 323 (PE); Zhuozi (卓资), Y. Q. Ma & Q. R. Wu (马毓泉, 吴庆茹) 188 (HIMC). **Ningxia** (宁夏): Guyuan (固原), Huanghe Exped. (黄河队) 56-2356 (PE); Haiyuan (海原), Huanghe Exped. (黄河队) 56-5501 (PE); Helan Shan (贺兰山), Y. Y. Pai (白银元) 173 (PE); Pingluo (平罗), Z. W. Zhang (张振万) 391 (PE); Tongxin (同心), Huanghe Exped. (黄河队) 56-8666 (PE); Zhongning (中宁), Z. W. Zhang (张振万) 306 (PE). **Qinghai** (青海): Datong (大通), Przewalski s.n. (LE), K. M. Liou (刘继孟) 6504 (PE); Guide (贵德), T. N. Ho (何廷农) 1027 (PE); Huangyuan (湟源), P. C. Tsoong (钟补求) 8921 (PE); Huzhu (互助), K. M. Liou (刘继孟) 5881 (PE); Minhe (民和), T. N. Ho (何廷农) 715 (PE); Qilian (祁连), P. C. Kuo (郭本兆) 12568 (PE); Regio Tangut, Przewalski s.n. (LE, S); Xining (西宁), K. M. Liou (刘继孟) 5904 (PE). **Shaanxi** (陕西): Hengshan (横山), K. T. Fu (傅坤俊) 7105 (IBSC, PE); Huanglong (黄龙), K. T. Fu (傅坤俊) 3097 (NAS, PE); Jingbian (靖边), K. T. Fu (傅坤俊) 7390 (IBSC, PE); Suide (绥德), K. T. Fu (傅坤俊) 6748 (PE); Wuqi (吴旗), Huanghe Exped. (黄河队) 56-8253 (PE); Yulin (榆林), Huanghe Exped. (黄河队) 56-7010 (PE). **Shanxi** (山西): Datong (大同), Licent 200 (TIE), Shanxi Exped. (山西考察队) 53-770 (PE); Fenyang (汾阳), K. M. Liou (刘继孟) 2724 (PE); Jiaocheng (交城), Licent 2163 (IBSC, K); Jiexiu (介休), K. M. Liou (刘继孟) 1340 (PE); Lingchuan (凌川), K. M. Liou (刘继孟) 7488, 7513 (PE); Lishi (离石), Y. W. Tsui (崔友文) 10310 (NAS); Taiyuan (太原), Licent 10857 (G), Limpricht 680 (S), Yabe s.n. (NAS); Wutai Shan (五台山), Hancock 10, Licent 2036, K. M. Liou (刘继孟) 2643 (K), T. Tang (唐进) 1053 (NAS, PE), K. C. Kuan & Y. L. Chen (关克俭, 陈艺林) 2239 (PE); Xi Xian (隰县), T. P. Wang (王作宾) 3156 (PE). **Sichuan** (四川): Kangding (康定), Zhonggu (中谷), K. C. Kuan et al. (关克俭等) 389 (PE).

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

3b. var. intrapuberula W. T. Wang, var. nov. Type: China. Gansu (甘肃): Heshui (合水),

Jiajia Valley (贾家沟), in shady places near road, woody vine, flowers yellow, 1954-07-07, *Huanghe Exped.* (黄河队) 54-461 (holotype, PE; isotype, IBSC).

毛萼黄花铁线莲

A var. *intricata* differt sepalis intus puberulis.

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

China (E Gansu).

3c. var. *purpurea* Y. Z. Zhao in Fl. Intramongol. 2: 242, 369, pl. 125, fig. 11. 1978; P. P. Ling in Fl. Reip. Pop. Sin. 28: 142. 1980; Y. Z. Zhao in Fl. Intramongol., ed. 2, 2: 533. 1990; W. T. Wang & Barth. in Fl. China 6: 367. 2001. Type: China. Nei Mongol (内蒙古): Daqing Shan (大青山), Halaqingou (哈拉沁沟), in *Betula* forest, 1964-09-06, Y. Q. Ma (马毓泉) 28 (holotype, not seen).

紫萼铁线莲

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.

An unclear form:

Clematis glauca Willd. var. ***akebioides*** (Maxim.) Rehd. & Wils. f. ***phaeantha*** Rehd. in J. Arn. Arb. 1: 195. 1920; Hand.-Mazz. in Acta Hort. Gotob. 13: 218. 1939; Rehd., Man. Cult. Trees & Shrubs, ed. 2, 219. 1951; Grey-Wilson in Kew Bull. 44: 46. 1989; et *Clematis* 167. 2000. — *C. glauca* Willd. var. *phaeantha* (Rehd.) Rehd., Man. Cult. Trees & Shrubs 229. 1927. — *C. intricata* Bunge var. *phaeantha* (Rehd.) M. Johnson, *Clematis* 840. 1997, p.p., excl. Hummel 4137. Type: Plant cultivated in Highland Park, Rochester, New York, U.S.A., 1918-09-20, W. L. J. Edson s.n. (holotype, GH!).

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.

4. *Clematis tibetana* Kuntze in Verh. Bot. Ver. Brand. 26: 172. 1885; Grey-Wilson in Kew Bull. 44: 46. 1989; Naithani, Flow. Pl. India, Nepal & Bhutan 9. 1990; Rau in Sharma et al., Fl. Ind. 1: 78. 1993; M. Johnson, *Clematis* 356. 1997; Grey-Wilson, *Clematis* 168. 2000; Brandenb., *Meclatis in Clematis* 164. 2000, p.p., excl. syn. *C. akebioides* (Maxim.) Veitch et *C. ladakhiana* Grey-Wilson; W. T. Wang & Barth. in Fl. China 6: 365. 2001. Type: India. Kumaon, *Strachey & Winterbottom* s.n. (holotype, K; isotype, BM!).

中印铁线莲

This species consists of four varieties occurring in the western Himalayas, the Pamirs and adjacent mountains.

4a. var. tibetana Fig. 6: A, B

Woody 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:

China. Xinjiang (新疆): Pamir (帕米尔), Jarkand, C. Persson 19, Norstedt 4 (S); Taxkorgan (塔什库尔干), Inst. Northwest Bot. Exped. (西北植物所队) 893 (PE); Wuqia (乌恰), Inst. Northwest Bot. Exped. (西北植物所队) 1849, 2073 (PE, WUK). **Xizang** (西藏): Pulan (普兰), Qinghai-Xizang Exped. (青藏队) 76-8422, 76-13271 (PE); Without precise locality, J. D. Hooker & Thomson 1077 (P).

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).

4b. var. vernayi (C. E. C. Fisch.) W. T. Wang in Acta Phytotax. Sin. 36: 164. 1998; W. T. Wang & Barth. in Fl. China 6: 365. 2001.—*C. vernayi* C. E. C. Fisch. in Bull. Misc. Inform. Kew 1937: 95. 1937; Gupta in Bull. Nat. Bot. Gard. Lucknow 80: pl. 45. 1963.—*C. tibetana* Kuntze ssp. *vernayi* (C. E. C. Fisch.) Grey-Wilson in Kew Bull. 44: 47. 1989; M. Johnson, Klematis 356. 1997; Grey-Wilson, Clematis 169, figs. 122–126. 2000; Brandenb., *Meclatis* in *Clematis* 175. 2000, p.p., excl. syn. *C. tangutica* var. *pubescens* M. C. Chang & P. P. Ling et *C. tibetana* ssp. *vernayi* var. *dentata* Grey-Wilson et var. *laciniifolia* Grey-Wilson. Type: China. Xizang: 12 ml NW of Gyantze, alt. 4150 m, Cutting & Vernay 57 (holotype, K; isotype, GH!).

C. chrysantha Ulbr. var. *brevipes* Tamura in Acta Phytotax. Geobot. 23: 30. 1968. Type: Nepal. Pijehl, 1958-09, *Namikawa 124* (holotype, KYO!).

?*C. orientalis* L. var. *uniflora* Tamura in Acta Phytotax. Geobot. 37: 156. 1986. Type: Nepal. Mustang Distr.: near Muktinath, alt. 3300 m, 1976-10-11, *Tabata et al. 9269* (holotype, KYO).

C. tibetana Kuntze var. *lineariloba* W. T. Wang in Acta Phytotax. Sin. 36: 164. 1998; W. T. Wang & Barth. in Fl. China 6: 365. 2001. Type: China. Xizang (西藏): Nyingchi (林芝), Nixi, 1965-07-29, *Y. T. Zhang & K. Y. Lang* (张永田, 郎楷永) 1089 (holotype, PE!).

C. tibetana auct. non Kuntze: Hara in Hara & Williams, Enum. Flow. Pl. Nepal 2: 16. 1979.

C. tenuifolia auct. non Royal: Ling in Fl. Reip. Pop. Sin. 28: 140, pl. 41. 1980; M. Y. Fang in Fl. Xizang. 2: 90. 1985.

厚萼中印铁线莲 Fig. 6: C, D

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).

Woody vine. Leaflets or their terminal lobes lanceolate, narrowly ovate, or linear, margin entire or subentire. Fl. May–Sept.

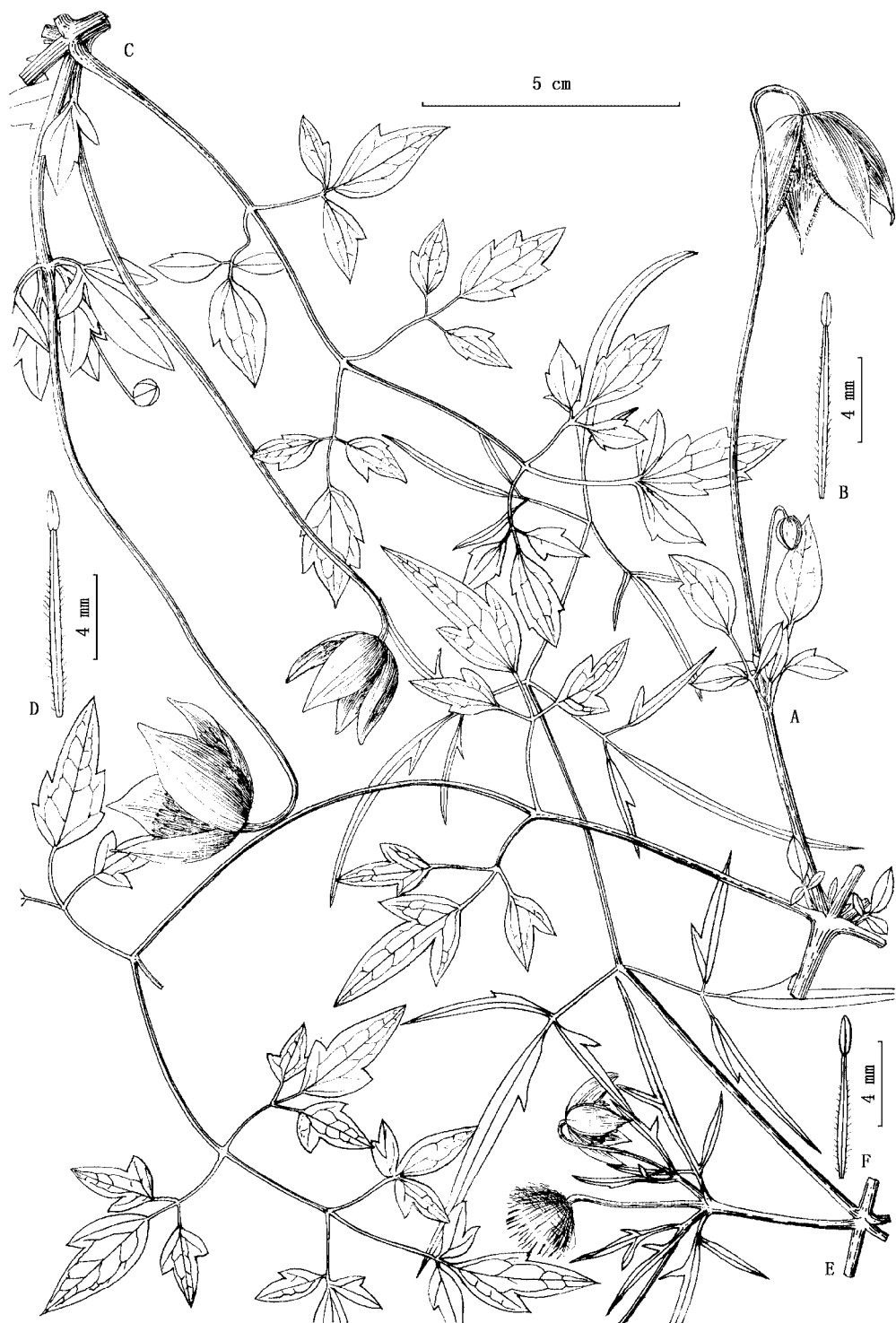


Fig. 6. A, B, *Clematis tibetana* Kuntze var. *tibetana*. A, flowering branch; B, stamen. Drawn from Shrestha 5315. C, D, *C. tibetana* var. *vernayi* (C. E. C. Fisch.) W. T. Wang. C, flowering branch; D, stamen. Drawn from Qinghai-Xizang Exped. 76-7153. E, F, *C. ladakhiana* Grey-Wilson. E, flowering branch; F, stamen. Drawn from Thomson s.n.

China (SW Xinjiang, S Xizang), Kashmir Region, and W & N Nepal. In bushes, on slopes or on gravelly 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 (张经纬) 2405 (PE); Bomi (波密), T. S. Ying & D. Y. Hong (应俊生, 洪德元) 1057 (PE); Changphu Chu, Wager 228 (K); Gyaca (加查), Qinghai-Xizang Exped. (青藏队) 75-656 (PE); Gyangzê (江孜), Ludlow 75, Walton 128 (BM); Gyirong (吉隆), Qinghai-Xizang Exped. (青藏队) 76-7153 (PE); Khambajary, Younghusband 70 (G, P); Kongbo: Pasum Tso, Ludlow et al. 13928 (BM); Lhasa (拉萨), Dungbou s.n. (K), Y. T. Zhang & K. Y. Lang (张永田, 郎楷永) 2662 (PE); Mainling (米林), Med. Pl. Exped. (药植队) 72-4321 (PE); Namling (南木林), Med. Pl. Exped. (中草药队) 72-850 (PE); Nang Xian (郎县), Med. Pl. Exped. (中草药队) 72-4246 (PE); Ngamring (昂仁), Z. W. Zhang (张振万) 2701 (PE); Nyalam (聂拉木), Y. T. Zhang & K. Y. Lang (张永田, 郎楷永) 4152 (PE); Nye, Ludlow & Sheriff 1944 (BM); Nyang Chu, Ludlow, Sherriff & Taylor 6199 (BM, G); Nyngchi (林芝), Y. T. Zhang & K. Y. Lang (张永田, 郎楷永) 1002 (PE); Qushui (曲水), G. X. Fu (傅国勋) 71 (PE); Rinbung (仁布), Xizang Exped. (西藏队) 61-1519 (PE); Sa'gya (萨迦), Xizang Exped. (西藏队) 61-1647 (PE); Tingri (定日), Y. T. Zhang & K. Y. Lang (张永田, 郎楷永) 3711 (PE); Zayü (察隅), Z. C. Ni et al. (倪志诚等) 1047 (PE); Zogang (左贡), Qinghai-Xizang Exped. (青藏队) 76-12047 (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 (K); Shimen, Grey-Wilson & Philips 534 (K).

4c. var. pamiralaica (Grey-Wilson) W. T. Wang, st. nov. — *C. pamiralaica* Grey-Wilson in Kew Bull. 44: 54, fig. 5. 1989; M. Johnson, Klematis 347. 1997; W. T. Wang in Acta Phytotax. Sin. 36: 165. 1998; Grey-Wilson, Clematis 171. 2000; Grabovsk. in Grubov, Pl. As. Centr. 12: 83. 2001; W. T. Wang & Barth. in Fl. China 6: 365. 2001, syn. nov. Type: Tadjikistan. Central Pamir, Murghäb, alt. 3350 m, 1958-06-29, *Tolmacheva 4367* (holotype, K!).

C. tangutica (Maxim.) Korsh. in Bull. Acad. Sci. St.-Petersb. 9: 399. 1898, p.p. quoad specim. cit.; Krasch. in Kom., Fl. URSS 7: 322. 1937, p.p.

C. tibetana Kuntze ssp. *tangutica* (Maxim.) Brandenb., *Meclatis* in *Clematis* 169. 2000, p.p. quoad syn. *C. pamiralaica* Grey-Wilson.

帕米尔铁线莲 Fig. 5: A, B

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 Tadjikistan. 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. (西北植物所队) 698 (PE, WUK); Pishan (皮山), B. S. Li & D. Zheng (李勃生, 郑度) 11675 (PE); Suget Karaul, Thundlov 607 (BM); Taxkorgan (塔什库勒干), Inst. Northwest Bot. Exped. (西北植物所队) 1221 (PE, WUK); Tagdumbash Pamir, Appleton 41 (LE).

Tadjikistan. Koung-Koul, Lacoste s.n. (P); Pamir: Kara Kul, Kuschakewicz s.n., S. Hedin s.n. (S); Pamir Mts., Fedtschenko s.n. (LE); Ak-baisal, 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!).

C. tibetana ssp. *vernayi* auct. non (C. E. C. Fisch.) Grey-Wilson: Brandenb., *Meclatis* in *Clematis* 175. 2000, p.p. quoad syn. *C. tibetana* ssp. *vernayi* var. *laciniifolia* Grey-Wilson.

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, Dunaihi, Polunin, Sykes & Williams 231 (BM); Kali Gandaki, Titre, N of Dana, Stainton, Sykes & Williams 7543 (BM).

5. *Clematis ladakhiana* Grey-Wilson in Kew Bull. 44: 49. 1989; Rau in Sharma et al., Fl. Ind. 1: 68. 1993; M. Johnson, Klematis 341. 1997; Grey-Wilson, Clematis 170, fig. 127. 2000; Grabovsk. in Grubov, Pl. As. Centr. 12: 81. 2001. Type: Kashmir Region. Nubra, Thomson s.n. (holotype, K!; isotype, LE!).

C. orientalis L. var. *acutifolia* Hook. f. & Thoms., Fl. Ind. 9. 1885; et in Hook. f., Fl. Brit. Ind. 1: 5. 1872. Type: Kashmir Region. Ladakh, Thomson s.n. (syntype, K—Grey-Wilson, 1989).

C. orientalis ssp. *normalis* var. *daurica* (Pers.) Kuntze f. *thomsonii* Kuntze in Verh. Bot. Ver. Brand. 26: 124. 1885. Type: China. Xizang (西藏): Without precise locality, Thomson s.n. (holotype, B; isotypes, GH!, S!).

C. orientalis ssp. *normalis* var. *daurica* f. *dyeri* Kuntze in l.c. Type: Kashmir Region. Askole, Clarke 30329B (holotype, K).

?*C. orientalis* L. var. *longifoliolata* Tamura in Kitamura, Pl. W Pakist. & Afghan. 58. 1964. Type: Karakoram: Askole, alt. 3200 m, 1955-07-24, Nakao s.n. (holotype, KYO).

C. tibetana auct. non Kuntze: Brandenb., *Meclatis* in *Clematis* 165. 2000, p.p., quoad syn. *C. ladakhiana* Grey-Wilson.

Fig. 6: E, F

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 (西藏): from Kargyay, to Lingti, Stolzka 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).

6. *Clematis glauca* Willd., Berl. Baumz. 65. t. 4, fig. 1. 1796; Poir., Encyc. Suppl. 2: 295. 1811; DC., Syst. 1: 136. 1818; et Prodr. 1: 3. 1824; Ledeb., Fl. Ross. 1: 3. 1841; Prantl in Bot. Jahrb. 9: 261. 1888; Krasch. in Kom., Fl. URSS 7: 321. 1937; Gamayou. in Fl. Kazakhst. 4:

72, t. 9, fig. 4. 1961; Anonymous in Iconogr. Corm. Sin. 1: 740. 1972; P. P. Ling in Fl. Reip. Pop. Sin. 28: 143. 1980, p.p.; Grubov, Key Vasc. Pl. Mongol. 113. 1982; Liou f., Fl. Desert. Sin. 1: 485. 1985; J. G. Liu in Fl. Xinjiang. 2: 291, pl. 79, figs. 3, 4. 1994; Grabovsk. in Grubov, Pl. As. Centr. 12: 79. 2001; W. T. Wang & Barth. in Fl. China 6: 366. 2001, p.p.—*Meclatis sibirica* Spach, Hist. Nat. Veg. Phan. 7: 273. 1839.—*C. orientalis* L. var. *glauca* (Willd.) Maxim., Fl. Tangut. 3. 1889, quoad nomen tantum. Type: In Herb. Willd., n. 10474, from plant cultivated in the Botanical Garden, Berlin—Grey-Wilson, 1989; Brandenburg, 2000).

C. daurica Pers., Synop. 2: 99. 1806; DC., Syst. 1: 153. 1818; et Prodr. 1: 7. 1824; Ledeb., Fl. Ross. 1: 4. 1841.—*C. orientalis* L. ssp. *normalis* Kuntze var. *daurica* (Pers.) Kuntze in Verh. Bot. Ver. Brand. 26: 123. 1885; Grey-Wilson in Kew Bull. 44: 43. 1989; et *Clematis* 165, fig. 118. 2000; M. Johnson, *Clematis* 345. 1997. Type: Without precise locality, *Patrin 10502* (holotype, P-Ju—Brandenburg, 2000).

C. orientalis ssp. *normalis* var. *daurica* f. *persoonii* Kuntze in Verh. Bot. Ver. Brand. 26: 124. 1885. Type: Specimen from plant collected from Dahuria (syntype, P-Ju); specimen from plant cultivated in Bot. Gard., Paris (syntype).

C. orientalis auct. non L.: Brandenb., *Meclatis* in *Clematis* 130. 2000, p.p., quoad syn. *C. glauca* Willd. et *C. daurica* Pers.

粉绿铁线莲 Fig. 7: A–C

Woody vine. Branches 4–8-sulcate, sparsely puberulous or subglabrous. Leaves 1–2-pinnate; leaflets blue-green, papery or herbaceous, narrowly ovate, lanceolate, elliptic, or ovate, (1–)2–5 × 0.6–1.8 cm, apex acute, base broadly cuneate, margin entire, undivided or near base 1–2-lobed, adaxially glabrous, abaxially very sparsely puberulous, basal veins slightly prominent; petioles 2.5–6 cm long, subglabrous. Cymes axillary, 1–7(–many)-flowered; peduncles 1–4.6 cm long, glabrous; bracts petiolate, ovate or lanceolate, 0.8–1.6 cm long. Flower 3.5–3.8 cm in diam.; pedicel 2–7 cm long, near apex puberulous. Sepals 4, ascending or nearly spreading, yellow, thinly papery, narrowly lanceolate or narrowly oblong, 1.4–2.3 × 0.4–0.7 cm, glabrous or sparsely puberulous on both surfaces, margin velutinous, apex attenuate or acute. Stamens 7–14 mm long; anthers linear or broadly linear, 2–3.5 mm long, glabrous, apex obtuse, rarely minutely apiculate. Ovaries pubescent; styles 7–10 mm long, densely villous. Achenes elliptic or ovate, 1.8–2.2 × 1.2–1.6 mm, pubescent, rimmed; persistent styles 3–5 cm long, plumose. Fl. Jul. –Sept.

China (C Gansu, Xinjiang), Kazakhstan, Kyrgyzstan, Mongolia, and Russia (S Siberia). On slopes or waste lands, or by rivers; alt. 500–2000 m.

Additional specimens examined:

China. Gansu (甘肃): Kangle (康乐), Y. S. Lian (廉永善) 96873 (PE). **Xinjiang** (新疆): Altay Shan (阿尔泰山), R. C. Ching (秦仁昌) 2332 (PE); Burqin (布尔津), Y. R. Ling (林有润) 74-1008 (PE); Fukang (阜康), K. C. Kuan (关克俭) 4191 (PE); Hoxud (和硕), A. J. Li & J. N. Zhu (李安仁, 朱家柮) 7705 (PE); Korla (库尔勒), A. J. Li & J. N. Zhu (李安仁, 朱家柮) 8641 (PE); Nilka (尼勒克), K. C. Kuan (关克俭) 4046 (PE); Tacheng (塔城), Y. R. Ling (林有润) 74-1360 (PE); Turpan (吐鲁番), Z. M. Zhang (张治明) 285 (PE); Ulatai (乌拉斯台), K. C. Kuan (关克俭) 3816 (PE); Ürümqi (乌鲁木齐), A. J. Li & J. N. Zhu (李安仁, 朱家柮) 10949 (PE); Wenquan (温泉), Hoch & J. R. Chen 86-308 (PE).

Kazakhstan. Kungej-Alatau, Roldugin 5367 (US); Semipalatinsk, Korshinsky s.n. (US).

Kyrgyzstan. ad fluv. Tiup prope Santash, Skvortsov s.n. (GH).

Mongolia. Kobdosk, Baranov s.n. (LE); Near Lake Kirghiz-nor, Potanin s.n. (LE).

Russia. Altai Mountain: Chuya River, Elias, Weber, Tomb & Krasnoborov 4411 (PE); Tuva AR: Kazil, Elias, Shetler & Murray 7594 (US); Tuvinskaja AR: Erzinsk, Timochia & Mrichin 2340 (LE); Siberia, Turczaninow s.n. (P).

7. *Clematis zandaensis* W. T. Wang in Acta Phytotax. Sin. 36: 165, fig. 2: 1–4. 1998; Grey-Wilson, *Clematis* 174. 2000; W. T. Wang & Barth. in Fl. China 6: 366. 2001. Type: China.

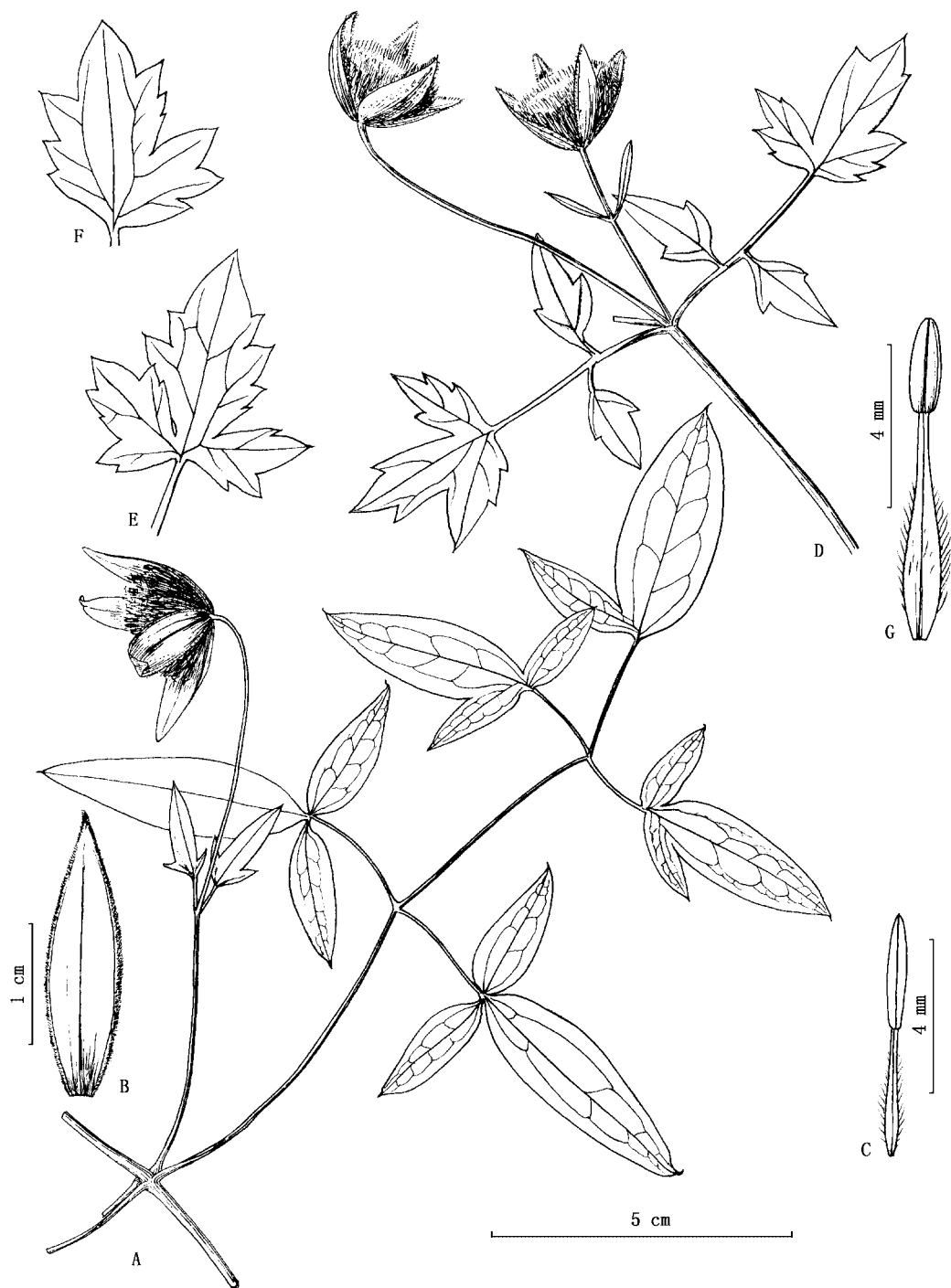


Fig. 7. A–C, *Clematis glauca* Willd. A, flowering branch; B, sepal outside; C, stamen. Drawn from *Skvortsov s.n.* D–G, *C. zandaensis* W. T. Wang. D, flowering branch; E, F, leaflets; G, stamen. Drawn from *Qinghai-Xizang Exped. 76-8160*.

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!).

C. graveolens auct. non Lindl.: P. P. Ling in Fl. Reip. Pop. Sin. 28: 144. 1980; M. Y. Fang in Fl. Xizang. 2: 89. 1985.

札达铁线莲 Fig. 7: D–G

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 5.4–7 cm long. Cymes axillary, 1–3-flowered; peduncles 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).

8. *Clematis serratifolia* Rehd. in Mitt. Deutsch. Dendr. Ges. 248. 1910; et in Repert. Sp. Nov. 13: 362. 1914; Bailey in Stand. Cyclop. Hort. 1: 798. 1914; Krasch. in Kom., Fl. URSS 7: 321. 1937; Nakai in J. Jap. Bot. 13 (7): 1. 1937; Kitag., Lineam. Fl. Mansh. 218. 1939; Ohwi, Fl. Japan 442. 1965; Liou et al., Fl. Pl. Herb. Chinae Bor.-Or. 3: 173, pl. 75, figs. 4–7. 1975; T. B. Lee, Ill. Fl. Korea 342, fig. 1368. 1979; P. P. Ling in Fl. Reip. Pop. Sin. 28: 143, fig. 16. 1980; Kitamura & Murata, Colour. Ill. Herb. Pl. Japan, rev. ed., 2: 225. 1980; Tamura in Satake et al., Wild Flow. Japan 2: 71. 1982; Grey-Wilson in Kew Bull. 44: 59. 1989; Ohwi & Kitag., New Fl. Japan 680. 1992; Luferov in Pl. Vasc. Or. Extr. Soviet. 7: 97. 1995; Y. N. Lee, Fl. Korea 167, fig. 494. 1996; M. Johnson, *Clematis* 349. 1997; Grey-Wilson, *Clematis* 175, figs. 133, 134. 2000; Brandenb., *Meclatis* in *Clematis* 160, fig. 221. 2000; W. T. Wang & Barth. in Fl. China 6: 366. 2001. Type: Korea. Ping Yang, 1905-09-18, *Jack s.n.* (holotype, GH!).

C. orientalis L. var. *serrata* Maxim. in Bull. Acad. Sci. St.-Petersb. 9: 21. 1879; Nakai in J. Coll. Sci. Univ. Tokyo 26: 7. 1909.—*C. intricata* Bunge var. *serrata* (Maxim.) Kom. in Acta Hort. Petrop. 22: 289. 1904.—*C. serrata* (Maxim.) Kom. in Kom. & Alis., Key Pl. Far. East Reg. USSR 1: 549. 1931. Type: Manshuria ross. austr., 1872-08-10, *Goldenstadt* 255 (holotype, LE!).

C. orientalis L. var. *wilfordi* Maxim. in l.c.; Nakai in l.c.—*C. eriopoda* Maxim. var. *wilfordi* (Maxim.) Kuntze in Verh. Bot. Ver. Brand. 26: 165. 1885; Huth in Bull. Herb. Boiss. 5: 1064. 1897; Matsum., Ind. Pl. Japan 2: 110. 1912.—*C. wilfordi* (Maxim.) Kom. in Kom. & Alis., Key Far East Reg. USSR 1: 549. 1931.—*C. serratifolia* Rehd. f. *wilfordi* (Maxim.) Kitag., Neu-Lineam. Fl. Mansh. 299. 1979. Type: China. Without precise locality: Coast of Manchuria, 1859, *Wilford s.n.* (holotype, LE!; isotypes, G!, UPS!).

C. sibiricoides Nakai in J. Jap. Bot. 23: 13. 1949. Type: Japan. Jeso: Prov. Kitami Wokka-nai, 1946-07-30, *Hiraoka Tomie s.n.* (holotype, TI!).

齿叶铁线莲 Fig. 8: A, B

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,

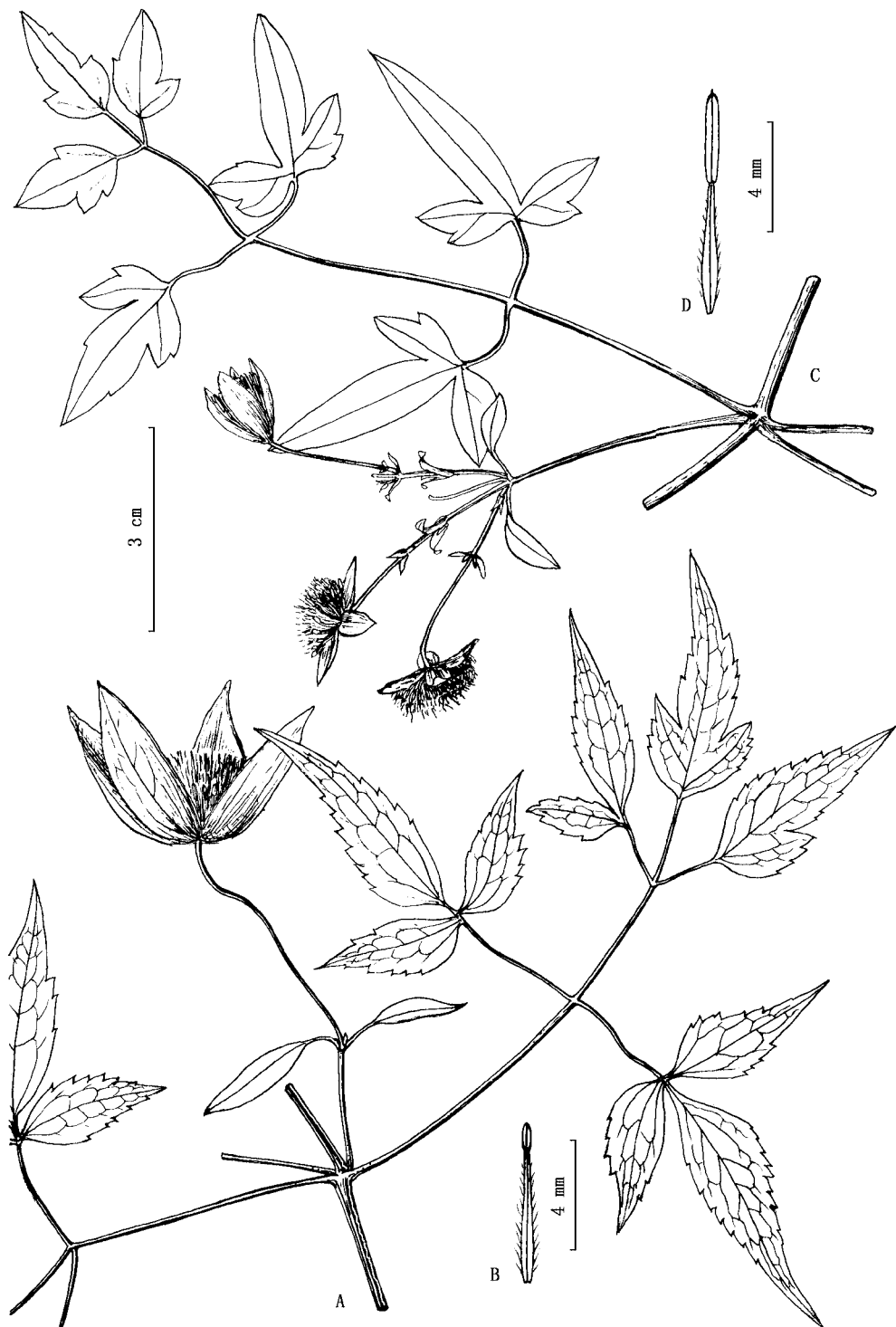


Fig. 8. A, B, *Clematis serratifolia* Rehd. A, flowering branch; B, stamen. Drawn from Sato 3039. C, D, *C. orientalis* L. var. *orientalis*. C, flowering branch; D, stamen. Drawn from Sintenis 848.

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 petiolate 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 (长白山), J. J. Chien (钱家驹) 799 (PE); Helong (和龙), Yanbian Exped. (延边队) 59-792 (PE); Hunchun (珲春), P. Y. Fu et al. (傅沛云等) 798 (PE); inter Kirin et Omosa, Komarov 703 (LE, P), 710 (1896-08-28, K); Linjiang (临江), S. X. Li (李书心等) 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 (林长清) 1218 (PE); Caohekou (草河口), Yabe s.n. (NAS); Kuandian (宽甸), S. C. Tsui (崔顺昌) 338 (PE); Youyan (岫岩), W. Wang et al. (王薇等) 1487 (PE).

Korea. Bakuho, Uchiyama s.n. (NAS); He-chun, Mills s.n. (PE); Kangkai, Mills s.n. (PE); Kapsan, Komarov s.n. (PE); Lyongdam, Mills s.n. (PE); Prov. Hengkyo: Tumen-Yalu divide, E. H. Wilson 8927 (GH, US); Prov. Kogen: Kongo-san, E. H. Wilson 10711 (GH, K, US); Taebak-san, Hagman 272 (UPS); Un-czchen-gen, Komarov 710 (1897-07-01, GH, K).

Russia. Prov. Primorje: near Vladivostok, Skvortsov 54 (G, GH, LE), Topping 2436 (US), Ulanova 6884 (G, LE).

9. *Clematis hilariae* Koval. in Not. Syst. Herb. Inst. Bot. Acad. Sci. Uzbek. 18: 34. 1967; Grey-Wilson in Kew Bull. 44: 55, fig. 6: A–C. 1989, p.p., excl. syn. *C. sarezica* Ikonn.; M. Johnson, *Clematis* 336. 1997; Grey-Wilson, *Clematis* 174, fig. 132. 2000. Type: Plants cultivated in Bot. Gard. Sci. Uzbek. from seeds collected in the Pamir Mts. near Ljangan, 1966-09-17, *Kovalevskaja 5541* (holotype, ?; isotypes, G!, LE!, S!).

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. *paucidentata* Tamura in Kitamura, Add. Corr. Fl. Afghan. 92. 1966. Type: Afghanistan. Badakhshan, Wakhlan, Qasideh Valley, Mt. Noshag, 1960-07-20, *Yosii 488* (holotype, KYO!).

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

C. intricata auct. non Bunge: Brandenb., *Meclatis* in *Clematis* 151. 2000, p.p., quoad syn. *C. hilariae* Koval. et *C. chrysantha* Ulbr. var. *paucidentata* Tamura et var. *monantha* Tamura.

Fig. 9: C, D

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 Tadjikistan. On borders of cultivated fields or by rivers; alt. ca. 3000 m.

10. *Clematis sarezica* Ikonn. in Novit. Syst. Pl. Vasc. 14: 231. 1977; M. Johnson, *Clematis* 349. 1997; Grey-Wilson, *Clematis* 174. 2000. Type: Tadjikistan. Badachshan, Lake Sarez, alt. 3350 m, 1958-08-23, *Ikonnikov 5830* (holotype, LE!; isotypes, PE!, S!).

C. hilariae auct. non Koval.: Grey-Wilson in Kew Bull. 44: 55. 1989, p.p. quoad syn. *C. sarezica* Ikonn.

C. intricata auct. non Bunge: Brandenb., *Meclatis* in *Clematis* 151. 2000, p.p., quoad syn. *C. sarezica* Ikonn.

Fig. 9: A, B

Woody 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 shortly 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 Tadjikistan. On grassy banks of lake; alt 3350 m.

11. *Clematis orientalis* L., Sp. Pl. 1: 543. 1753; DC., Syst. 1: 135. 1818; et Prodr. 1: 3. 1824; Ledeb., Fl. Ross. 1: 3. 1841; Trautv. in Bull. Soc. Nat. Mosc. 33: 57. 1860; Boiss., Fl. Orient. 1: 3. 1867; Koch, Dendr. 1: 422. 1869; Hook. f. & Thoms. in Hook. f., Fl. Brit. Ind. 1: 5. 1872, p.p.; Maxim. in Bull. Acad. Sci. St.-Petersb. 22: 211. 1876; Tritram, Fauna & Fl. Palest. 207. 1884; Kuntze in Verh. Bot. Ver. Brand. 26: 123. 1885, p.p.; Maxim., Enum. Pl. Mongol. 3. 1889; Halácsy, Consp. Fl. Graec. 1: 2. 1901; Finet & Gagnep. in Bull. Soc. Bot. France 50: 540. 1903, p.p.; Ostenf. & Pauls in Hendin, S Tibet 6: 3. 1922; Hayek, Prodr. Fl. Penin. Balcan. 1: 322. 1927; Krasch. in Kom., Fl. URSS 7: 322. 1937; Reching., Fl. Aegaea 184. 1943; Parsa, Fl. Iraq 1: 353. 1952; Gamayou. in Fl. Kazakhst. 4: 72. 1961; Tutin, Fl. Europ. 1: 221. 1964; Davis et al., Fl. Turkey 1: 139. 1965; P. P. Ling in Fl. Reip. Pop. Sin. 28: 140. 1980; Liou f., Fl. Desert. Sin. 1: 185. 1985; Grey-Wilson in Kew Bull. 44: 36, fig. 2. 1989; Y. Z. Zhao in Fl. Intramongol., ed. 2, 2: 531. 1990; Riedl & Nasir in Fl. Pakist 193: 93. 1991; Reching., Fl. Iraq 171: 233. 1992; Rau in Sharma et al., Fl. Ind. 1: 72. 1993; J. G. Liu in Fl. Xinjiang. 2: 291. 1994; Heller & Heyn, Consp. Fl. Orient. 444. 1994; M. Johnson, *Clematis* 342. 1997; Grey-Wilson, *Clematis* 163. 2000; Brandenb., *Meclatis* in *Clematis* 130, fig. 2: 10, 11. 2000, p.p.; Grabovsk. in Grubov, Pl. As. Centr. 12: 82. 2001; W. T. Wang & Barth. in Fl. China 6: 367. 2001.—*Meclatis orientalis* (L.) Spach, Hist. Nat. Veg. Phan. 7: 274. 1839.—*Clematis orientalis* L. var. *vulgaris* Trautv. in Bull. Soc. Nat. Mosc. 33: 57. 1860; Maxim., Enum. Pl. Mongol. 4. 1889.—*Viticella orientalis* (L.) W. A. Weber in Phytologia 55: 9. 1984. Type: Dillenius Hort. Eltham. 144, t. 119, fig. 145. 1732 (lectotype, BM!); Dillenium Herb. n. 2868 (typotype, OXF)—Grey-Wilson, 1989; Brandenburg, 2000.

Clematis flava Moench, Method. 296. 1794.—*Clematis orientalis* ssp. *normalis* Kuntze var. *flava* (Moench) Kuntze in Verh. Bot. Ver. Brand. 26: 123. 1885. Type: No type specimen designated.

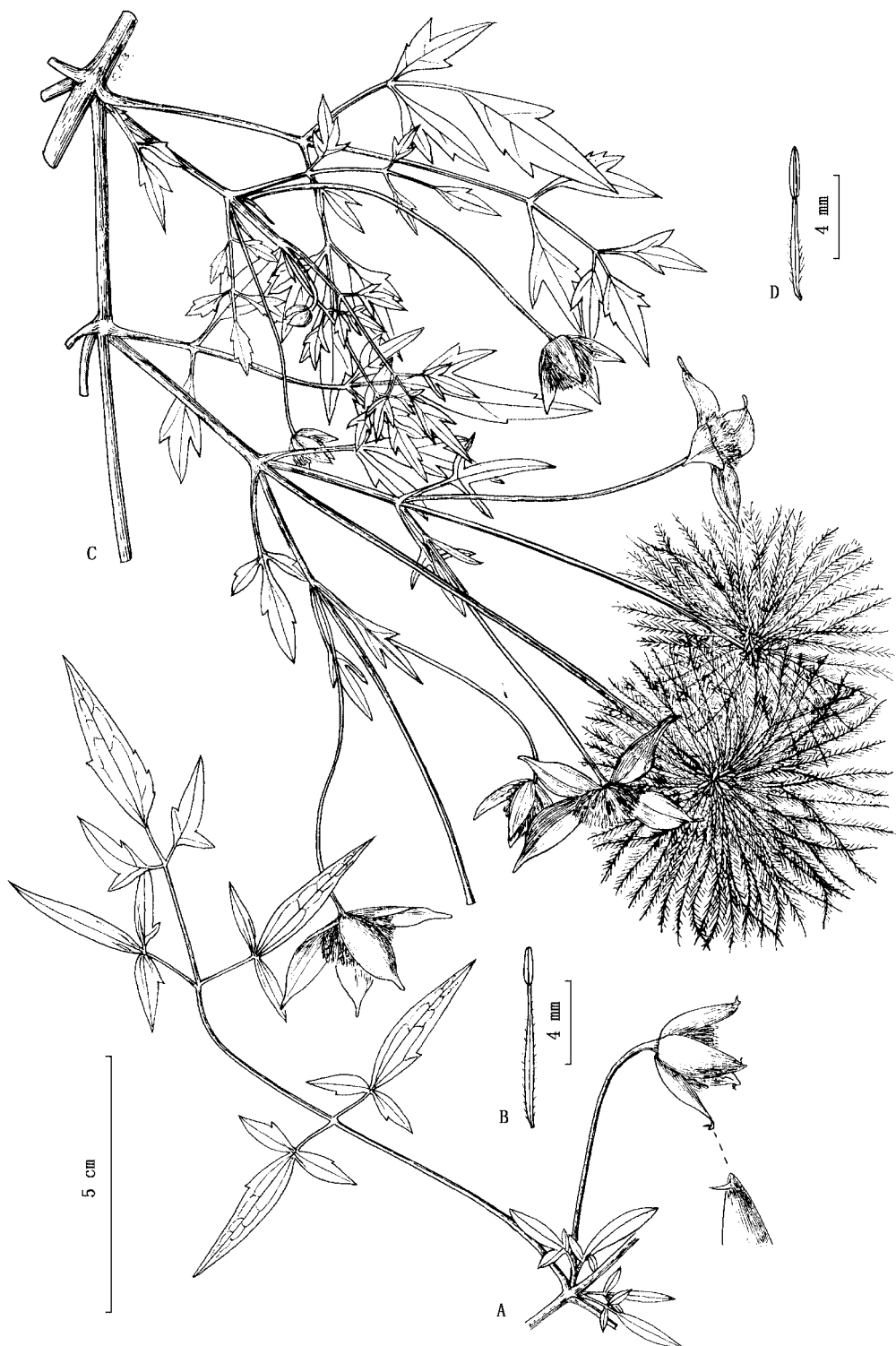


Fig. 9. A, B, *Clematis sarezica* Ikonn. A, flowering branch; B, stamen. Drawn from *Ikonnikov* 5830. C, D, *C. hilariae* Koval. C, flowering and fruiting branch; D, stamen. Drawn from *Kovalevskaia* 5541.

Clematis longicaudata Ledeb., Fl. Ross. 1: 3. 1841.—*C. orientalis* ssp. *wightiana* (Wall.) Kuntze var. *longicaudata* (Ledeb.) Kuntze in l.c. 125. Type: Without field notes (holotype, LE!).

C. glauca Willd. *β. angustifolia* Ledeb., Fl. Ross. 1: 3. 1841. Type: in Mt. Altay. vel fl. Katunja (syntypes).

东方铁线莲

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, Turkmenistan, 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** (甘肃): Anxi (安西), Anonymous 308 (PE); Jiuquan (酒泉), Qinghai-Gansu Exped. (青甘调查队) 60-2966 (PE); Minqin (民勤), Y. Q. He (何业祺) 3332 (PE). **Xinjiang** (新疆): Alataw Shan (阿拉套山), Xinjiang Exped. (新疆队) 78-3835 (PE); Altay Shan (阿尔泰山), R. C. Ching (秦仁昌) 2813 (PE); Aksu (阿克苏), Z. N. Feng (冯肇南) 417 (PE); Fuyun (富蕴), R. C. Ching (秦仁昌) 1892 (PE); Gongliu (巩留), Xinjiang Exped. Inst. Northwest Bot. (西北植物所新疆队) 2667 (PE); Hami (哈密), R. C. Ching (秦仁昌) 122 (PE); Hoxud (和硕), A. J. Li & J. N. Zhu (李安仁, 朱家柮) 7705 (PE); Korla (库尔勒), A. J. Li & J. N. Zhu (李安仁, 朱家柮) 8641 (PE); Lop Nur (罗布泊), Xinjiang Exped. (新疆队) 59-10120 (PE); Manas (玛纳斯), K. C. Kuan (关克俭) 1339 (PE); Nilka (尼勒克), K. C. Kuan (关克俭) 3885 (PE); Qira (策勒), Xinjiang Exped. (新疆队) 56-129 (PE); Shanshan (鄯善), A. J. Li & J. N. Zhu (李安仁, 朱家柮) 6692 (PE); Shawan (沙湾), G. L. Zhu (朱格麟) 5517 (PE); Tacheng (塔城), Y. R. Ling (林有润) 74-1363 (PE); Tian Shan (天山), T. N. Liou (刘慎谔) 2689 (PE); Toksun (托克逊), A. J. Li & J. N. Zhu (李安仁, 朱家柮) 7288 (PE); Turpan (吐鲁番), Z. M. Zhang (张智敏) 294 (PE); Ürumqi (乌鲁木齐), T. N. Liou (刘慎谔) 2891, R. C. Ching (秦仁昌) 3372 (PE); Wenquan (温泉), K. C. Kuan (关克俭) 4560 (PE); Yecheng (叶城), Qinghai-Xizang Exped. (青藏队) 87-764 (PE); Yining (伊宁), Z. M. Zhang (张智敏) 206, Y. X. Liou (刘瑛心) 712 (PE); Yiwu (伊吾), Q. R. Wang (王庆瑞) 4522 (PE); Zhaosu (昭苏), Xinjiang Exped. Inst. Northwest Bot. (西北植物所新疆队) 2593 (PE).

Georgia. Caucasus, Vasak s.n. (G).

Iran. Amol, Hewer 1492 (LE); Khorasan, Koelz 16822 (US), Reching 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. Jacquemont 1162 (P), Stewart 2015 (G).

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

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

Mongolia. Shabarakh Usu, Chaney 583 (US).

Pakistan. Karakorum, Polunin 6414 (G).

Tadzhikistan. Achty, Alexenko s.n. (LE).

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

Turkmenistan. Ashabad, Litwinow 23 (G), Sintenis 848 (US); ad fl. Daino-Ssu, Litwinow 411 (P); Farab, Androsov 2916 (K).

Uzbekistan. Taskent, Ellas, Murray & Newcomba 9873 (PE), Korovina s.n. (G).

11b. var. **albida** (Klotzsch) Kuntze in Verh. Bot. Ver. Brand. 26: 124. 1885.—*C. albida* Klotzsch in Klotzsch & Garke, Bot. Ergeb. Reise Pr. Waldemar 131, t. 40. 1862. Type: W. Himalaya, *Hoffmeister s.n.* (holotype, B).

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:

Pakistan. Kurram Valley, Aitchison 415 (K, P), 455 (GH).

11c. var. **latifolia** Hook. f. & Thoms., Fl. Ind. 1: 9. 1855; et in Hook. f., Fl. Brit. Ind. 1: 5. 1875; Grey-Wilson in Kew Bull. 44: 42. 1989; et *Clematis* 165. 2000; M. Johnson, *Klematis* 346. 1997. Type: India. Himachal Pradesh, Piti, *Munro s.n.* (syntype, K!—Grey-Wilson, 1989).

C. globosa Royle, Ill. Bot. Himal. Mts. 51. 1834; Lauener in Not. R. Bot. Gard. Edinb. 36: 128. 1978.—*C. orientalis* L. var. *globosa* (Royle) Mukerjee in Bull. Bot. Surv. Ind. 1: 140. 1959; Kapoor in Bull. Nat. Bot. Gard. Lucknow 124: 57. 1966. Type: Kashmir Region. Soongnum, *Royle s.n.* (holotype, LIV).

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 × 0.7–3 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).

11d. var. **robusta** Grey-Wilson in Kew Bull. 44: 40. 1989; et *Clematis* 164, fig. 119. 2000; M. Johnson, *Klematis* 346. 1997. Type: Afghanistan. Badakhshan Province: Wakham, between Urgun and Qazideh, alt. 2800 m, 1971-07, *Grey-Wilson & Hewer 1688* (holotype, K!).

C. orientalis L. var. *hindukushensis* Grey-Wilson in Kew Bull. 44: 40. 1989; et *Clematis* 164. 2000; M. Johnson, *Klematis* 345. 1997. Type: Afghanistan. Ghorat Province, 1 mile E of Minaret of Djam, alt. 2000 m, 1971-06, *Grey-Wilson & Hewer 1224* (holotype, K!).

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:

Afghanistan. Badakhshan Province: Wakham, Grey-Wilson & Hewer 1634 (K).

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

11e. var. **tenuifolia** (Royle) Grey-Wilson in Kew Bull. 44: 42. 1989; et Clematis 165. 2000; M. Johnson, Klematis 347. 1997. — *C. tenuifolia* Royle, Ill. Bot. Himal. Mts. 51. 1834. Type: Kashmir Region. Without precise locality, *Royle s.n.* (holotype, LIV).

?*C. baltistanica* Qureshi & Chaudhri in Pakist. Syst. 2: 11. 1978. Type: unknown.

光枝东方铁线莲

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).

Kashmir region. Karakoram, Polunin 6453 (BM).

11f. var. **baluchistanica** Grey-Wilson in Kew Bull. 44: 40. 1989; et Clematis 165. 2000; M. Johnson, Klematis 345. 1997. Type: Pakistan. Baluchistan, Urak Zarghoun, alt. 2350 m, 1952-06, *Crookshank 373* (holotype, K!).

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, 0.8–1 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).

11g. var. **sinorobusta** W. T. Wang in Acta Phytotax. Sin. 36: 167. 1998. — *C. orientalis* L. var. *robusta* W. T. Wang in l.c. 29: 466. 1991, non Grey-Wilson, 1989; M. Johnson, Klematis 346. 1997. Type: China. Xinjiang (新疆): Yecheng (叶城), Yiliki (伊力克), alt. 3800 m, 1987-09-15, B. S. Li *et al.* (李勃生等) 11557 (holotype, PE!).

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. Leaf-lets 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).



Fig. 10. A, B, *Clematis corniculata* W. T. Wang. A, upper part of flowering branch; B, stamen. Drawn from K. Guo 12158. C, D, *C. caudigera* W. T. Wang. C, upper part of flowering branch; D, stamen. Drawn from B. S. Li 11741.

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.

12. *Clematis caudigera* W. T. Wang in Acta Phytotax. Sin. 36: 165, fig. 2: 5, 6. 1998; Grey-Wilson, *Clematis* 165. 2000; W. T. Wang & Barth. in Fl. China 6: 365. 2001. Type:

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

尾尖铁线莲 Fig. 10: C, D

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-denticulate per side, seldom entire, lateral lobes smaller, obliquely cuneate, unequally 2-lobulate, adaxially 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.

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

13. *Clematis corniculata* W. T. Wang in Acta Phytotax. Sin. 29: 466, fig. 3: 1, 2. 1991; M. Johnson, Klematis 334. 1997; Grey-Wilson, Clematis 165. 2000; W. T. Wang & Barth. in Fl. China 6: 366. 2001. Type: China. Xinjiang (新疆): Yecheng (叶城), Supikiya (苏皮克牙), alt. 2800 m, 1987-09-01, D. Zheng (郑度) K102 (holotype, PE!).

角萼铁线莲 Fig. 10: A, B

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-denticulate, 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 corniculate (hornlike 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.

Additional specimen examined:

China. Xinjiang (新疆): Qira (策勒), K. Guo (郭柯) 12518 (PE).

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铁线莲属黄花铁线莲组修订

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摘要 对毛茛科铁线莲属 *Clematis* 的黄花铁线莲组 sect. *Meclatis* 进行了全面修订, 确定此属含 13 种和 13 变种(包括 1 新变种和 2 新变种等级); 写出了此组的分类学简史和地理分布, 并对其在铁线莲属中的系

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,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* subsect. *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. ispahonica* 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。

关键词 铁线莲属;黄花铁线莲组;分类学修订