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

WANG Wen-Tsai

(State Key Laboratory of Systematic and Evolutionary Botany, Institute of Botany, Chinese Academy of Sciences, Beijing 100093, China)

Abstract: *Clematis* sect. *Pterocarpa* is revised in this paper. Brief taxonomic history, description, and illustration of the monotypic section with its only species, *C. brachyura*, are given, and the origin of it is briefly discussed.

Key words: *Clematis*, sect. *Pterocarpa*, Ranunculaceae, taxonomic revision

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铁线莲属翅果铁线莲组修订

王文采

(中国科学院植物研究所 系统与进化植物学国家重点实验室, 北京 100093)

摘要: 对毛茛科铁线莲属(*Clematis*)中单型的翅果铁线莲组(sect. *Pterocarpa*)进行了分类学修订,写出了此组及其惟一种,翅果铁线莲(*C. brachyura*)的分类学简史和形态描述,给出此种插图。根据其体态及花构造近似亚洲东部的辣蓼铁线莲(*C. mandshurica* Rupr.)和圆锥铁线莲(*C. terniflora* DC.) [二种均为威灵仙组(sect. *Clematis*)的成员],推测翅果铁线莲可能源自威灵仙组。

关键词: 铁线莲属, 翅果铁线莲组, 毛茛科, 分类学修订

In 1867, on the basis of probably one Korean flowering specimen, Oldham 7, Miquel described a new form under *Clematis paniculata* Thunb. (= *C. terniflora* DC. —Wang, 2003), giving no morphological description and seeming to use the formal epithet ‘*pauciflora*’ as the diagnostic character for this form. Ten years later in 1877, probably noticing that this new plant was characterized by having few carpels per flower, short styles, and broadly winged achenes, and distinctly different from *C. paniculata*, Maximowicz raised this form to spe-

cific rank, and renamed it as *C. brachyura*, not using the original formal epithet ‘*pauciflora*’ due to the then existence of a specific name *C. pauciflora* Nutt. (1840), which represents a species endemic in southwestern North America (Wang, 2004). He paid particular attention to the curious feature of the short style (whence the specific epithet), and compared the new species with *C. cadmia* Buch.-Ham. ex Hook. f. & Thoms., belonging to sect. *Viticella* and characterized also by having short styles, and placed it in sect. *Viti-*

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作者简介: 王文采(1926-), 男, 研究员, 中国科学院院士, 著名植物分类学家, 长期从事有花植物分类学研究。

cella. In Kuntze's monograph (1885), *C. brachyura* was treated as one of the subspecies under *C. recta* L., an ally of *C. terniflora* DC., probably according to the erect habit and the more or less similar floral structure. In Prantl's classification of *Clematis*, *C. brachyura* was not included. Afterwards, this species was described two times as new by Palibin in 1898 and by Nakai in 1912. In 1955, on the basis of *C. brachyura* with unique broadly winged achenes, Tamura established a new monotypic section *Pterocarpa*, placed near sect. *Flammula* and sect. *Viticella*, and this new section was unanimously accepted by later students of *Clematis* (Snoeijer, 1992; Johnson, 1997; Grey-Wilson, 2000; Wang & Li, 2005).

In habit and floral structure, *C. brachyura* shows resemblance to *C. mandshurica* Rupr. and *C. terniflora* DC., differing from the latter mainly in its short style and broadly winged achenes, which may result from the adaptation to wind dispersal of fruit. On account of possessing such curious advanced morphological characters, *C. brachyura* is distinctly more advanced than them, and might be derived from sect. *Clematis*, to which *C. mandshurica* and *C. terniflora* belong (Wang, 2003; Wang & Li, 2005).

Clematis L. sect. **Pterocarpa** Tamura in Sci. Rep. Osaka Univ. 4: 50. 1955; in Acta Phytotax. Geobot. 16 (2): 80. 1956; in Sci. Rep. Osaka Univ. 16: 34. 1967; in Acta Phytotax. Geobot. 38: 43. 1987; et in Hiepko, Nat. Pflanzenfam., Zwei. Aufl., 17a (4): 385. 1995; Snoeijer in Clematis 1992: 18. 1992; M. Johnson, Klematis 649. 1997; Grey-Wilson, Clematis 125. 2000; W. T. Wang in Acta Phytotax. Sin. 43: 473. 2005. Type: *C. brachyura* Maxim.

Perennials with erect stems, woody at base. Seedling leaves unknown (Essig, 1991). Leaves opposite, pinnate, ternate, or simple, entire. Flowers bisexual, small, in 1–5-flowered terminal and axillary cymes. Sepals 4 (–6), spreading, white, oblanceolate, outside on margin velutinous. Stamens numerous, glabrous; filaments linear; anthers narrow-oblong, apex obtuse or minutely apiculate. Carpels 3–6; ovaries densely appressed-puberulous; styles short, subulate, glabrous or near base puberulous. Achenes strongly compressed,

broadly winged; persistent styles short, subulate, near base appressed-puberulous, elsewhere glabrous.

One species, endemic to Korea.

Clematis brachyura Maxim. in Bull. Acad. Sci. St.-Petersb. 22: 221. 1877; et in Mém. Biol. 9: 598. 1877; Forb. & Hemsl. in J. Linn. Soc. Bot. 23: 2. 1886; Palibin in Acta Hort. Petrop. 17: 11. 1898; Nakai in J. Coll. Sci. Univ. Tokyo 26: 11. 1909; Chong, Ill. Man. Korean Trees & Shrubs 187, fig. 279. 1943; T. B. Lee, Ill. Fl. Korea 344, fig. 1375. 1979; Y. N. Lee, Fl. Korea 163, fig. 474. 1996; M. Johnson, Klematis 649. 1997; Grey-Wilson, Clematis 125. 2000; Toomey & Leeds, Ill. Encycl. Clematis 136. 2001. — *C. paniculata* Thunb. f. *pauciflora* Miq., Ann. Mus. Bot. Lugd.-Bat. 3: 1. 1867. — *C. recta* L. ssp. *brachyura* (Maxim.) Kuntze in Verh. Bot. Ver. Brand. 26: 114. 1885. Type: Korea, 1867, Oldham 7 (**holotype**, ? L; isotypes, GH!, K!, LE!, PE!, S!).

C. spectabilis Palibin in Acta Hort. Petrop. 17: 12. 1898; Nakai in J. Coll. Sci. Univ. Tokyo 26: 9. 1909. Type: Korea. Kyong-kwi, prope Seoul, 1886-05, Kalinowsky s. n. (**holotype**, LE!).

C. oligantha Nakai in Matsum., Ic. Pl. Koisikov. 1: 95, t. 48. 1912. Type specimen not designated.

C. brachyura Maxim. var. *hexasepala* Y. N. Lee in Korea J. Bot. 25: 177. 1982; et Fl. Korea 163, fig. 475. 1996; M. Johnson, Klematis 650. 1997. Type: Korea. Chungbuk: Choryong, 1974-06-10, Y. N. Lee s. n. (**holotype**, not seen).

Stem 50–100 cm tall, simple or branched, 10–20-sulcate, glabrous or on nodes sparsely pilose. Leaves 5-foliolately pinnate, ternate, or simple; leaflet or leaf blade thickly papery, ovate, broadly ovate, deltoid, or elliptic, (2–) 3.5–8 × (1.2–) 1.8–5 cm, apex acute or obtuse, often mucronate, base rounded, broadly cuneate, truncate, or subcordate, margin entire, adaxial surface on basal veins sparsely puberulous, glabrescent, abaxial surface subglabrous, distinctly reticulate, basal veins prominent; petioles 2.2–5.4 cm long. Cymes terminal and axillary, 1–5-flowered; peduncles 1.5–9 cm long; bracts foliaceous or small, linear, ca. 1.2 mm long. Flower 1.6–2.5 cm in diam.; pedicel 0.2–4 cm long, glabrous. Sepals 4 (–6), oblanceolate, 9–15 × 3–5 mm,

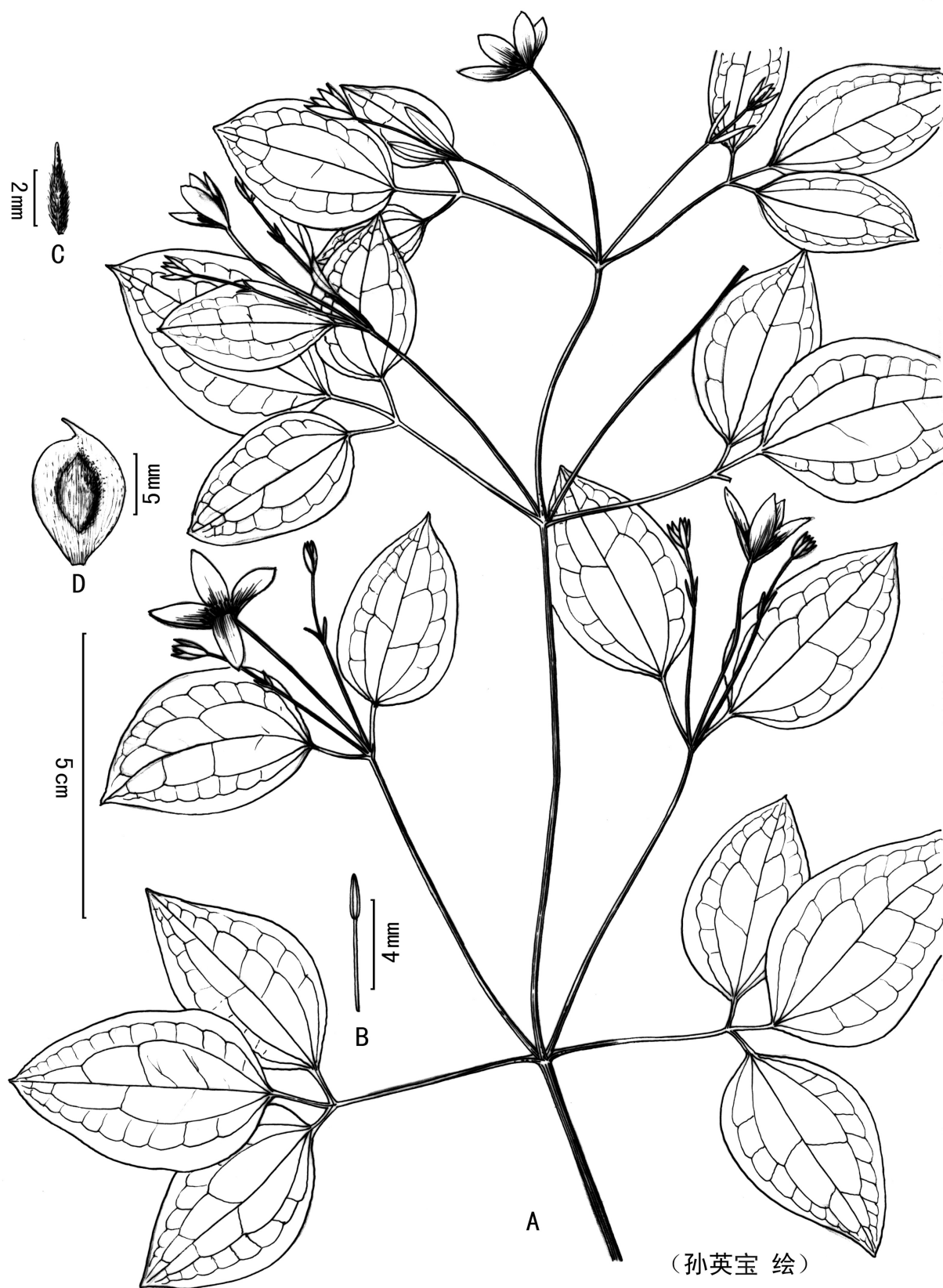


Fig. 1 *Clematis brachyura* Maxim.

A. Upper part of flowering stem; B. Stamen; C. Carpel (from Oldham 7); D. Achene (from Jack s.n.). (Drawn by SUN Ying-Bao)

on both surfaces glabrous, outside on margin velutinous, apex acute, often mucronate. Stamens 15–30, 2.5–6 mm long, glabrous; anthers narrowly oblong, 1.5–2.8 mm long, apex obtuse or minutely apiculate. Carpels 3–6, 3–4 mm long; ovaries narrowly ovoid, 2–2.8 mm long, densely appressed-puberulous; styles subulate, 1.2–3 mm long, glabrous or near base puberulous. Achenes strongly compressed, broadly obovate or obliquely broadly elliptic, 8–11×6–8 mm, very sparsely puberulous, broadly winged; persistent styles 2–3 mm long. Fl. from summer to early autumn.

S Korea. In grassy, gravelly places or in sparse forests; up to 300 m in elevation.

Additional specimens examined. Korea. Chemulpo, Carles 54, 76 (K); Chinampo, Faurie 12 (G, P); Hanciy, Schmidt s. n. (LE); Kangwon, Sungil Bridge, Chung Yung-ho & Kang Young-moo s. n. (US); Kyonggi-do, Suwon, Nakajima s. n. (NAS); Lake Mikko-ura, Umi-Kongo, Kongo-san, Beathie & Kurihara 10223 (US); Seoul: Mt. Kwanak-san, H. N. Qin *et al.* 17925 (PE); Yong Weol, Hagman *et al.* 251 (UPS); without precise locality, Faurie 14 (G), Law 7 (P), Oldham 1057 (G), Perry 29 (GH, K), Schmidt 89, 248 (LE).

From the herbarium material cited above it can be seen that in *C. brachyura*, the flowers are usually 4-sepalled. However, sometimes 5–6-sepalled flowers may be observed. For example, in a plant of Oldham 7, deposited in GH, one flower is 5-sepalled, while other ones 4-sepalled, and in Faurie 12, deposited in P, the terminal flower of a terminal 3-flowered cyme has six sepals, while the two lateral flowers have four sepals each. So, the sepal number per flower in this species is variable from four to six, and the variety *hexasepala*, described according to sepal number, can not be recognized.

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