

Additional Remarks of Ranunculaceae in Taiwan (5) — The genus *Clematis* L.

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ABSTRACT: This is a taxonomic study of *Clematis* L. (Ranunculaceae) in Taiwan. Twenty taxa, including thirteen species, two subspecies and five varieties are described: one new species, *i.e.*, *C. tamurae* T. Y. A. Yang et T. C. Huang and one new combination, *C. parviloba* Gard. *ex* Champ. subsp. *bartlettii* (Yamam.) T. Y. A. Yang et T.C. Huang, are proposed. A key, description and distribution maps for each taxon are given.

KEY WORDS: *Clematis* L., Ranunculaceae, Taxonomy, Taiwan.

INTRODUCTION

The genus *Clematis* L. is one of the largest genera in the family Ranunculaceae. Opinions about the total number of species vary 230 species (Mabberley, 1987), 250 species (Jury, 1978) or 300 species (Tamura, 1967, 1987). It is widely distributed, ranging from the tropical regions to frigid zones and from sea level to high altitude (Tamura, 1967; Chang *et al.*, 1980).

Forbes and Hemsley (1886) first recorded 3 species of *Clematis* in the Taiwanese flora, then Henry (1896) reported 7 species. Over the following five decades, Taiwanese *Clematis* were studied by Japanese taxonomists until Huang (1960) who is the first Chinese taxonomist, revised this genus. The chronological study of Taiwanese *Clematis* by selected representative authors is shown in the Table 1. There are 20 taxa including 9 endemic taxa represented in Taiwan.

In the present work, one new species, *C. tamurae* T. Y. A. Yang et T. C. Huang, and one new combination, *C. parviloba* Gard. *ex* Champ. subsp. *bartlettii* (Yamam.) T. Y. A. Yang et T. C. Huang, for Taiwan are reported. Distribution maps of *Clematis* on Taiwan with descriptions and a key to the treated taxa are given.

Key to the taxa of *Clematis* in Taiwan

1. Erect shrubs

2. Leaflets large, more than 70 mm long; flowers pink 13. *C. psilandra*
2. Leaflets small, less than 35 mm long; flowers purple or blue 17. *C. tsugetorum*

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Table 1. The chronological study of Taiwanese *Clematis* by selected authors

year	author	taxon	species	variety	total number
1886	Forbes and Hemsley		3	0	3
1896	Henry		7	0	7
1906	Matsumura and Hayata		9	1	10
1910	Kawakami		17	2	19
1908-1920	Hayata		17	3	20
1928	Sasaki		17	3	20
1932	Kudo and Masamune		19	2	21
1936	Suzuki		22	2	24
1954	Masamune		23	2	25
1960	S.S.Huang		23	1	24
1973	Shimizu		20	2	22
1976	Liu and Hsieh		17	4	21
1979	Lui and Liao		17	4	21
1980	Chang <i>et al.</i>		16	1	17
1982	T. I. Yang		18	4	22

1. Climbing vines

3. Leaves simple or ternately compound

4. Sepals spreading; stamens glabrous

5. Sepals more than 10 mm wide; achenes glabrous 11. *C. montana*

5. Sepals less than 8 mm wide; achenes pubescent

6. Leaflets more than 25 mm wide, ovate or broadly ovate

7. Leaflets entire, unlobed, glabrous on both sides

8. Filaments curved 3. *C. crassifolia*8. Filaments smooth, straight 10. *C. meyeniana*7. Leaflets coarsely serrate, 3-lobed, at least pubescent on abaxial side 6. *C. grata*6. Leaflets less than 23 mm wide, narrowly ovate or narrowly oblong 4. *C. formosana*

4. Sepals upward; stamens pubescent

9. Leaves simple 7a. *C. henryi* var. *henryi*

9. Leaves compound ternate

10. Leaflets glabrous; flowers white 7b. *C. henryi* var. *morii*10. Leaflets pubescent; flowers golden 9. *C. leschenaultiana*

3. Leaves pinnately or biternately compound

11. Sepals 6, rarely 5

12. Terminal leaflets less than 60 mm long; flowers pale pink 1. *C. akoensis*12. Terminal leaflets more than 70 mm long; flowers dark purple 15. *C. tashiroi*

11. Sepals 4

13. Leaflet margins serrate

14. Sepals upward; stamens pubescent 8. *C. lasiandra*

14. Sepals spreading; stamens glabrous

15. Flowers large, c. 28-45 mm diam., white 12. *C. parviloba* subsp. *bartlettii*15. Flowers small, c. 15-25 mm diam., yellowish-green 6. *C. grata*

13. Leaflet margins entire

16. Flowers yellowish-green; petioles stipulate 5. *C. gouriana* ssp. *lishanensis*
 16. Flowers white; petioles estipulate
 17. Petiolule articulate; leaves coriaceous
 18. Ovaries glabrous; fruits glabrous 18a *C. uncinata* var. *uncinata*
 18. Ovaries pubescent; fruits pubescent 18b. *C. uncinata* var. *okinawensis*
 17. Petiolule non articulate; leaves chartaceous or subcoriaceous
 19. Leaflets 5, rarely 7
 20. Ratios between length and width of leaflet = 1.2—1.9 ... 16. *C. terniflora* var. *garanbiensis*
 20. Ratios between length and width of leaflet = 2.0—3.5 2. *C. chinensis*
 19. Leaflets 15 14. *C. tamurae*

1. *Clematis akoensis* Hayata in Journ. Coll. Sci. Univ. Tokyo **30**: 13. 1911, Icon. Pl. Form. **1**: 21. Pl. 2. 1911; Sasaki, List Pl. Form. 182. 1928; Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. **2**: 76. 1932; Suzuki, Short Fl. Form. 64. 1936; Masamune, List Vasc. Pl. Taiwan 53. 1954; S.S. Huang in Biol. Bull. Taiwan Norm. Univ. **5**: 17. 1960; T.C. Huang, Fl. Taiwan **6**: 48. 1979.

屏東鐵線蓮 Fig. 1

Type: Taiwan: Ako (Pingtung), Miharashi-toge, *Kawakami & Mori 3137* (holotype: TI!; isotype: TAIF!)

Clematis owatarii Hayata in Journ. Coll. Sci. Univ. Tokyo **30**: 17. 1911; *syn. nov.* Type: Taiwan: Ako (Pingtung), *Owatarii s.n.* Mar. 1898 (holotype: TI!, isotype: TAIF!).
Clematis dolichosepala Hayata, Icon. Pl. Form. **3**: 1. 1913; *syn. nov.* Type: Taiwan: Hieranzan (Henchun), *Kawakami & Sasaki s.n.* Feb. 1911 (holotype: TI!; isotype: TAIF!).

A scandent perennial woody vine. Stem dark red, sulcate, glabrous when mature. Leaves pinnately compound, subcoriaceous; petioles tendrilate, *c.* 40–70 mm long; stipules absent. Leaflets 5, sometimes 3, *c.* (22-) 37–58 (-74) mm long, (15-) 30–46 (-54) mm wide, deltoid or broadly elliptic; apex finely retuse; base cordate, cuneate or obtuse; rarely lobed; margin sparsely serrulate, rarely entire; glabrous on both surfaces; main veins 5, nerves flat or sunken on adaxial side; margin and nerves elevated on abaxial side; petiolulate. Inflorescence a dichasium or cymes, sometimes 1-flowered, axillary; pedicels glabrous, trichotomously branched; bracts and bracteoles elliptic-lanceolate or lanceolate, subcoriaceous, glabrous on both sides. Flowers *c.* 35–75 mm diam., pale pink, spreading. Sepals 6, rarely 5, *c.* 20–35 mm long, 5–13 mm wide, obovate-lanceolate; apex obtuse-mucronulate; base cuneate; glabrous or nearly so inside and densely velutinous outside. Stamens numerous, *c.* 8–15 mm long, glabrous, centripetal, inner ones shorter; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective short excurrent beyond the pollen sacs, *c.* 0.18–0.2 mm long; filaments linear and flat, blue when fresh and brown when dry. Carpels numerous, with white sericeous hairs. Fruits *c.* 40–48 mm long; achenes *c.* 5–8 mm long, narrowly ovate or elliptic, compressed laterally, yellowish brown or reddish brown with white velutinous hairs; style persistent and lengthening to become caudate after anthesis, with white or pale yellow bearded hairs.

Flowering season starts from late winter or early spring, i.e. November to February of the following year; fruiting season is from December to March.



Fig. 1. *Clematis akoensis* Hayata (Ranunculaceae). 1. Habit; 2. Bracteole; 3. & 4. Sepals, 3, adaxial and 4, abaxial sides; 5. & 6. Stamens; 7. Carpel; 8. Fruit.

Distribution: Endemic to Taiwan, found only on Hengchun Peninsula.

Habitat and Ecology: It is growing in sunny places or forest margins at an altitude below 800 m. Fig.2.

Specimens examined:

Pingtung: Manchiou, Laofoshan, *Fung s.n.* May 1976 (PPI), *Yang 263 1* (TAI,TUNG), 2710 (TAI), 2712 (TAI), 2835 (TAI, TUNG), 2836 (TAI,TUNG), 2837 (TAI, TUNG); Nanjenshan, *Chiou 159*(PPI); Mt. Wanliteshan, *S.P. Li 448* (HAST, TAI, TNM, TNU), *Yang et al. 2750* (TAI), *Yang et al. 6208* (TNM); Shouka, *Ou et al. 2436* (TCF); 9 Highway 496.5 Km, 350 m, *Yang et al. 5951* (TNM,TUNG); Tashulinshan to Chishuiyin, *Y. Yamamoto s.n.* Jan 1927 (TAI). **Taitung:** Kweitien, *Y.P. Yang s.n.* Feb 1976 (TAIF); Mt. Tahanshan, *Liu 21901* (TAIF).

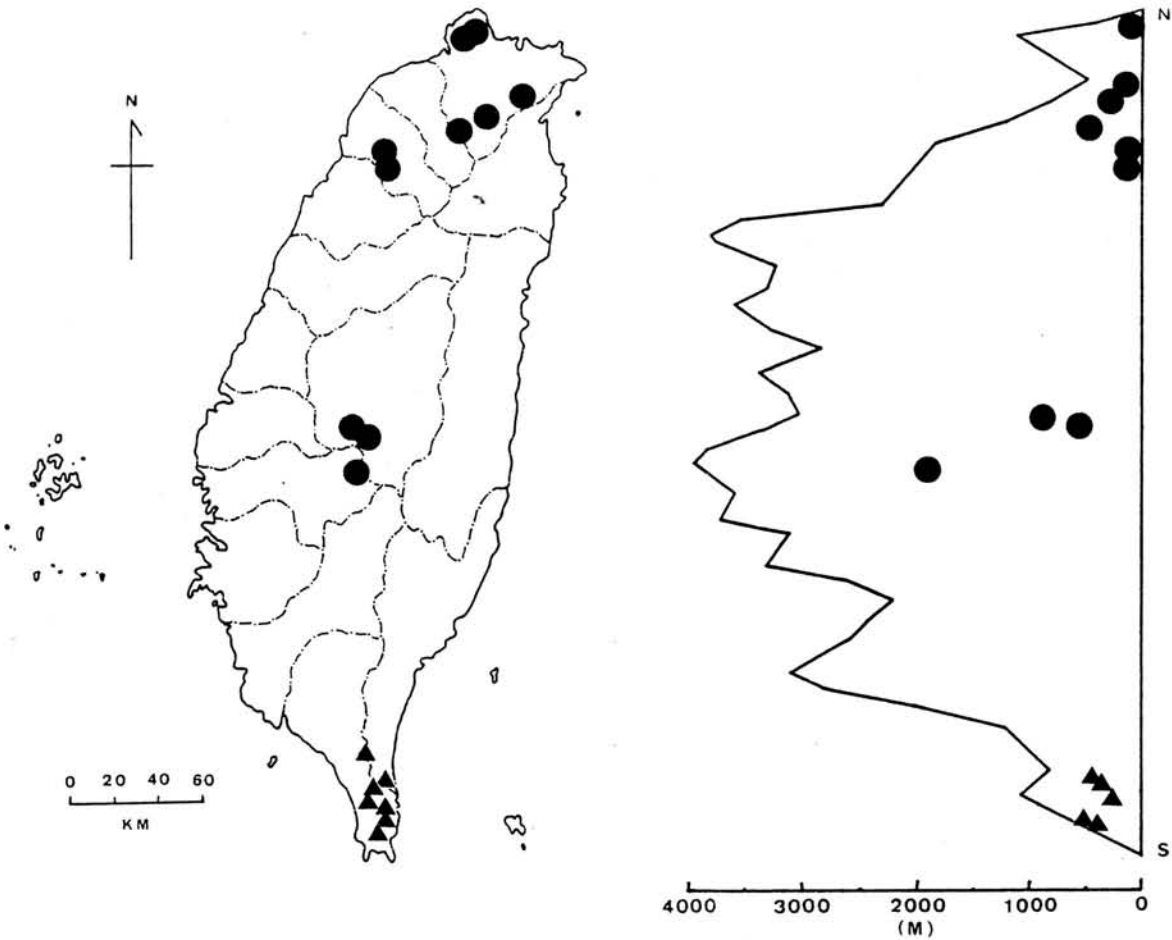


Fig. 2. Latitudinal and altitudinal distribution of *Clematis akoensis* (▲) and *C. crassifolia* (●).

2. **Clematis chinensis** Osbeck, *Dagb. Ostind. Resa* 205, 242. 1757; Bretschneid., *Fl. China* 91. 1881; Rehder in *Journ. Arn. Arb.* **14**: 200. 1933; Handel-Mazzetti in *Act. Hort. Gothob.* **13**: 206. 1939; Tamura in *Act. Phytotax. Geobot.* **15**: 19. 1953; Hatusima, *Fl. Ryukyus* 277. 1971; Liu & Hsieh, *Fl. Taiwan* **2**: 483. 1976; T. C. Huang, *Fl. Taiwan* **6**: 48. 1979; Chang, *Fl. Reip. Pop. Sinicae* **28**: 161. 1980; T.I Yang, *List Pl. Taiwan* 602. 1982.

威靈仙 Fig. 3

Clematis chinensis Retz., *Observ. Bot.* **2**: 18. t.2. 1781.

Clematis sinensis Lour., *Fl. Cochinch.* 345. 1790.

Clematis minor Lour., *Fl. Cochinch.* 345. 1790.

Clematis benthamiana Hemsl. in *Journ. Linn. Soc. Bot.* **23**: 2. 1886; *quoad spec.*

A scandent perennial herbaceous vine. Stem green fresh and turning black when dry, sulcate, sparsely pubescent or glabrous. Leaves pinnately compound, chartaceous; petioles tendrillate, *c.* 30–50 mm long; stipules absent. Leaflets 5–7–15, *c.* (20–) 36–69 (–78) mm long, (10–) 15–29 (–38) mm wide, ovate, narrowly ovate or ovate-lanceolate; apex acuminate; base obtuse, cuneate or cordate; rarely lobed; margin entire; glabrous on both surfaces or sparsely pubescent on adaxial surface; main veins 3 to 5, nerves flat or sunken on adaxial side and elevated on abaxial side; petiolulate. Inflorescence cymes, axillary or terminal; pedicels pubescent, trichotomously branched; bracts and bracteoles elliptic or oblong-lanceolate, sparsely pubescent or glabrous on adaxial side; densely pubescent on abaxial side. Flowers *c.* 10–20 mm diam., white, spreading. Sepals 4, *c.* 7–12 mm long, 2–4 mm wide, elliptic to oblong; apex obtuse-mucronulate; base cuneate; glabrous or nearly so inside and densely velutinous outside. Stamens numerous, *c.* 4–8 mm long, glabrous, centripetal; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective shortly excurrent beyond the pollen sacs, *c.* 0.10–0.15 mm long; filaments linear and flat. Carpels numerous, with white sericeous hairs. Fruits *c.* 25–40 mm long; achenes *c.* 4–6 mm long, orbicular or broadly ovate, compressed laterally, dark brown with pale yellow velutinous hairs; style persistent and lengthening to become caudate after anthesis, with brown or pale yellow bearded hairs.

In Taiwan, flowering season July to November; fruiting season August to November.

Distribution: Widely distributed in Southwest, South, Southeast, Central China (Provs. Anhui, Fujian, Jiangxi, Henan, Hubei, Hunan, Guangdong, Guangxi, Sichuan, Guizhou, Yunnan, Shaanxi), Hongkong and Taiwan, and northern Vietnam.

Habitat and Ecology: It is growing in open land or forest margins at altitudes from 500 to 1800 m around the whole Island. Fig. 4.

Specimens examined:

Miaoli: Tsiaochiao, *Simada* 3153 (TAI,TAIF). **Taichung:** Shenkuang, *C. M. Kuo* 3930 (TAI); Neipu, *C.C. Hsu* 4713 (TAI). **Nantou:** Hoshieh to Mt. Alishan, *M. Tamura et al.* 22279 (TAI), 22280 (TAI), *S. Sasaki s.n.* May 1932 (TAI), Hoshieh to Tungpu, *M. Tamura & Shimizu* 22311 (TAI); Wusheh, *C.H. Ou* 1690(TAI). **Chiayi:** Mt. Alishan, *T. Kawakami & Sasaki s.n.* Mar 1911 (TAIF), Fenchihu, *U. Faurie s.n.* Jun 1914 (TAI), Tashan, *T. Kawakami & Nakahara s.n.* Oct 1906 (TAI); Chiayi, *S. Sasaki s.n.* Oct 1917 (TAI); Tapu, *S. Sasaki s.n.* Oct 1917 (TAI). **Kaohsiung:** *A. Henry s.n.* s.d. (US); Chiahsien, *W.S. Tang et*



Fig. 3. *Clematis chinensis* Osbeck (Ranunculaceae). 1. Habit; 2. Flower; 3. & 4. Bracteoles, 3. adaxial and 4, abaxial sides; 5. & 6. Sepals, 5, adaxial and 6, abaxial sides; 7. & 8. Stamens; 9. Carpel; 10. Fruit.

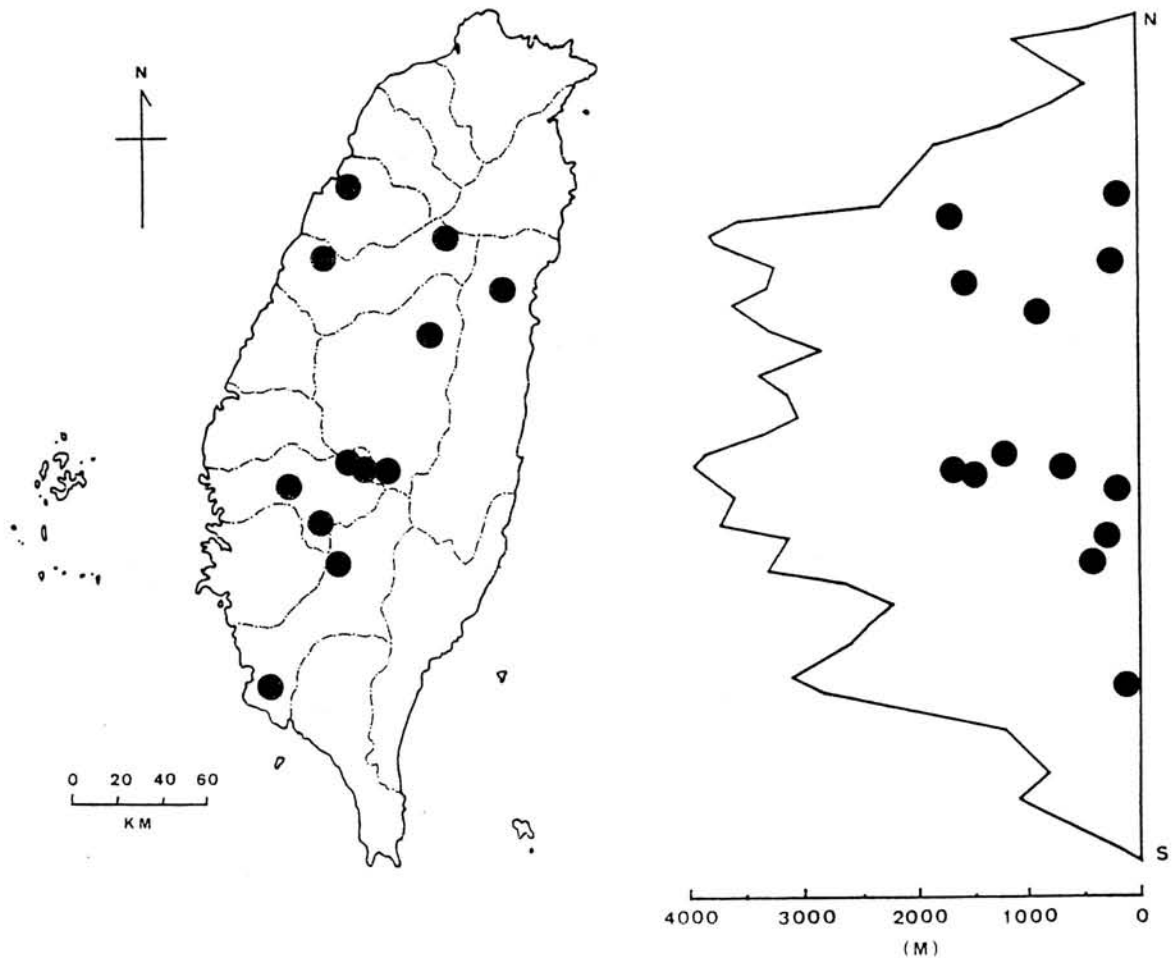


Fig. 4. Latitudinal and altitudinal distribution of *Clematis chinensis* in Taiwan.

al. 1697 (TAI); Tasheh, Mt. Kuangyingshan, Yang et al. 6191(TNM). **Pingtung**: Fantzuliao, U. Mori & Kawakami 4945 (TAIF); Hengchun, E. Matuda s.n. Jul 1917(TAIF). **Hualien**: Tienhsian, C.M. Kuo et al. 7001 (TAI), C.C. Hsu 3759 (TAI). **Taitung**: Hongyie-tsun, Yang et al. 5929 (TNM).

3. ***Clematis crassifolia*** Benth., Fl. Hongk. 7. 1861; Kuntze in Verh. Bot. Ver. Brand. 26: 152. 1885; Kawakami, List Pl. Form. 1. 1910; Hayata in Journ. Coll. Sci. Univ. Tokyo 30: 15. 1911, Icon. Pl. Form. 1: 17. 1911; Sasaki, List Pl. Form. 182. 1928; Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. 2: 77. 1932; Suzuki, Short Fl. Form. 64. 1936; Masamune, List Vasc. Pl. Form. 53. 1954; S.S. Huang in Biol. Bull. Taiwan Norm. Univ. 5: 20. 1960; Ohwi, Fl. Japan 600. 1965; Liu & Hsieh, Fl. Taiwan 2: 483. 1976; T.C. Huang, Fl. Taiwan 6: 48. 1979; T.I Yang, List Pl. Taiwan 602. 1982.

厚葉鐵線蓮 Fig. 5

Type: Hongkong: in a ravine on Victoria Peak, Wilford 106 (lectotype is designated here: K!; isolectotype: K!).

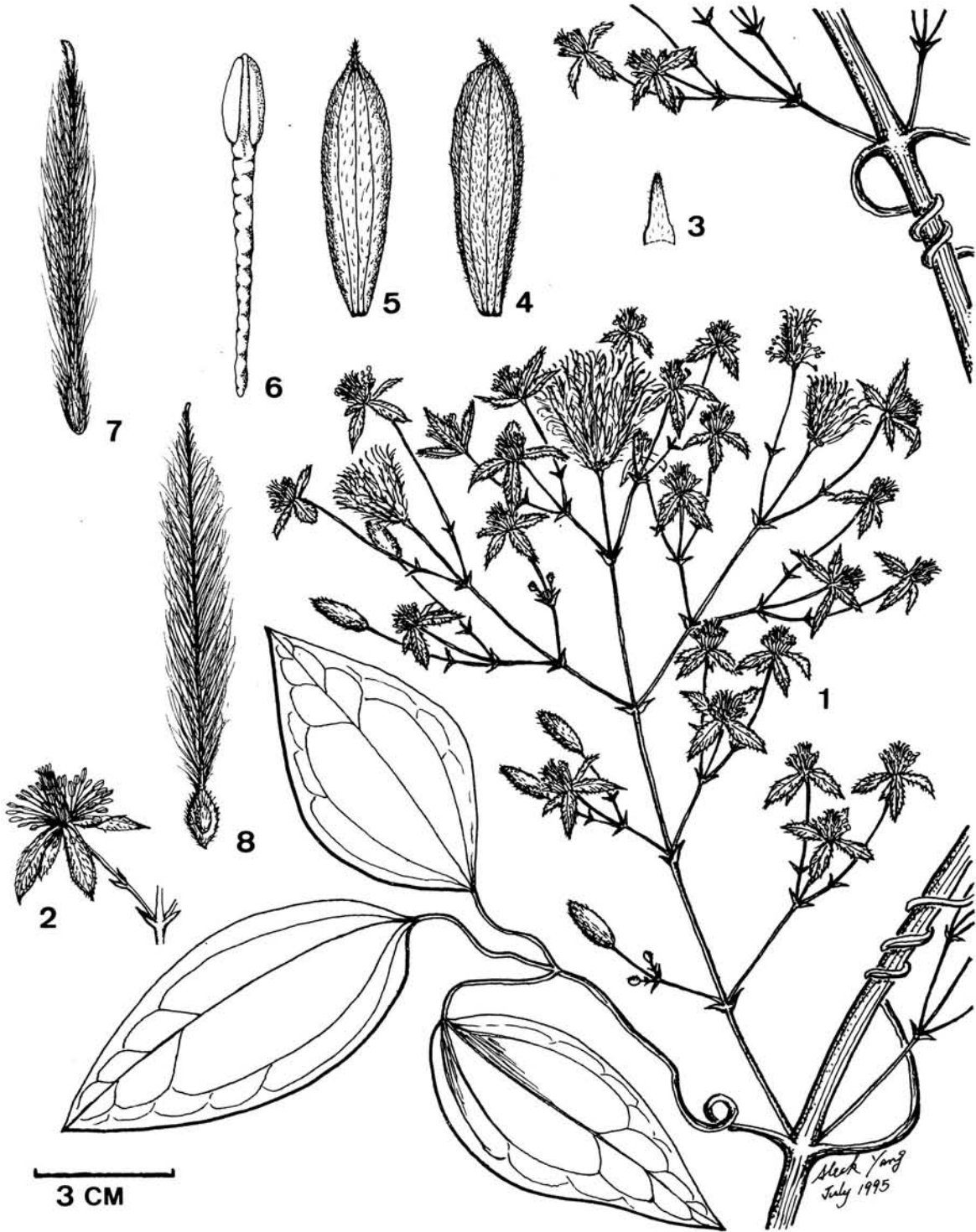


Fig. 5. *Clematis crassifolia* Benth. (Ranunculaceae). 1. Habit; 2. Flower; 3. Bracteole, abaxial side; 4. & 5. Sepals, 4, adaxial and 5, abaxial sides; 6. stamen; 7. Carpel; 8. Fruit.

A scandent perennial woody vine. Stem dark red, sulcate, glabrous. Leaves ternately compound, subcoriaceous or crassate; petioles tendrilate, *c.* 66–102 mm long; stipules absent. Leaflets 3, *c.* (75-) 81–98 (-114) mm long, (29-) 35–58 (-95) mm wide, broadly ovate, elliptic or oblong; apex acute or acuminate; base obtuse or cuneate; unlobed; margin entire; glabrous on both surfaces; main veins 3, nerves flat or elevated on adaxial side and elevated on abaxial side; petiolulate. Inflorescence cymes, terminal or axillary; pedicels almost glabrous, trichotomously branched; bracts and bracteoles subulate, coriaceous, densely albovelutinous on both sides. Flowers *c.* 24–40 mm diam., white, spreading. Sepals 4, *c.* 12–21 mm long, 4–6 mm wide, lanceolate or oblanceolate; apex acute-mucronulate; base cuneate; velutinous or sparsely velutinous inside and densely velutinous outside. Stamens numerous, *c.* 5–10 mm long, glabrous, centripetal; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective shortly excurrent beyond the pollen sacs, *c.* 0.05–0.09 mm long; filaments linear, flat and curved. Carpels numerous, with white sericeous hairs. Fruits *c.* 29–46 mm long; achenes *c.* 4–6 mm long, narrowly ovate or elliptic, compressed laterally, yellowish brown with white velutinous hairs; style persistent and lengthening to become caudate after anthesis, with white or pale yellow bearded hairs.

Flowering season starts from late winter, December to January of the following year; fruiting season is from January to February.

Distribution: Distributed around South China (Provs. Hunan, Fujian, Guangdong, Guangxi, Hainan), Hongkong, Taiwan and South Japan (Kyushu).

Habitat and Ecology: It is growing in sunny places or forest margins of northern Tropic of Cancer areas, e.g. Mt. Alishan, Hsitou and Yangmingshan at altitudes of 300–2300 m. Fig. 2.

Specimens examined:

Taipei: Pinglin, *H.N. Yang 1399* (TAI), *Yang 34A* (TNM); Wulai, *W.S. Tang 735* (TAI), Mt. Tapaokoshan, 870 m, *H.L. Ho et al. 805(A)*; Yangmingshan, *M.T. Kao 9543* (TAI), *Yang 844* (TNM), 938 (TNM), 2632 (TNM), 2758 (TNM), 2846A (TNM). **Taoyuan:** Mt. Peichiatienshan, *Yang 2877* (TNM). **Hsinchu:** Peipu, *T. Kawakami & Mori 5100* (TAIF); Wutzushan, *T. Kawakami 1245* (TAIF). **Nantou:** Hsitou, Mt. Fonghuangshan, *Yang 2488* (TNM); Hosheh, *E.H. Wilson 9945* (A). **Chiayi:** Mt. Alishan, *R. Kanehira & Sasaki s.n.* Feb 1918 (TAIF).

HONGKONG: *N.K. Chun 40133* (NY). **Hongkong:** Isl. Lantau, *S.Y. Hu 6301* (US), Mt. Fungwongshan, *Yang 6324* (TNM), Tung-Chung, *Y.S. Lau 817* (HK), *C.T. Tang 2127* (HK). **New Territories:** Mt. Taimoshan, *C.G. Matthew 4797* (HK); Yin-Ngan, *L.T. Lo 625* (HK).

JAPAN: KYUSHU: Yakushima, *G. Masamune s.n.* Apr 1927 (NY), Ambo, *M. Togasi s.n.* Dec 1956 (NY,US), Pref Kagoshima, 400 m, *T. Yahara et al. 10003* (NY,US).

4. *Clematis formosana* Kuntz. in Hook., *Icon. Pl. t.1945*. 1891; Henry, *List Pl. Form.* 14. 1896; Matsumura & Hayata in *Journ. Coll. Sci. Univ. Tokyo* 22: 5. 1906; Kawakami, *List Pl. Form.* 1. 1910; Hayata, *Icon. Pl. Form.* 1: 24. 1911; Sasaki, *List Pl. Form.* 183. 1928; Kudo & Masamune in *Ann. Rep. Taihoku Bot. Gard.* 2: 77. 1932; Suzuki, *Short Fl. Form.* 64. 1936; Masamune, *List Vasc. Pl. Taiwan* 53. 1954; Liu & Hsieh, *Fl. Taiwan* 2: 483. 1976; T.C. Huang, *Fl. Taiwan* 6: 48. 1979; T.I Yang, *List Pl. Taiwan* 602. 1982.

寶島鐵線蓮

Type: Formosa: Ape's Hill, *G.M.H. Playfair 307* (lectotype is designated here: K!; isolectotypes: K!, NY!).

Clematis sasakii Shimizu in *Taiwania* **18**(2): 173. 1973; *syn. nov.* Type: Taiwan: Daikwanzan, *S. Sasaki s.n.* Oct 1933 (holotype: TAI!; isotype: TAI!).

A scandent perennial herbaceous vine. Stem olive, sulcate, densely albovegetinuous hairs, sometimes becoming glabrous when mature. Leaves ternately compound, chartaceous; petioles tendrillate, *c.* 28–62 mm long; stipules absent. Leaflets 3, *c.* (31-) 32–63 (-74) mm long, (8-) 11–23 (-34) mm wide, ovate-lanceolate or elliptic-lanceolate; apex acute-mucronulate or acuminate-mucronulate; base obtuse; unlobed or 3-lobed, sometimes deeply lobed and segments lanceolate or linear; margin entire; glabrous or nearly so on adaxial surfaces; sparsely pubescent on abaxial surface but densely pubescent along nerves; main veins 3, nerves flat or sunken on adaxial side and elevated on abaxial side; petiolulate. Inflorescence cymes, axillary or terminal; pedicels densely velutinous, trichotomously branched; bracts and bracteoles elliptic-lanceolate or subulate, chartaceous, glabrous on adaxial side densely pubescent on abaxial side. Flowers *c.* 15–25 mm diam., white, spreading. Sepals 4, *c.* 8–13 mm long, 3–4 mm wide, elliptic or elliptic-lanceolate; apex acute-mucronulate; base obtuse; glabrous or nearly so inside and densely velutinous outside. Stamens numerous, glabrous, centripetal, inner ones *c.* 2–3 mm long, outer ones *c.* 5–9 mm long; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective shorter than the pollen sacs; filaments linear and flat. Carpels numerous, with white sericeous hairs. Fruits *c.* 17–45 mm long; achenes *c.* 3–5 mm long, round or elliptic, compressed laterally, yellowish brown or reddish brown, white velutinous hairs; style persistent and lengthening to become caudate after anthesis, with pale yellow bearded hairs.

Flowering season November to January of the following year; fruiting season January to February.

Distribution: Endemic to Taiwan.

Habitat and Ecology: It is growing in sunny places or forest margins around limestone areas, mainly in southern and eastern Taiwan below altitude 800 m. Fig. 6.

Specimens examined:

Kaohsiung (Takaw): *A. Henry s.n.* s.d. (A, NY, US), *E. Matuda s.n.* Oct 1918 (TAIF); Soushan, *E. Matuda H162*(TAI), *C.L. Yeh 1047*(PPI), *1048* (PPI). **Pingtung:** Ape's Hill, *A. Henry s.n.* s.d. (NY); Boryo (Fangliao) to Kuraru (Kueitzechiao), *E.H. Wilson 10996* (A, US); Chehcheng, *S.Z. Yang 520*(PPI), *522* (PPI), *C.E. Chang 2025* (PPI); Fongkang, Mt. Lilongshan, *Yang 1213* (TAI); Henchun, Kengting, *C.E. Chang et al. s.n.* Sept 1984 (PPI), *Yang & Sun 2270* (TAI), *Yang 2600* (TAI), *Yang & Hung 3330* (TAI), Kuanshan, *Yang 2444* (TAI), *2619* (TAI), *Yang et al. 2812* (TAI), Tashanmushan, *Yang 2450*(TAI); Isl. Hsiaoliuchiou, *T. Hosokawa 1697* (TAI), *2058*(TAI); Manchou, Nanjenshan, *C.E. Chang 3274*(PPI); Santimen, *C.E. Chang s.n.* Oct 1977(PPI). **Hualien:** Chingshuei cliff, 600 m, *T.C. Huang 15075* (NY); Tsuilu, *S. Suzuki s.n.* Nov 1931 (TAI). **Taitung:** Kueitien to Taimali, *Yang et al. 5898* (TNM, TUNG).

5. *Clematis gouriana* Roxb. ex DC. subsp. *lishanensis* T.Y. Yang & Huang in Journ. Taiwan Mus. **44(1): 144. 1991.** 梨山小蓑衣藤

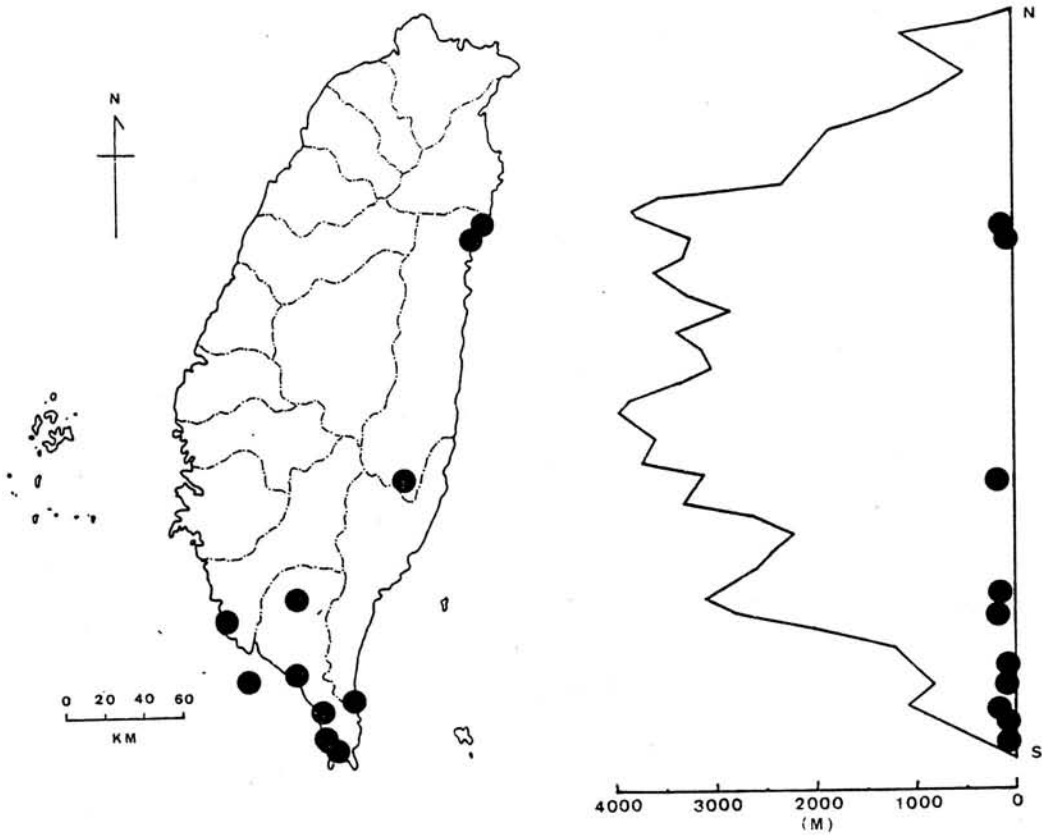


Fig. 6. Latitudinal and altitudinal distribution of *Clematis formosana*.

Type: Taiwan: Nantou, E-W Cross Island Highway 103K, *Yang 2623* (holotype: TAI!; isotypes: HAST!, K!, PE!, TUNG!).

Clematis taiwaniana auct. non Hayata: Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. 2: 77. 1932.

A scandent perennial woody vine. Stem sulcate, densely velutinous hairs. Leaves flammuliform, chartaceous; petioles tendrillate, *c.* 35–65 mm long; stipules 4, palmate, coarsely serrate, chartaceous. Leaflets 9–15, *c.* (36–) 43–62 (–75) mm long, (12–) 16–29 (–40) mm wide, elliptic or elliptic-lanceolate; apex acute, rarely acuminate; base cordate, obtuse or cuneate; unlobed or sometimes 3–5-lobed; margin entire; glabrous or nearly on adaxial surface and sparsely velutinous on abaxial surface; main veins 3 to 5, nerves flat or sunken on adaxial side and elevated on abaxial side; petiolulate, tendrillate, articulate near leaflet base. Inflorescence a panicle-cymes or cymes, axillary; pedicels velutinous, trichotomously branched; bracts and bracteoles leaf-like, sulcate or oblong-lanceolate, chartaceous, glabrous or sparsely velutinous on adaxial side and densely velutinous on abaxial side. Flowers *c.* 10–15 mm diam., yellowish-green or pale yellow, spreading. Sepals 4, *c.* 7–10 mm long, 4–5 mm wide, oblong; apex acute-mucronulate; base cuneate or obtuse; glabrous or nearly so inside and densely villose outside. Stamens numerous, *c.* 3–6 mm long, glabrous, centripetal, inner ones shorter; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective shorter than or equal to the pollen sacs;

filaments linear and flat. Carpels numerous, with golden sericeous hairs. Fruits *c.* 19–37 mm long; achenes *c.* 2–4 mm long, ovate-elliptic or elliptic, convex on both sides, dark brown or nearly black with yellow velutinous hairs; style persistent and lengthening to become caudate after anthesis, with pale yellow bearded hairs.

Flowering season starts from late summer, September to November; fruiting season is from November to February the following year.

Distribution: Endemic to Taiwan.

Habitat and Ecology: It is growing in open land or near forest margins in the Central Mountains, including Yushan Mountains and Alishan Mountains at altitudes between 1200 and 2600 m. Fig. 7

Specimens examined:

Ilan: Nanshan to Mt. Chungyangchienshan, *M. Tamura & Koyama 23614* (KYO). **Taichung:** Lishan, *Yang 4226* (TNM,TUNG). **Nantou:** E-W Cross Island Highway, *Yang 2638* (TAI,TNM,TUNG). **Chiayi:** Mt. Alishan, *Yang 2549* (TNM,TUNG). **Kaohsiung:** S. Cross Island Highway, Likuan Station, *Yang 3126*(TAI). **Hualien:** Tafeng, *Yang 331* (TAI,TNM,TUNG). See also in *J. Taiwan Mus.* **44**(1): 144-148. (1991)

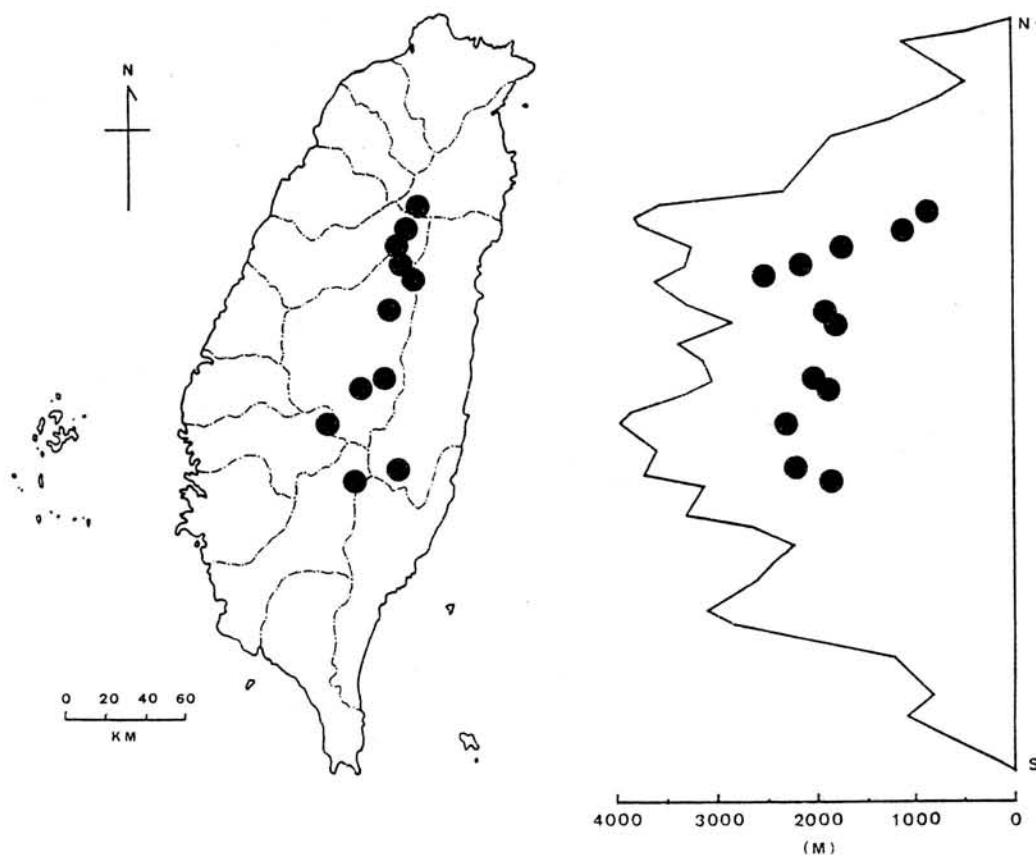


Fig. 7. Latitudinal and altitudinal distribution of *Clematis gouriana* subsp. *lishanensis*.

6. *Clematis grata* Wall., Pl. As. Rar. 1: 83, t.98. 1830; Yang *et al.* in Journ. Taiwan Mus. 44(1): 148. 1991. 串鼻龍

Type: India: Calcutta, *Wallich 4668a* (lectotype is designated here: K!; isolectotype: G!); syntypes: India: Kamaon, *Wallich 4668b* (K!); Jirinagur, *Wallich 4668c* (K!).

Clematis apiifolia sensu Henry, List Pl. Form. 14. 1896; non DC.

Clematis taiwaniana Hayata in J. Coll. Sci. Univ. Tokyo 30: 17. 1911. Type: Taiwan: Miaoli: Taiko (Tahu), *T. Kawakami, Hayata & Mori 73* (lectotype is designated here: TI!; isolectotype: TAIF!); Taihoku (Taipei): Shizangan (Chihshanyen), *T. Kawakami & Sasaki s.n.* Jun 1908 (syntype: TI!); Taichuho (Taichung): Daiboho (Tamaopu), *T. Kawakami & Mori 1229* (Aug 1904) (syntype: TI!).

Clematis gouriana auct. non Roxb. ex DC.: Sasaki, List Pl. Form. 183. 1928.

Clematis grata var. *ryukiuensis* Tamura in Act. Phytotax. Geobot. 15(1): 17. 1953; *syn. nov.* Type: Ryukiu: Okinawa, Okinoerabu, *Koidzumi s.n.* Aug 1923 (holotype: KYO!)

A scandent perennial woody vine. Stem sulcate, densely velutinous hairs. Leaves ternate, pinnate or biternate, chartaceous; petioles tendrillate, *c.* 42–97 mm long. Leaflets 3–5 (-7)–9, *c.* (23-) 37–76 (-131) mm long, (11-) 21–56 (-101) mm wide, ovate, deltoid or elliptic; apex acuminate; base cordate, obtuse or cuneate; 3–5-lobed; margin coarsely serrate; sparsely velutinous or glabrous on adaxial surface and velutinous on abaxial surface; main veins 3 to 5, nerves flat or sunken on adaxial side and elevated on abaxial side; petiolulate. Inflorescence panicle-cymes or cymes, axillary; pedicels velutinous, trichotomously branched; bracts and bracteoles leaf-like, elliptic or lanceolate, chartaceous, sparsely velutinous on adaxial side and densely velutinous on abaxial side. Flowers *c.* 15–25 mm diam., yellowish-green or pale yellow, spreading. Sepals 4, *c.* 9–15 mm long, 3–5 mm wide, obovate-oblong or obovate-lanceolate; apex acuted; base cuneate or obtuse; glabrous or sparsely velutinous inside and densely villose outside. Stamens numerous, *c.* 4–8 mm long, glabrous, centripetal, inner ones shorter; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective shorter than or equal to the pollen sacs; filaments linear and flat. Carpels numerous, with golden sericeous. Fruits *c.* 16–38 mm long; achenes *c.* 2.5–5 mm long, ovate-elliptic or elliptic, convex on both sides, dark brown or nearly black, pale yellow velutinous hairs; style persistent and lengthening to become caudate after anthesis, with pale yellow bearded hairs.

Flowering season in Taiwan starts from late spring to summer (April to September); fruiting season is from July to October.

Distribution: The Himalayan region (eastern Pakistan, northern India, Nepal, Bhutan and Xizang), Southwest, Central China and Taiwan.

Habitat and Ecology: It is growing in open land, stream sides or forest margins throughout the whole island and also adjacent islands, *i.e.* Layu, Ludao and Kueishandao, from sea level to an altitude about 2500 m. Fig. 8

Specimens examined:

Taipei: NTU campus, *Yang 140* (TAI,TUNG). **Keelung:** Keelung Harbor, *M. Tamura et al. 20016* (TI). **Han:** Nanshan, *Y. Yamazaki et al. 915* (TAI,TI) ; Isl. Kueishandao, *R. Kanehira & Sasaki s.n.* Jun 1919 (TAIF). **Taoyuan:** Mt. Tsatienshan, *U. Mori s.n.* May 1909 (TAIF). **Hsinchu:** Matalahsi, *Yang 2427* (TNM).

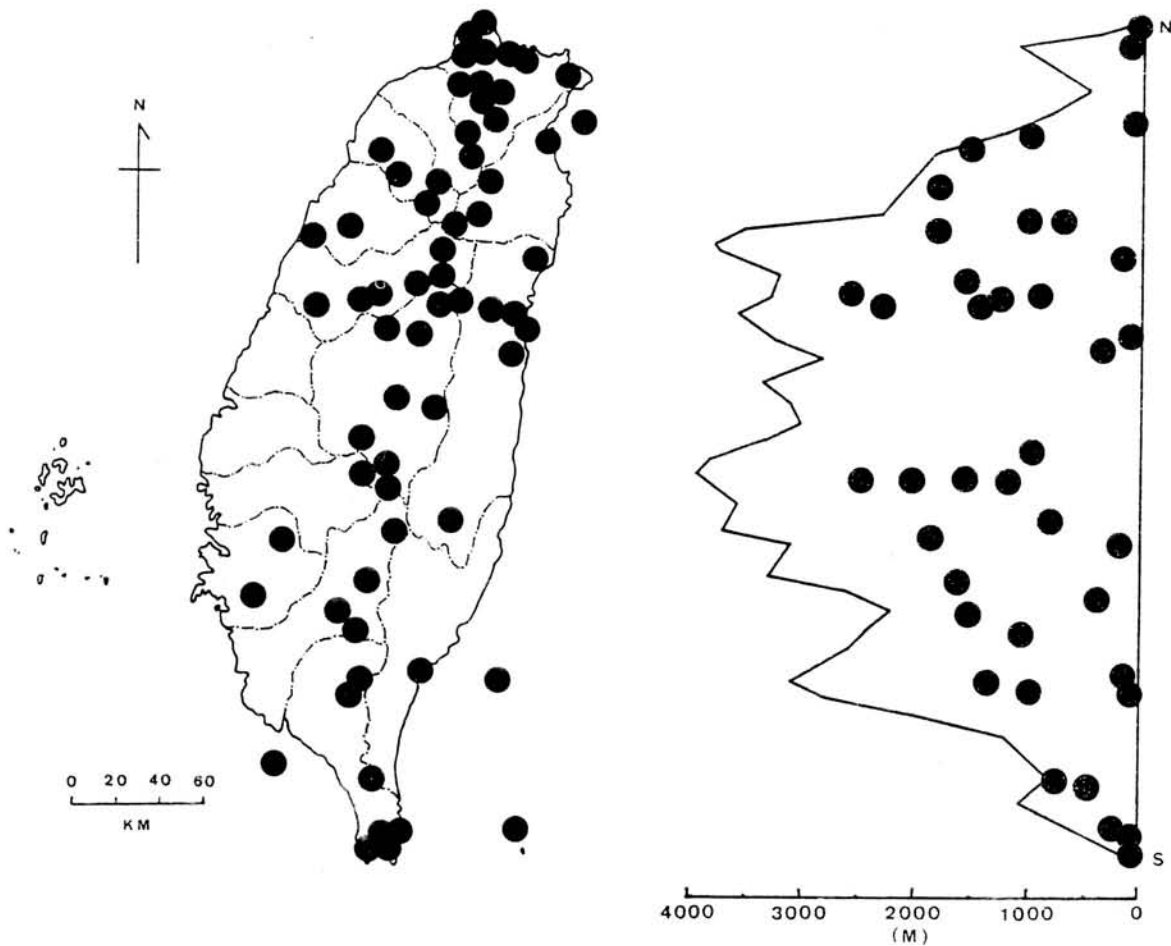


Fig. 8. Latitudinal and altitudinal distribution of *Clematis grata* in Taiwan.

Miaoli: Mt. Houyen-shan, *Yang et al.* 4246 (TUNG). **Taichung:** E-W Cross Island Highway, Lishan, *Yang* 4068 (TUNG). **Nantou:** Hsitou, *Yang* 149 (TAI). **Chiayi:** Mt. Alishan, *Yang* 3085 (TNM,TUNG). **Tainan:** Tungshan, Mt. Kantoushan, *C.I. Peng* 7088 (HAST). **Kaohsiung:** S. Cross Island Highway, Likuan, *Yang* 3125 (TUNG). **Pingtung:** Manchou, Gankou, *Yang et al.* 4355 (TNM,TUNG). **Hualien:** Hualien, *Y.C. Liu et al.* 1794 (CHIA); Tayulin to Pilu, *T. T. Lin s.n.* Jun 1983 (TAIF). **Taitung:** Chipen, *C.E. Chang* 2579 (PPI); Isl. Lanyu, *Yang et al.* 3892 (TUNG); Isl. Ludao, *T.C. Huang* 7010 (TAI). See also in *J. Taiwan Mus.* **44**(1): 149-152. (1991)

7. *Clematis henryi* Oliv. in Hook., *Icon. Pl. t.* 1819. 1889; Finet & Gagnepain in *Bull. Soc. Bot. France* **50**: 540. 1903; Matsumura & Hayata in *Journ. Coll. Sci. Univ. Tokyo* **22**: 6. 1906; Kawakami, *List Pl. Form.* 2. 1910; Rehder & Wilson in *Sarg. Pl. Wils.* **1**(3): 342. 1913; P'ei in *Contr. Biol. Lab. Sci. Soc. China* **10**: 107. 1936; Handel-Mazzetti in *Act. Hort. Gothob.* **13**: 193. 1939; Fang, *Fl. Reip. Pop. Sinicae* **28**: 96. 1980; Yang & Huang in *Taiwania* **37**(1): 22. 1992.

亨利氏鐵線蓮

Type: China: Hubei: Ichang, *Henry 3280* (= 266) (lectotype is designated here: K!; isolectotypes: BM!, HK!, K!, LE!, NY!, TII!, US!)

Clematis henryi var. *leptophylla* Hayata, Icon. Pl. Form. 3: 2. 1913. Type: Taiwan: Chiayi: Mt. Alishan, *Hayata & Sasaki s.n.* Jan. 1912 (lectotype is designated here: TII!; isolectotypes: K!, TAI!, TAIF!)

Clematis hayatae Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. 2: 77. 1932.

Clematis henryi var. *ternata* M.Y. Fang, Fl. Reip. Pop. Sinica 28: 353. 1980; *syn. nov.* Type: China: Shaanxi: Chengkuhsien, Nanshan, Tapapa, 1300 m, *T.N. Liou 11305* (holotype: PE!).

Clematis henryi var. *mollis* W.T. Wang in Bull. Bot. Res. 7(2): 99. 1987; *syn. nov.* Type: China: Hubei: Hofonghsien, 410 m, *H.J. Li 8070* (holotype: PE!).

7a. *Clematis henryi* var. *henryi*.

A scandent perennial woody vine. Stem sulcate, velutinous when young and glabrous at maturity. Leaves simple, opposite, rarely whorled, subcoriaceous to chartaceous; petiole tendrillate, *c.* 34–60 mm long. Leaves ovate-lanceolate or oblong-lanceolate, *c.* (70–) 89–149 (–194) mm long, (21–) 39–62 (–75) mm wide; apex acuminate; base cordate; unlobed or sometimes basal leaves 3-lobed; margin remotely serrate, mucronately serrate, rare entire; glabrous on both surfaces or velutinous along the vine on abaxial surface; main veins 3 to 5, nerves flat or sunken on adaxial side and elevated on abaxial side. Flowers solitary, rarely dichasic, *c.* 15–25 mm diam., white, turning yellowish-green or yellowish-brown when dry, campanulate, pendent, recurved at the tip; axillary or terminal; pedicels albo-velutinous, with 2–3 or more pairs of bracts, decussate, chartaceous, subulate or linear, glabrous on adaxial side and pubescent on abaxial side. Sepals 4, *c.* 15–25 mm long, 5–12 mm wide, oblong or ovate-oblong; apex acute; base cuneate; albovelutinous outside and glabrous except tip and margin inside. Stamens numerous, *c.* 10–12 mm long, pubescent, centripetal, inner ones shorter; anthers linear, with lateral longitudinal dehiscence; connective equal to the pollen sacs, glabrous on both sides; filaments linear, dilated near base, glabrous on adaxial side, pubescent on lateral and abaxial sides. Carpels numerous, pubescent. Fruits *c.* 27–44 mm long; achenes *c.* 3–4 mm long, narrowly ovate or elliptic, convex on both sides, reddish-brown, or purplish-brown, velutinous hairs; style persistent and lengthening to become caudate after anthesis, with pale yellow bearded hairs.

Flowering season during winter, late October to February of the following year; fruiting season November to April or May.

Distribution: Southwest, Central, East and Southeast China and eastwarding to Taiwan.

Habitat and Ecology: It is growing in open land, stream sides or forest margins at altitudes between 800 and 2500 m.

Specimens examined:

Taipei: Wulai, *S. Suzuki 18918*(TAI). **Ilan:** Mt. Taipingshan, *S. Sasaki s.n.* Mar 1918 (TAIF). **Hsinchu:** Chutung, *T.S. Liu et al. 1413* (HAST, TAI). **Taichung:** E-W Cross Island Highway, Chiayang, *S.Y. Lu 12431* (TAIF). **Nantou:** Hsitou, *Yang 1000* (TAI, TNM, TUNG). **Chiayi:** Fenchihu, *U. Faurie 1315*(BM, KYO, P). **Kaohsiung:** S. Cross Island Highway, Kuaigu, *C.S. Kuoh* (NCKU). **Pingtung:** Tawu, *T.C. Huang & Kao 7403* (TAI). **Hualien:** Hopin, *Yang 2927*(TNM). **Taitung:** Chinshueiyin, *S.Y. Lu s.n.* Feb 1973 (TAIF). See also in *Taiwania* 37(1): 31–35. (1992)

7b. *Clematis henryi* var. *morii* (Hayata) T.Y. Yang & T.C. Huang in *Taiwania* 37(1): 35. 1992. 森氏鐵線蓮

Clematis morii Hayata in J. Coll. Sci. Univ. Tokyo 25: 42. 1908.

Type: Taiwan: Nantou: Montibus Centralibus, *T. Kawakami & Mori 1854* (lectotype is designated here: TI!; isolectotype: TAIF!)

A scandent perennial woody vine. Stem sulcate, usually velutinous and glabrous at maturity. Leaves ternately compound, opposite, rarely whorled, subcoriaceous; petiole tendrilate, *c.* 26-55 mm long. Leaflets 3, sometimes basal leaves simple, terminal segment *c.* (53-) 71-110 (-134) mm long, (9-) 17-29(-36) mm wide, oblong-lanceolate or ovate-lanceolate; apex acuminate; base cuneate or obtuse, and oblique on lateral leaflets; usually unlobed but 3-lobed on simple leaflets; margin sparsely serrulate, rarely entire; glabrous on both surfaces; main veins 3, nerves flat or sunken on adaxial side and elevated on abaxial side; petiolulate. Flowers solitary, rarely dichasic, *c.* 15-25 mm diam., white, turning yellowish-brown when dry, campanulate, pendent, recurved at the tip; axillary or terminal; pedicels albo-velutinous, with 2-3 or more pairs of bracts, decussate, chartaceous, subulate or linear, glabrous inside and pubescent outside. Sepals 4, rarely 5 or 6, *c.* 15-25 mm long, 5-12 mm wide, oblong or ovate-oblong; apex acute; base cuneate; albovegetinous outside and glabrous except tip and margin inside. Stamens numerous, *c.* 7-17 mm long, pubescent, centripetal, inner ones shorter; anthers linear, with lateral longitudinal dehiscence; connective shorter than the pollen sacs, glabrous on both sides; filaments linear, dilated near base, glabrous on adaxial side, pubescent on lateral and abaxial sides. Carpels numerous, with white sericeous hairs. Fruits *c.* 28-40 mm long; achenes *c.* 3-5 mm long, narrowly ovate or elliptic, convex on both sides, brown, velutinous hairs; style persistent and lengthening to become caudate after anthesis, with pale yellow bearded hairs.

Flowering season during winter, November to February of the following year; fruiting season January to April.

Distribution: Endemic to Taiwan.

Habitat and Ecology: It is growing in open land and forest margins around the Central Mountains and Alishan Mountains at altitudes between 1000 and 2500 m.

Specimens examined:

Taoyuen: Balin to Mt. Lalashan, *Yang 1927* (TAI). **Taichung:** Mt. Nanhutashan, *Yang 329A* (TAI). **Nantou:** E-W Cross Island Highway 103-111K, *Yang 2673* (TNM). **Kaohsiung:** S. Cross Island Highway, Kuaigu, *F.Y. Lu & Ou 3304*(TCF). **Hualien:** Mt. Nankaoshan, *R. Kanehira & Sasaki s.n.* Mar 1918 (TAIF). **Taitung:** Chakahsi, *T. Kawakami & Mori 4510* (TI). See also in *Taiwania* 37(1): 35-38. (1992)

8. *Clematis lasiandra* Maxim. in Bull. Acad. Imp. Soc. St.-Petersb. 22: 213. 1876; Kuntze in Verh. Bot. Ver. Brand. 26: 169. 1885; Finet & Gagnepain in Bull. Soc. Bot. France 50: 547. 1903; Handel-Mazzetti in Act. Hort. Gothob. 13: 196. 1939; Wang in Act. Phytotax. Sinica 6: 373. 1957; Fang, Fl. Reip. Pop. Sinicae 28: 112. 1980; Yang & Huang in *Taiwania* 37(1): 38. 1992. 小木通

Type: Japan: Sikoku: Nagasaki, Nagayama. *Maximowicz s.n.* Sept.-Oct. 1863. (lectotype: LE!; isolectotypes: A!, BM!, K!, LE!, NY!)

Clematis lasiandra var. *nagasawai* Hayata in Journ. Coll. Sci. Univ. Tokyo 25: 40. 1908.

Type: Taiwan: Hualien: Shukoran (Hsiukuluanshi), *S. Nagasawa 611* (holotype: TII!; isotype: KYO!)

A scandent perennial deciduous woody vine. Stem sulcate, with gland hairs when young and glabrous at maturity. Leaves biternate or flammuliform, the first several leaves usually alternate in the juvenile stage or on new branches and changing to opposite; chartaceous; petioles tendrilate, *c.* 43–67 mm long, connate and enlarged at the node. Leaflets 9 to 15, sometimes to 21 or more, 5-leaflets at the pedicel or near the base, *c.* (38-) 47–72 (-86) mm long, (13-) 18–34 (-48) mm wide, ovate or ovate-lanceolate; apex acuminate or acute; base cuneate, truncate or cordate, lateral segments oblique; 1 to 3-lobed; margin serrulate to double-serrate; sparsely velutinous or subglabrous on adaxial surface; glabrous or sparse velutinous along vein on abaxial surface; main veins 3 to 5, nerves flat or sunken on adaxial side and elevated on abaxial side; petiolule tendrilate. Inflorescence cymes, axillary; pedicels glabrous or nearly so; trichotomously branched; bracts leaf-like, lanceolate, glabrous or nearly so on both sides. Flowers *c.* 15–25 mm diam., pale pink, pink, or sometimes white, turning brown when dry, campanulate, pendent, recurved at the tip. Sepals 4, *c.* 10–25 mm long, 5–10 mm wide, oblong or oblong-ovate; apex acute; base obtuse; glabrous on both sides except the recurved tip; nerves convex ridge-like on abaxial side. Stamens numerous, *c.* 10–20 mm long, pubescent, centripetal, inner ones shorter; anthers oblong or linear, with lateral longitudinal dehiscence, glabrous on both sides; connective equal to the pollen sacs or shorter, glabrous on both sides; filaments linear, flat and dilated near base, sericeous on both sides, extending beyond the anthers. Carpels numerous, with sericeous hairs. Fruits *c.* 23–35 mm long; achenes *c.* 3 mm long, ovate or elliptic, convex on both sides, reddish-brown, velutinous hairs; style persistent and lengthening to become caudate, with white bearded hairs.

Flowering season during summer, late June to November, rarely to January next year; fruiting season August to April the following year.

Distribution: The main distribution is in China (south from Jujiang Range and north to Huangho Range, including Provs. Yunnan, Sichuan, Gansu, Shaanxi, Guizhou, Guangxi, Hubei, Hunan, Jiangxi, Guangdong, Anhui, Zhejiang) and eastwards to Taiwan and southern Japan (Isls. Ryukyu, Kyushu, Sikoku and part of Honshu).

Habitat and Ecology: It is growing in open land and forest margins at altitudes between 800 and 3000 m.

Specimens examined:

Taipei: Mt. Lalashan, *S. Sasaki s.n.* Oct 1930 (TAIF). **Han:** Nanshan, *C.C. Chuang 2439* (TAI, TI). **Hsinchu:** Kuanwu, *H.Y. Liu 3774* (TNM). **Taichung:** Lishan, *Yang 3178* (TNM, TUNG). **Nantou:** Wusheh, *Sasso s.n.* Nov 1932 (CHIA). **Chiayi:** Mt. Alishan, *R. Kanehira 2999* (NY, US). **Tainan:** Hsinhua Farm, *C.S. Kuoh 13132* (NCKU). **Kaohsiung:** S. Cross Island Highway, Tienchi to Likuan, *Y.F. Chen 13375* (priv.). **Hualien:** Tayulin, *W.S. Tang 91* (TAI). **Taitung:** S. Cross Island Highway, Yakou to Liyuen, *Yang et al. 4251* (TNM). See also in *Taiwania* 37(1): 38-42. (1992)

9. *Clematis leschenaultiana* DC., Syst. Nat. I: 151. 1817, Prod. Syst. I: 6. 1824; Finet & Gagnepain in Bull. Soc. Bot. France 50: 542. 1903; Hayata in J. Coll. Sci. Univ. Tokyo 30: 5. 1911, Icon. Pl. Form. 1: 17. 1911; Sasaki, List Pl. Form. 183. 1928; Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. 2: 77. 1932; Handel-Mazzetti in Act. Hort. Gothob. 13: 191. 1939; Suzuki, Short Fl. Form. 65. 1936; Masamune, List Vasc. Pl. Taiwan 53. 1954; S.S. Huang in Biol. Bull. Nat. Taiwan Norm. Univ. 5: 24. 1960; Eichler, Fl. Java I: 144. 1963; Liu & Hsieh, Fl. Taiwan 2: 486. 1976; Fang, Fl. Reip. Pop. Sinicae 28: 120. 1980; T.I. Yang, List Pl. Taiwan 603. 1982; Wang in Bull. Bot. Res. 7: 100. 1987; Yang & Huang in Taiwania 37(1): 42. 1992. 銹毛鐵線蓮

Clematis acuminata DC. var. *leschenaultiana* (DC.) Kuntz. in Verh. Bot. Verb.Brand. 26: 167. 1885.

Clematis acuminata ssp. *leschenaultiana* (DC.) Bruhl in Ann. Bot. Gard. Calc. 5: 75. 1896.

Type: Indonesia: Java. *Leschenault s.n.* s.d. (P!)

Clematis fulva Zoll. & Mor. ex Mor., Syst. Verz. Zoll. 35. 1845-46. Type: Indonesia: Java: Zollinger 2005 (isotypes: BM!, P!)

Clematis leschenaultiana var. *fulva* (Zoll. & Mor.) Kuntz. in Ann. Jard. Bot. Buitenzorg 14. t. 20. 1897.

Clematis caesariata Hance in Journ. Bot. 8: 71. 1870. Type: China: Fujien: C.F. DeGrijs 6700 (lectotype is designated here: K!; isolectotype: BM!, LE!)

Clematis splenden Levl. & Van. in Bull. Acad. Inter. Geog. Bot. 11: 171. 1902. Type: China: Guizhou: Hoangkochou, L. Martin & Bodinier 2248 (E!); Tchenlin, Bodinier 2248 (E!)

Clematis leschenaultiana var. *angustifolia* Hayata in Journ. Coll. Sci. Univ. Tokyo 30: 16. 1911. Type: Taiwan: Chiayi: Shinko, Rahao, T. Kawakami s.n. 1908 (holotype: TI!)

Clematis angustifolia (Hayata) Hayata, Icon. Pl. Form. 3: 1. 1913.

Clematis leschenaultiana var. *subglabrifolia* Merr. in Philipp. Journ. Sci. Ser. C, Botany 10: 303. 1915. Type: Philippine: Luzon: Mt. Polis, Subprov. Ifugao, R.C. McGregor s.n. Feb 1913 (BM!, K!, US!)

A scandent perennial evergreen woody vine. Stem sulcate, densely golden velutinous hairs. Leaves ternately compound, opposite, chartaceous; petioles tendrillate, c. 66–117 mm long. Leaflets 3, c. (64-) 73–105 (-138) mm long, (22-) 39–59 (-78) mm wide, ovate-elliptic, or ovate-lanceolate; apex acuminate or acute; base cordate or cuneate, oblique usually on lateral segments; unlobed or rarely 3-lobed; margin dentate or serrate; golden velutinous on adaxial surface and densely golden tomentose on abaxial surface; main veins 3 to 5, nerves flat or sunken on adaxial side and elevated on abaxial side; petiolule tendrillate. Inflorescence dichasic or cymes, axillary; pedicels golden velutinous hairs, trichotomously branched; bracts leaf-like, lanceolate, golden velutinous on both sides; bracteola subulate, golden pubescent. Flowers c. 15–25 mm diam., golden, campanulate, pendent, recurved at the tip. Sepals 4, c. 15–25 mm long, 5–10 mm wide, oblong or ovate-oblong; apex acute; base cuneate; densely golden velutinous outside and glabrous or nearly so inside except recurved tip and margin. Stamens numerous, c. 10–25 mm long, pubescent, centripetal, inner ones shorter; anthers linear, with lateral longitudinal dehiscence, glabrous on both sides; connective shorter than the pollen sacs, glabrous on both sides; filaments linear, flat and dilated near base, glabrous or sparsely hairy on adaxial side, densely sericeous on abaxial side, extending beyond the anthers.

Carpels numerous, with golden sericeous hairs. Fruits *c.* 35—47 mm long; achenes *c.* 5—7 mm long, oblong-lanceolate or fusiform, convex on both sides, reddish-brown, golden velutinous hairs; style persistent and lengthening to become caudate after anthesis, with golden bearded hairs.

Flowering season during winter, October to March of the following year; fruiting season November to April of the following year.

Distribution: It is the only species in this group distributed over both Hemispheres and widely distributed in the Old World. The distributed area from India, Himalayan, Southwest, South and Southeast China (including Provs. Yunnan, Sichuan, Guizhou, Guangxi, Hubei, Hunan, Guangdong, Hainan, Fujian), Taiwan, Vietnam, Philippines to Indonesia (Sumatra, Java and Sumbawa) and north to southern Japan (Ryukyu and Kyushu Islands).

Habitat and Ecology: It is growing in open land, stream sides and forest margins at altitudes between 500 and 2200 m.

Specimens examined:

Taipei: Wulai, *Yang 2686* (TNM). **Han:** Kueishan, *C.C. Chuang 3159* (L, NY, TAI, TI). **Taoyuen:** Mt. Lalashan, *M.T. Kao 10210* (TAI). **Hsinchu:** Wutzushan, *T. Kawakami s.n.* Jun 1907(TAIF). **Taichung:** Mt. Annashan, *T.S. Liu et al. 17* (TAI). **Nantou:** Puli, *Y.C. Liu et al. 889*(CHIA). **Chiayi:** Fenchihu, *Y.H. Hwang & Chen 45* (TNM). **Tainan:** Kuangzulin, *C.S. Kuoh 11312*(NCKU). **Kaohsiung:** S. Cross Island Highway, *C.S. Kuoh 11117* (NCKU, TUNG). **Pingtung:** Wutai, *I.S. Chen 1591* (TAI). **Hualien:** Yenhai Logging Tract, *Yang, Hsieh et al. 5484* (TAI, TNM, TUNG). **Taitung:** Chinshueiyin, *C.E. Chang 7310* (PPI). See also in *Taiwania* 37(1): 43-47. (1992)

10. Clematis meyeniana Walp. in Nov. Act. Nat. Cur. 19(1): 297. 1843; Bentham, Fl. Hongk. 6. 1861; Forbes & Hemsley in Journ. Linn. Soc. Bot. 23: 5. 1886; Henry, List Pl. Form. 14. 1896; Finet & Gagnepain in Bull. Soc. Bot. France 50: 530. 1903; Matsumura & Hayata in Journ. Coll. Sci. Univ. Tokyo 22: 5. 1906; Kawakami, List Pl. Form. 2. 1910; Hayata, Icon. Pl. Form. 1: 20. 1911; 1903; Sasaki, List Pl. Form. 183. 1928; Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. 2: 77. 1932; Suzuki, Short Fl. Form. 65. 1936; Tamura in Act. Phytotax. Geobot. 15(1): 19. 1953; Masamune, List Vasc. Pl. Taiwan 53. 1954; S.S. Huang in Biol. Bull. Nat. Taiwan Norm. Univ. 5: 27. 1960; Ohwi, Fl. Japan 600. 1965; Hatusima, Fl. Ryukyus 276. 1971; Liu & Hsieh, Fl. Taiwan 2: 486. 1976; T.C. Huang, Fl. Taiwan 6: 48. 1979; Chang, Fl. Reip. Pop. Sinicae 28: 171. 1980; T.I. Yang, List Pl. Taiwan 603. 1982.

麥氏鐵線蓮 Fig. 9

Type: China: Hongkong: Cap. Syng-moon, *non vide*.

Clematis hakkuensis Hay. in sched. TAI & TAIF; *nom. nud.*

A scandent perennial woody vine. Stem sulcate, glabrous. Leaves ternately compound, coriaceous; petioles tendrillate, *c.* 47—76 mm long; stipules absent. Leaflets 3, *c.* (39-) 61—94 (-123) mm long, (23-) 31—48 (-71) mm wide, ovate, ovate-elliptic or ovate-lanceolate; apex acute-mucronulate; base obtuse or cuneate; unlobed; margin entire; glabrous on both surfaces; main veins 5, nerves elevated on both sides; petiolulate. Inflorescence cymes,



Fig. 9. *Clematis meyeniana* Walp. (Ranunculaceae). 1. Habit; 2. Bracteole, abaxial side; 3. & 4. Sepals, 3, adaxial and 4, abaxial sides; 5. & 6. Stamens; 7. Carpel; 8. Fruit.

terminal or axillary; pedicels almost glabrous or pubescent, trichotomously branched; bracts and bracteoles subulate, coriaceous, glabrous on both sides. Flowers *c.* 24–52 mm diam., white, spreading. Sepals 4, *c.* 14–25 mm long, 3–7 mm wide, oblong or oblong-lanceolate; apex acute-mucronulate; base cuneate; glabrous inside and sparsely velutinous outside. Stamens numerous, *c.* 7–14 mm long, glabrous, centripetal; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective excurrent beyond the pollen sacs, *c.* 0.3–0.7 mm long; filaments linear and flat. Carpels numerous, with golden sericeous hairs. Fruits *c.* 21–40 mm long; achenes *c.* 5–9 mm long, lunate or elliptic, compressed laterally, yellowish brown with golden velutinous hairs; style persistent and lengthening to become caudate after anthesis, with golden bearded hairs.

Flowering season starts from spring, March to September; fruiting season is from August to January of the following year.

Distribution: Distributed around Southwest and South China (Provs. Sichuan, Yunnan, Guizhou, Hunan, Guangdong, Guangxi, Jiangxi, Fujien), Hongkong, Taiwan, and southern Japan.

Habitat and Ecology: It is widely distributed in open land or forest margins, usually at an altitude below 2000 m. Fig. 10.

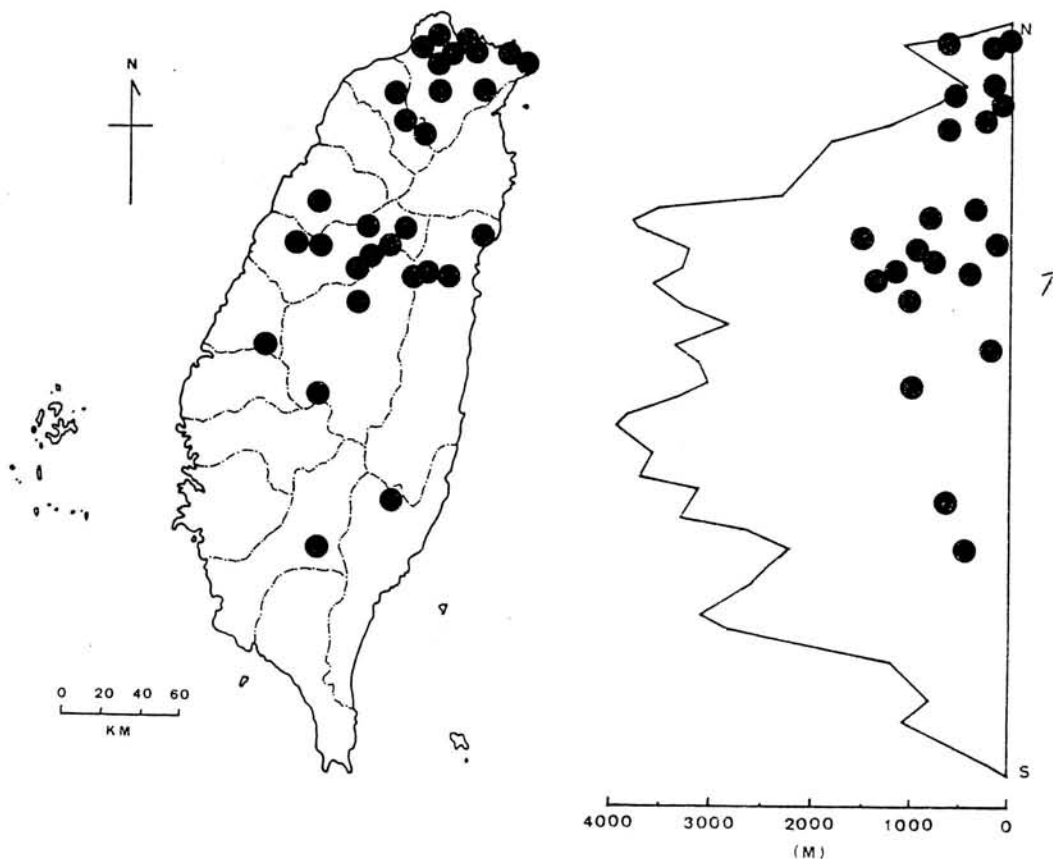


Fig. 10. Latitudinal and altitudinal distribution of *Clematis meyeniana* in Taiwan.

Specimens examined:

MAINLAND CHINA: **FUJIAN:** Nanjin, Shuhai, 400 m, *Ximen Univ. Coll.* 228 (PE); Nanping, *Y. Lin* 84 (PE). **JIANXI:** Fulian, *Q.H. Li & Chen* 63 1(PE); Mt. Wugongshan, Temple Zijigong, *Jiangxi Exped.* 946 (PE). **HUNAN:** Wugang, Yunshan, *P.C. Tsoong* 1299 (PE); Xinning, Mt. Ziyunshan, *L.H. Liu* 15449 (PE). **GUANGDONG:** Boluo, Gongchuang, Mt. Xialudishan, 510 m, *C.F. Wei* 121749 (PE); Dinghu, *G.L. Shi* 13112 (PE). **GUANGXI:** Beiliu, Mt. Daronshan, *M.J. Liang* 66299 (PE); Xinan, *Z.Y. Chen* 51663 (PE). **GUEIZHOU:** Ronjiang, Mt. Yueilianshan, 900 m, *S.P. Jien et al.* 51363 (PE); Xinjen, 1200 m, *Z.S. Zhang & Chang* 8438 (PE). **YUNNAN:** Jingping, 1450 m, *P.Y. Mao* 415 (PE); Shuangjiang, Mengku, 1100-1200 m, *J.S. Shing* 1192 (PE); Simao, 1400-1600 m, *P.Y. Mao* 5784 (PE).

TAIWAN: **Taipei:** Aoti, *Y.F. Chen* 2383 (TAI); Chenchushan, *S. Suzuki* 8452 (TAI), *Nakamura* 1617 (TAI); Chihsinshan, *Yu et al.* 74 (TAI); Fulong, *Yang* 2483 (TNM); Hsiaogetou, *C.C. Hsu et al.* 1080 (TAI), *Yang* 1855 (TNM), 1859 (TNM), 2926 (TNM); Nangangshan, *Yang* 1620 (TNM); Nanshichiao, *T. Kawakami s.n.* May 1915 (TAIF); Neihu, *Yang* 2990(TAI); Pihu, *Yang* 9 (TAI, TUNG), 1870 (TAI); Sengken, *Shimizu* 413 (TAI), *T. Kawakami* 5744 (TAIF), *T. Kawakami & Shimada s.n.* May 1907 (TAIF); Shihfengliiao, *M.T. Kao* 11010 (TAI); Shihting, *C.M. Kuo* 11557 (TAI), *Lin & Kao* 4955(TAI,HAST), *C.C. Hsu* 9541 (TAI), *Yang* 2442 (TAI), 2575 (TNM), 2991(TNM), Huangtitien, 200 m, *T.S. Hsieh et al. s.n.* May 1992 (TNM); Sichi, *Wo s.n.* May 1934 (TAI), *S. Sasaki s.n.* Jul 1932 (TAI); Songshan, *S. Sasaki s.n.* Apr 1933 (TAI); Tachitoushan, *Yang* 2411 (TAI); Tanshui, *Oldham s.n.* 1864 (K, copy in pencil at TAI); Wanli, *C.M. Kuo* 5354 (TAI); Wulai, *S. Sasaki s.n.* May 1929 (TAI), *Yang* 953 (TNM), 956 (TNM), 2451 (TNM), 2678 (TNM), 2992 (TNM); Zuiho (Juifang), *S. Suzuki s.n.* Nov 1931(US). **Keelung:** Keelung, *T. Kawakami & Sasaki s.n.* Apr 1911 (TAIF), *S. Sasaki s.n.* May 1931 (TAI). **Taoyuan:** Chiaobanshan, *S. Sasaki s.n.* Nov 1915 (TAIF); Chikeping, *T. Kawakami & Mori s.n.* Mar 1907 (TAIF); Kueishan, *G. Masamune & Sasaki s.n.* Jul 1932 (TAI); Lalashan, *M.T. Kao* 10209 (TAI). **Miaoli:** Hushan, *T.C. Huang* 8708 (TAI). **Taichung:** Anmashan, *Liu et al.* 259 (TAI), Tashueishan logging tract, *S.Y. Lu* 14893 (TAI,TAIF); E-W Cross Island Highway, Chiapaotai, 1000 m, *J.S. Huang s.n.* Jan 1976 (TCF), Chingshan, 1200 m, *Yang* 1373 (TAI), 1761 (TAI), 2856 (TNM), 2949 (TNM), Lishan, 1900 m, *E. Matuda s.n.* Aug 1919 (TAIF), Malun, *M.T. Kao* 9266 (TAI), Sungho, *M.T. Kao* 9642 (TAI), Tungshi, *Cheng s.n.* Apr 1971(TCF); Wuling, *Y.C. Liu et al.* 4440(TCF). **Nantou:** Hueisun Forestry Res., *Yang* 2858 (TNM), *Chang et al. s.n.* May 1971 (TCF), *Shon s.n.* May 1971 (TCF); Shanlinhsi, *Yang & Chen* 2778 (TNM). **Yunlin:** Juoshueihsi, *Y. Yamamoto s.n.* Aug 1931 (TAI). **Kaohsiung:** Tehchi, *Y. Yamamoto & Mori* 794 (TAI). **Pingtung:** Mt. Peitawushan, Kwaigu, 2000 m, *Z.Y. Chen et al. s.n.* Jul 1991(priv.); Daizyurinzan (Mt. Tashulinshan), *E. Matuda Ran.* 7 (TAI). **Taitung:** Changpan to Chaori, *Y. Yamamoto & Mori* 335(TAI); Litao to Bridge Tienlongchiao, 700 m, *Yang et al.* 4259 (TAI). **Hualien:** Haishushan, *S. Suzuki* 9024 (TAI); Hueiyuan, *S.Y. Lu* 15985 (TAIF); Kuanyuan, *C.I. Peng* 7389 (HAST); Tienhsian, *T. C. Huang & Huang* 10159 (TAI), *M.T. Kao* 7828 (TAI), *T. Shimizu & Kao* 10663 (TAI), *Tanaka & Yamamoto s.n.* Oct 1930 (TAI); Tsuelu, *S. Suzuki* 10511 (TAI); Bridge Tzuenchiao, *C.I. Peng* 9314 (HAST).

HONGKONG: **Hongkong:** Isl. Lantau, Ngong-Ping, *S.Y. Hu* 10710(PE).

JAPAN: Pref Kagoshima, Isl. Tokunoshima, Oshima-gun, Kamezu, *J. Murata & Endo* 137 (KUN), Koshima, *J. Murata* 10386 (KUN). **Isls. Ryukyu:** Isl. Kumezima, Nakazatoson, Taiya, 200 m, *T. Yamazaki* 1692 (PE).

Note: The distribution of *C. meyeniana* is through southwestern and southern China, Hongkong, and on Taiwan and southern Japan (Figure 11). Plants with glabrous pedicels are normally found in Taiwan whereas pubescent or subpubescent pedicels are present mainly in Hongkong and parts of Mainland China. In Taiwan, there are also a small group with pubescent / subpubescent pedicels, e.g. *S. Y. Lu* 14893 (collected in Taichung) and *E. Matuda Ran.* 7 (collected in Pingtung). The character of pedicels pubescent or glabrous could therefore be considered as a continuous variation.

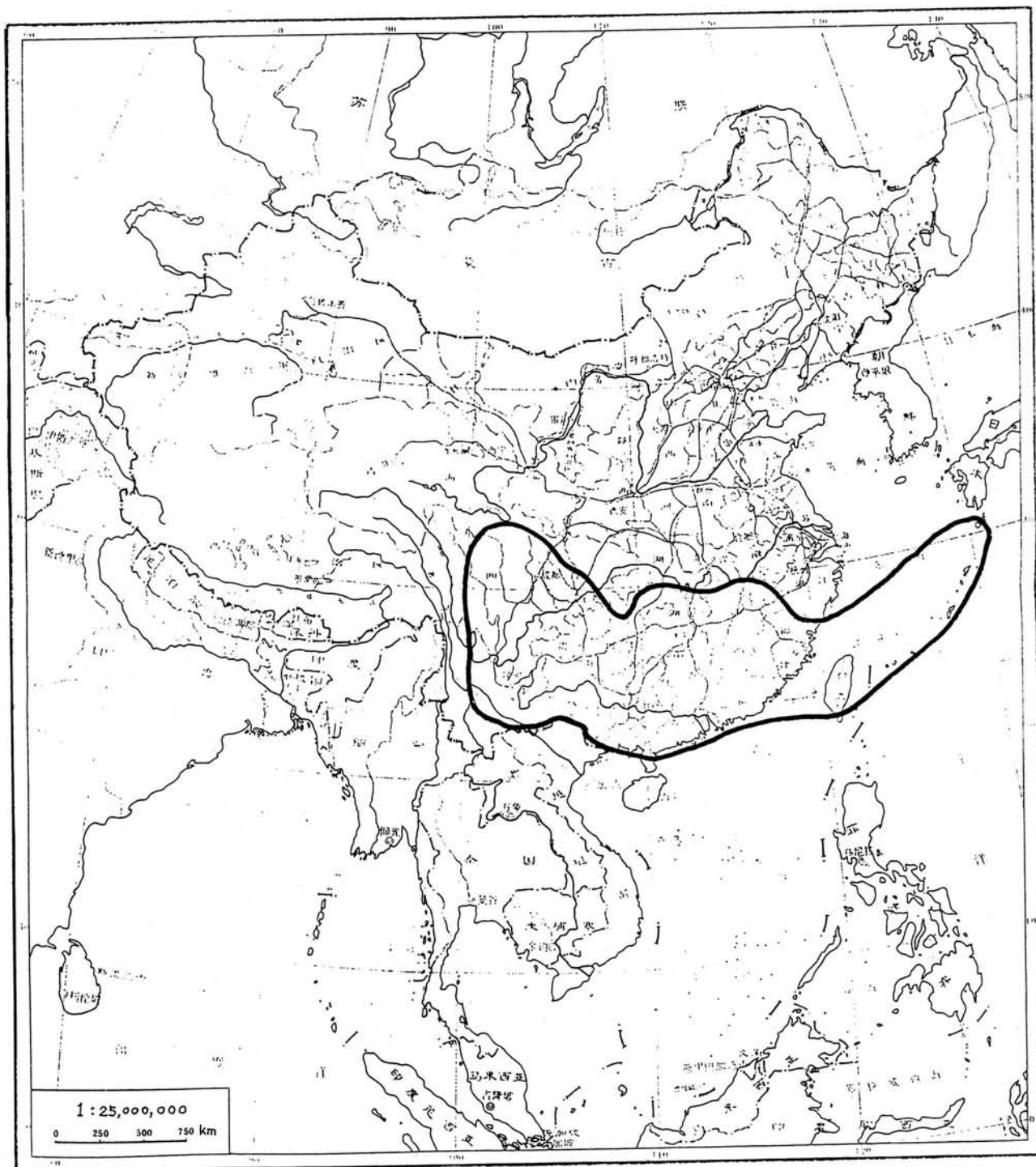


Fig. 11. Distribution map of *Clematis meyeniana* in the world.

- 11. *Clematis montana*** Buch.-Ham. ex DC., Syst. 1: 164. 1817; Kuntze in Verh. Bot. Ver. Brand. 26: 141. 1885; Franchet in Bull. Soc. Bot. France 33: 362. 1886, Pl. Delav. 5. 1889; Maximowicz in Act. Hort. Petrop. 11(1): 10. 1890; Finet & Gagnepain in Bull. Soc. Bot. France 50: 524. 1903; Handel-Mazzetti in Act. Hort. Gothob. 13: 210. 1939; Tamura in Act. Phytotax. Geobot. 15: 118. 1954; Liu & Hsieh, Fl. Taiwan 2: 486. 1976; T.C. Huang, Fl. Taiwan 6: 48. 1979; Chang, Fl. Reip. Pop. Sinicae 28: 220. 1980; T.I Yang, List Pl. Taiwan 603. 1982. 繡球藤 Fig. 12

Clematis insulari-alpina Hayata, Icon. Pl. Form. 3: 3. 1913. Type: Montibus Formosae, U. Mori s.n. Jul 1912 (holotype: TI!)

A scandent perennial deciduous woody vine. Stem round, sulcate, pubescent and turning glabrous when mature. Flower buds produced in the leaf-axils of last year's shoots, winter buds, new buds possessed branches only. Leaves ternately compound, sometimes pinnate, chartaceous, opposite; petioles tendrillate, *c.* 36–61 mm long; stipules absent. Leaflets 3 to 5, *c.* (22-) 37–59 (-72) mm long, (10-) 16–31 (-47) mm wide, ovate or ovate-lanceolate; apex acuminate; base cuneate or obtuse; 1 to 3-lobed; margin irregularly serrate; pubescent on both surfaces or sparsely velutinous on adaxial surface; main veins 3, nerves flat or sunken on adaxial side and elevated on abaxial sides; petiolulate. Inflorescence fasciculate, axillary; pedicels densely velutinous, trichotomously branched. Flowers *c.* 30–72 mm diam., white, spreading. Sepals 4, *c.* 20–40 mm long, 10–25 mm wide, elliptic or obovate; apex obtuse-mucronulate; base cuneate; glabrous inside and densely velutinous outside. Stamens numerous, *c.* 5–10 mm long, glabrous, centripetal; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective excurrent beyond the pollen sacs, *c.* 0.13–0.17 mm long; filaments linear and flat. Carpels numerous, ovary glabrous and style with white sericeous hairs. Fruits *c.* 38–55 mm long; achenes *c.* 3–5 mm long, round or elliptic, convex laterally, brown to dark brown, glabrous; style persistent and lengthening to become caudate after anthesis, with pale yellow or yellow bearded hairs.

Flowering season April to July; fruiting season July to August.

Distribution: This species occurs from Southwest China (Provs. Yunnan, Sichuan and Guizhou) westwards to the Himalaya area (including Nepal, Sikkim, northern India and Xizhang), eastwards to Central, South and Southeast China (Provs. Hubei, Hunan, Guangxi, Jiangxi, Anhwei, Fujian) to Taiwan, and northeastwards to North China (Provs. Shaanxi, Gansu and Ningxia).

Habitat and Ecology: It is growing in alpine grassland or associated with shrubs around the Central Mountains, Hsueshan Mountains, Yushan Mountains at an altitude above 2500m. Fig. 13

Specimens examined:

Ilan: Mt. Nanhutashan, C.C. Hsu 5887 (TAI), Yang 327 (TAI), 2993 (TNM); Mt. Shenmachenshan, T.C. Huang 7773 (TAI). **Hsinchu:** Mt. Tapachienshan, C.T. Wu 1336 (TAI), Yang 2354 (TNM), 2367 (TNM), 3166 (TNM), 3171 (TNM). **Taichung:** Mt. Hsiaohsueishan, Yang 424 (TAI), Mt. Hsueishan, T.C. Huang & Hsieh 7162 (TAI); Mt. Paikotashan, Liu et al. s.n. Aug 1956. **Nantou:** Mt. Chilaichunanshan, S. Suzuki 2454

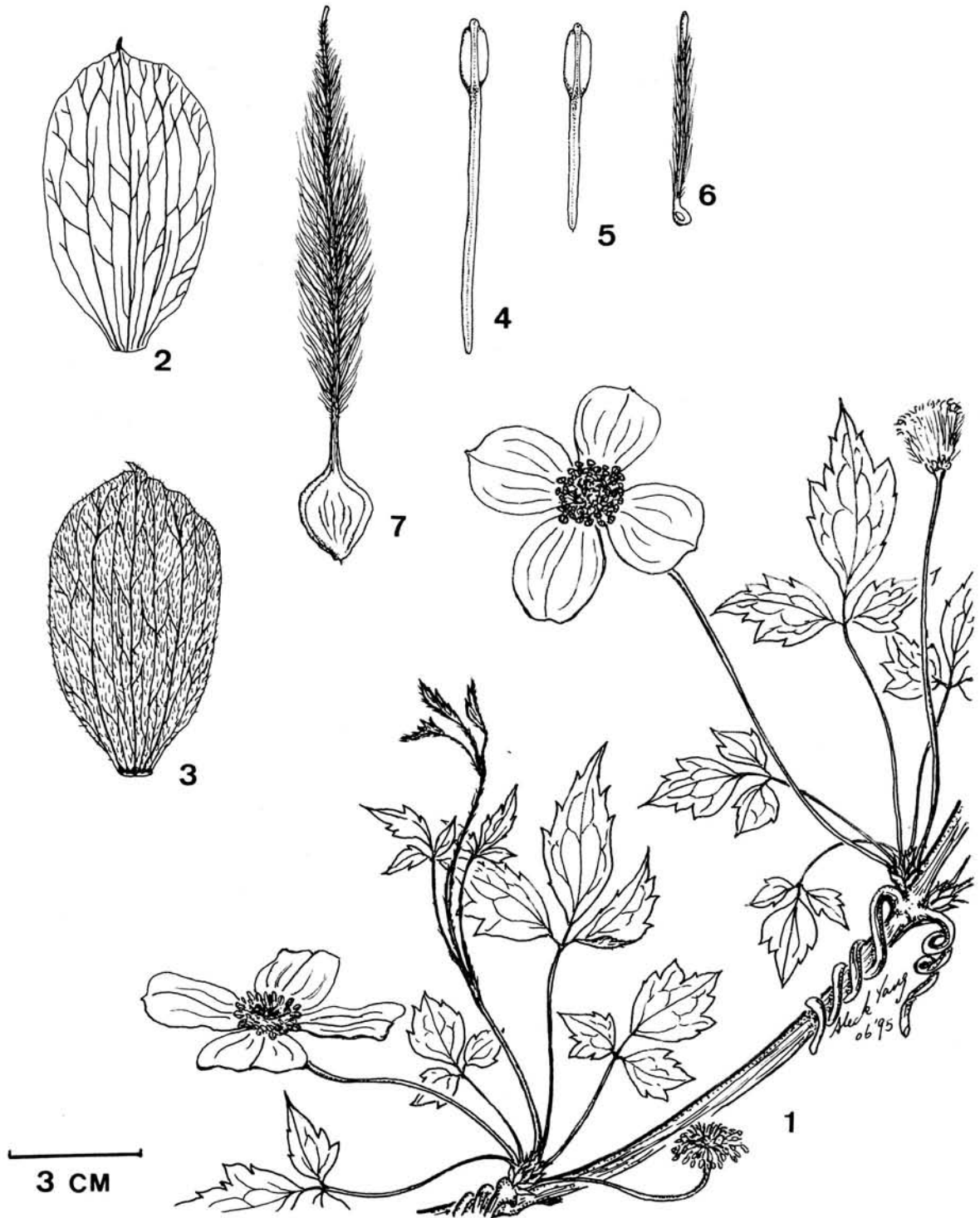


Fig. 12. *Clematis montana* Buch.-Ham. ex DC. (Ranunculaceae). 1. Habit; 2. & 3. Sepals, 2, adaxial and 3, abaxial sides; 4. & 5. Stamens; 6. Carpel; 7. Fruit.

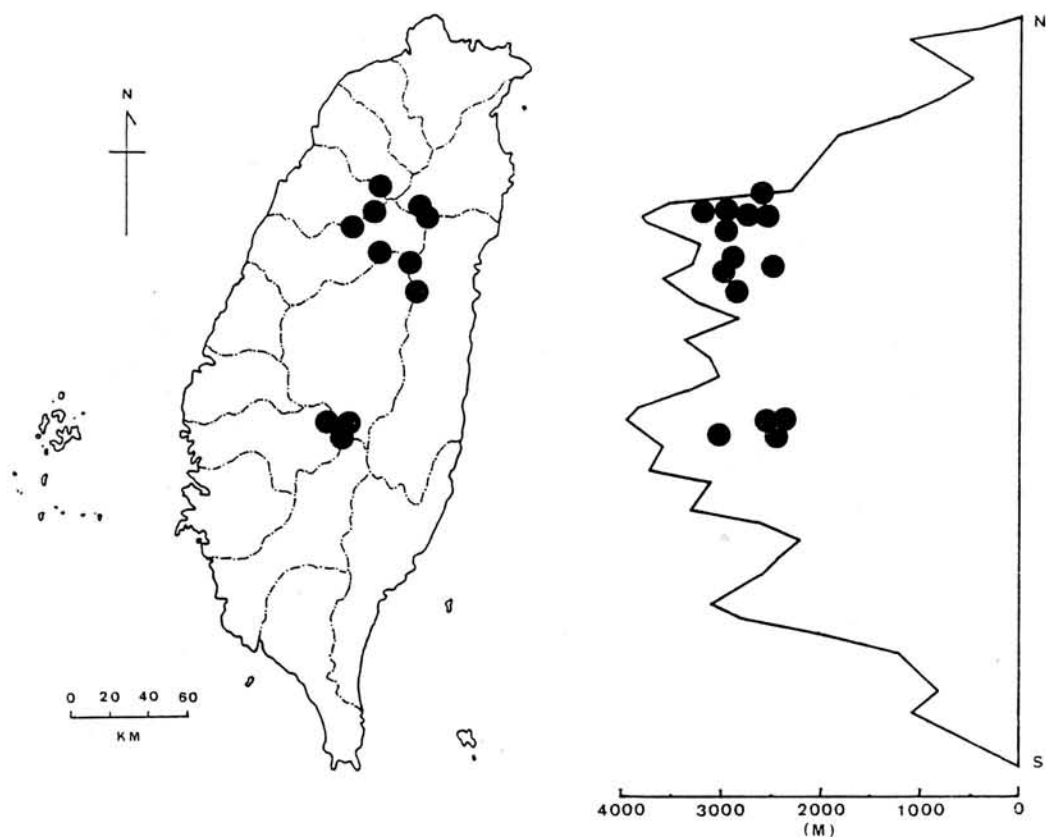


Fig. 13. Latitudinal and altitudinal distribution of *Clematis montana* in Taiwan.

(TAI); Mt. Hohuanshan, C.C. Hsu & Kuoh 11138 (TAI); Junta logging tract, R.S. Lin s.n. May 1992 (TNM); Kunyang, Yang 2261 (TAI); Mt. Yushan, R. Kanehira & Sasaki s.n. Oct 1918 (TAIF), S. Sasaki s.n. Oct 1909 (TAIF), s.n. Sept 1924 (TAIF), Yang 2261 (TNM), 3404 (TUNG), 3436 (TUNG), C.L. Yeh 973 (PPI), 399 (PPI), s.n. Jul 1975 (PPI). **Chiayi**: Mt. Alishan to Mt. Yushan, 2666-3333 m, E.H. Wilson 10949 (A), Tatak-anbu, 2600 m, C. C. Hsu 5382 (TAI), M. Tamura et al. 22154 (TAI), 22282 (TAI), Yang 3401 (TUNG); Mt. Lulinshan, C.C. Chuang & Kao s.n. Jul 1957 (TAI); Paiyunshanchuang, C.C. Hsu 5341 (TAI), C.I. Peng 9550 (HAST). **Hualien**: Tayulin, C.T. Lin s.n. Jun 1983 (TAIF), Yang 2166 (TNM), 2167 (TNM).

12. *Clematis parviloba* Gard. ex Champ. subsp. *bartlettii* (Yamam.) T.Y.A. Yang et T.C. Huang, stat. nov. 巴氏鐵線蓮 Fig. 14

Clematis bartlettii Yamam. in Trans. Nat. Hist. Soc. Form. 20: 101. 1930.

Type: Taiwan: Taihoku (Ilan): between Doba (Tucheng) (1,460 ft) and Taiheisan (Mt. Taipinshan) (4,880 ft), H.H. Bartlett 6011 (holotype: TAI!; isotypes: TAI!, US!).

Clematis matsudai Hay., in sched. at US; nom. nud.

A scandent perennial herbaceous vine. Stem olive or green, sulcate, glabrous when matured. Leaves biternately or bipinnately compound, chartaceous; petioles tendrillate, c. 46–71 mm long; stipules absent. Leaflets 9–15, c. (24-) 42–66 (-86) mm long, (4.0-) 15–33 (-57) mm wide, ovate or ovate-oblong, sometimes oblong-lanceolate; apex acute; base cuneate or obtuse; 3-lobed; margin serrate or coarsely serrate, rarely entire; sparsely

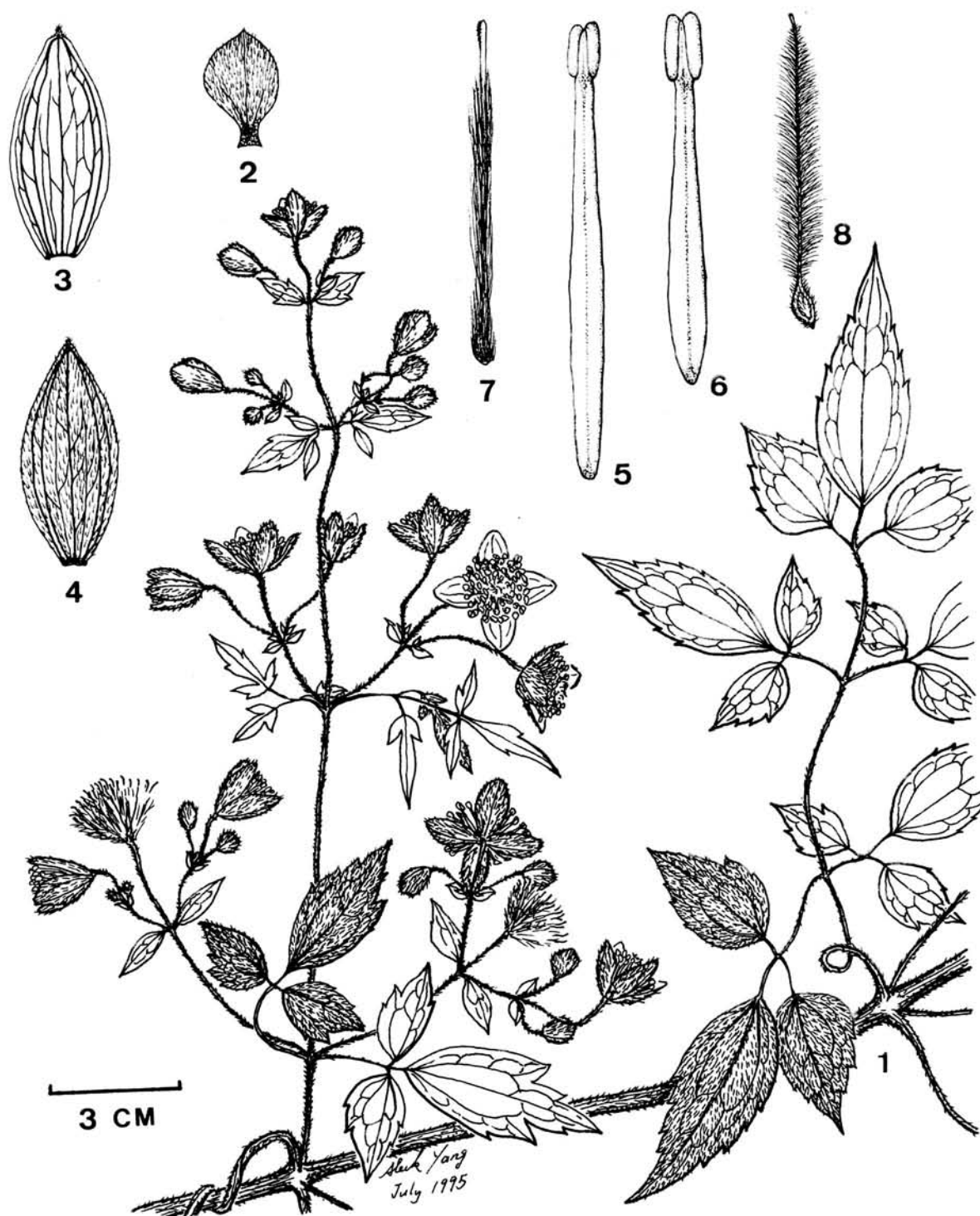


Fig. 14. *Clematis parviloba* subsp. *bartlettii* (Yamam.) T.Y.A. Yang et Huang (Ranunculaceae). 1. Habit; 2. Bracteole, abaxial side; 3. & 4. Sepals, 3, adaxial and 4, abaxial sides; 5. & 6. Stamens; 7. Carpel; 8. Fruit.

velutinous or at least along nerves on adaxial surface; densely albovegetinous on abaxial surface; main veins 3, rarely 5, nerves flat or sunken on adaxial side and elevated on abaxial side; petiolulate. Inflorescence cymes, axillary; pedicels pubescent, trichotomously branched; bracts ovate, sometimes 3-lobed, glabrous on adaxial side and pubescent on abaxial side. Flowers *c.* 28–45 mm diam., white when fresh turning dark brown when dry, spreading. Sepals 4, *c.* 15–25 mm long, 5–12 mm wide, elliptic or ovate; apex acute; base obtuse or cuneate; glabrous or nearly so inside and densely albovegetinous outside. Stamens numerous, inner and outer ones shorter, *c.* 6–11 mm long, middle ones longer, *c.* 12–17 mm long, glabrous, centripetal; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective shorter than the pollen sacs; filaments linear and flat. Carpels numerous, with brown sericeous hairs. Fruits *c.* 20–30 mm long; achenes *c.* 4 mm long, narrowly ovate or elliptic, convex laterally, dark brown with brown velutinous hairs; style persistent and lengthening to become caudate after anthesis, with goldish brown or reddish brown bearded hairs.

Flowering season mainly July to October; fruiting season late September to November.

Distribution: Endemic to Taiwan.

Habitat and Ecology: It is growing in open land or forest margins, mainly around the Central Mountains, Yushan Mountains and Alishan Mountains at altitudes between 1100 and 2500 m. Fig. 15

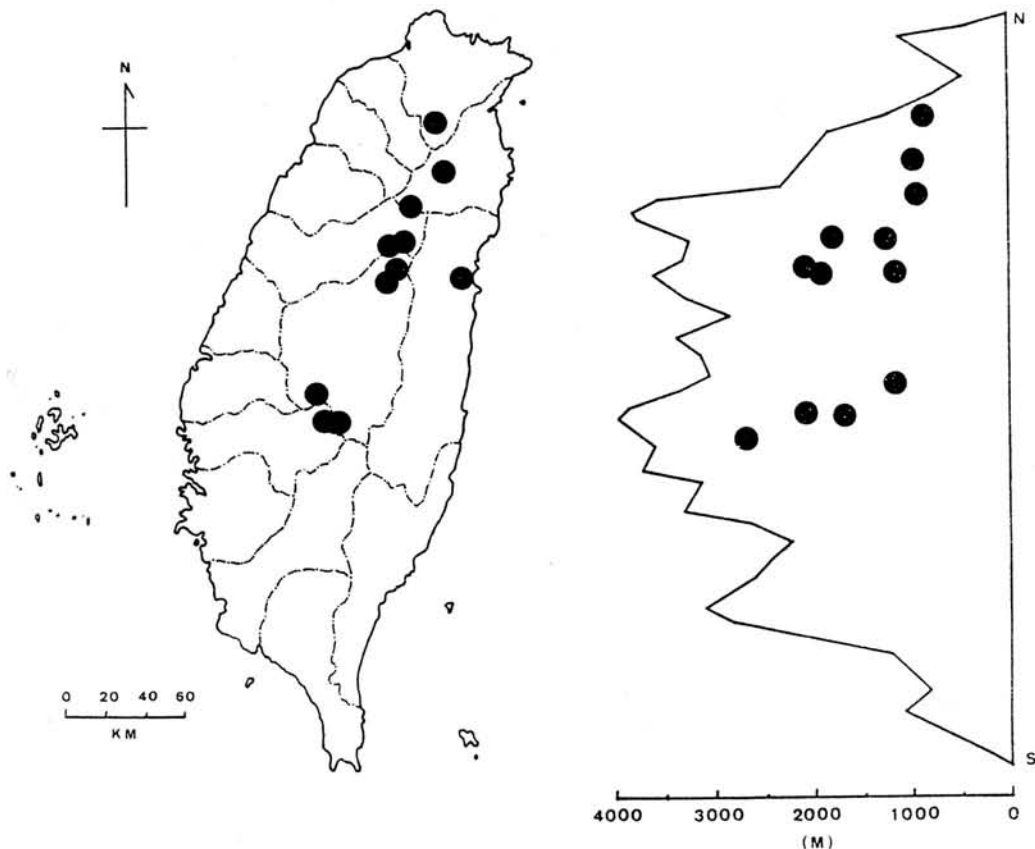


Fig. 15. Latitudinal and altitudinal distribution of *Clematis parviloba* subsp. *bartlettii*.

Specimens examined:

Taipei: Fushan, *T. Suzuki 18888* (TAI). **Ilan:** Mt. Taipingshan, *C.C. Chuang et al. 4783* (TAI), *4822* (TAI); *Shikuei, S. Suzuki 6004* (TAI); *Ssuyuan-Yako, Yang & Ou 2454* (TAI), to Nanshantsun, 1900 m, *K. C. Yang 2077* (TAI). **Taichung:** Central Cross-island way, Kuangming Bridge to Techi Reservoir, 1400m, *W.P. Leu et al. 355(A)*; *Lishan, C.C. Hsu 12470* (A), *C.M. Kuo et al. 8686* (TAI), *Yang 779*(TAI), *782* (TAI), *2599* (TAI), *2941* (TAI), *Yang & Ou 2476*(TAI). **Nantou:** *Hsitou, C.E. Chang 8102* (PPI), *C.C. Chuang 4043* (US), *M.T. Kao 9502* (TAI,PPI), *C.H. Ou & Kao 9538*(TAI), *Yang 2517* (TAI), *2519* (TAI), *3144*(TAI), *3145*(TAI), *3157*(TAI); *Meifong, M.C. Tsai 9503*(TAI), *Yang 139A* (TAI), *2501* (TAI), *2509* (TAI), *3207*(TAI), *3218*(TAI), *3222* (TAI); *Songkang, Yang 3206* (TAI); *Tsuefong, C.H. Ou 4673* (TCF); *Tungpushanchuang, 1500-2500 m, Yang 418* (TAI). **Chiayi:** Mt. Alishan, *F.Y. Lu & Ou 1435* (CHIA). **Hualien:** *Lanshan, Chiou s.n. Aug 1970* (PPI).

Note: This subspecies with a serrate margin is diagnostically different from ssp. *parviloba* with entire margin. Subspecies *bartlettii* also has leaflets pubescent on both surfaces whereas subspp. *parviloba* has leaflets which are subglabrous or glabrous on the adaxial surface.

- 13. Clematis psilandra** Kitagawa in Journ. Jap. Bot. 13: 352. 1937; Masamune, List Vas. Pl. Taiwan 53. 1954; Shimizu in J. Fac. Tex. Sci. Technol., Shinshu Univ. n. 36. Ser. A. (Biol.), 12: 25. 1963; Liu & Hsieh, Fl. Taiwan 2: 489. 1976; T.I. Yang, List Pl. Taiwan 604. 1980; Yang & Huang in Taiwania 37 (1): 47. 1992. 台灣草牡丹

Clematis heracleifolia DC. var. *taiwanica* S. Suzuki & Hosokawa in Trans. Nat. Hist. Soc. Form. 23: 96. 1933.

Type: Taiwan: Pingtung: Mt. Mutoo, Hannoki et Adel, *T. Hosokawa 5405* (holotype: TAI!; isotypes: TAI!)

An erect perennial deciduous shrub, *c.* 50–120 cm tall. Stem sulcate, albo-velutinous hairs, turning glabrous at maturity; branches possessing from the previous year axillary bud or older buds with scales. Leaves ternate, opposite, chartaceous; petioles non-tendrillate, *c.* 56–106 mm long, densely velutinous hairs. Leaflets 3, broadly ovate, ovate or elliptical, *c.* (45-) 71–110 (-120) mm long, (38-) 56–99 (-128) mm wide; apex acuminate; base truncate or obtuse, lateral segments oblique; 3 to 5-lobed; margin serrate or sometimes coarsely serrate; glabrous or nearly so on adaxial surface and pubescent on abaxial surface; main veins 5, nerves flat or sunken on adaxial side, elevated on abaxial side; petiolules on terminal segment and subsessile or sessile on lateral ones. Inflorescence umbel-like racemose, terminal and axillary, usually clustered; pedicels alboveutinous hairs; bracts chartaceous, subulate or leaf-like with lobed, margin serrate, sparsely velutinous inside and densely villose outside. Flowers *c.* 10 mm diam., polygamous, pale pink or pale rose, turning brown when dry, tubular, recurved at the tip. Sepals 4, *c.* 14–20 mm long, 3-4.5 mm wide, oblong-lanceolate to linear, expanded wider above middle, *c.* 5 mm wide; apex cuspidate; base cuneate; glabrous on adaxial side, sericeous-tomentose on abaxial side. Stamens numerous, *c.* 4–10 mm long, glabrous on adaxial side, sparsely pubescent on abaxial side; anthers linear, with lateral longitudinal dehiscence, glabrous outside; connective shortly excurrent beyond the pollen sacs, *c.* 0.06–0.1 mm long; filaments linear, dilated near anther. Carpels numerous, with

albosericeous hairs. In staminate flowers with normal stamens and sterile carpels. Fruits *c.* 24–49 mm long; achenes *c.* 3.5–4.5 mm long, ovate or elliptic, convex on both sides, deeply brown, yellow velutinous hairs; style persistent and lengthening to become caudate after anthesis, with yellow bearded hairs.

Flowering season July to September; fruiting season August to October.

Distribution: Endemic to Taiwan.

Habitat and Ecology: It is growing in open land around the Central Mountains and Alishan Mountains at altitudes between 1000 and 2500 m.

Specimens examined:

Nantou: Hsitou, Sanlinhsi, T. C. Huang 13084 (TAI). **Chiayi:** Mt. Alishan, S. J. Moore 16481 (TNM). **Pingtung:** Wutai, Ali to Hsiaokueihu, 1135–1315 m, C. C. Liao *et al.* 559 (A, HAST). **Hualien:** Tayulin, C. S. Kuoh *et al.* 6915 (TAI). See also in *Taiwania* 37(1): 47–49. (1992)

14. *Clematis tamurae* T. Y. A. Yang *et* T. C. Huang, *sp. nov.* 田村氏鐵線蓮 Fig. 16

Type: Taiwan: Pingtung: Manchou, Mt. Nanjenshan, Yang 6119 (holotype: TAI; isotypes: HAST, K, PE, TNM, TNU)

Clematis austro-taiwanensis Tamura *in sched.*, TAI; *nom. nud.*

Folia bipinnata chartacea 15-foliolata; folioliola angusta ovata vel ovata-lanceolata, integra; achaenia angusta orbiculara vel ovata.

The species differs from *C. parviloba* subsp. *bartlettii* and *C. terniflora* var. *garenbiensis* in having narrowly ovate or ovate-lanceolate leaflets as opposed to ovate or oblong leaflets. Each leaf on *C. tamurae* possesses 15 leaflets as opposed to 3 to 5 (-7) on the leaves of *C. chinensis* and *C. formosana*.

A scandent perennial herbaceous vine. Stem green and turning black when dry, sulcate, pubescent. Leaves bipinnately compound, chartaceous; petioles tendrillate, *c.* 44–58 mm long; stipules absent. Leaflets 15, *c.* (37-)46–59(-62) mm long, (8-)12–17(-18) mm wide, narrowly ovate or ovate-lanceolate; apex acuminate; base obtuse or cuneate; unlobed or sometimes 3 lobed; margin entire; sparsely pubescent on both surfaces or sometimes nearly glabrous on adaxial surface; main veins 3, nerves sunken on adaxial side and elevated on abaxial side; petiolulate. Inflorescence cymes, axillary or terminal; pedicels pubescent, trichotomously branched; bracts and bracteoles elliptic or oblong-lanceolate, sparsely pubescent on adaxial side and pubescent on abaxial side. Flowers *c.* 13–25 mm diam., white, spreading. Sepals 4, *c.* 10–15 mm long, 4–6 mm wide, elliptic or oblong; apex acute; base cuneate; sparsely velutinous or velutinous inside and densely velutinous outside. Stamens numerous, *c.* 4–8 mm long, glabrous, centripetal; anthers narrowly elliptic, with lateral longitudinal dehiscence; connective shorter than the pollen sacs; filaments linear and flat. Carpels numerous, with white sericeous hairs. Fruits *c.* 30–46 mm long; achenes *c.* 2.8–4.2 mm long, narrowly orbicular or ovate, compressed laterally, brown, yellow velutinous hairs; style persistent and lengthening to become caudate after anthesis, with brown or yellowish-brown bearded hairs.

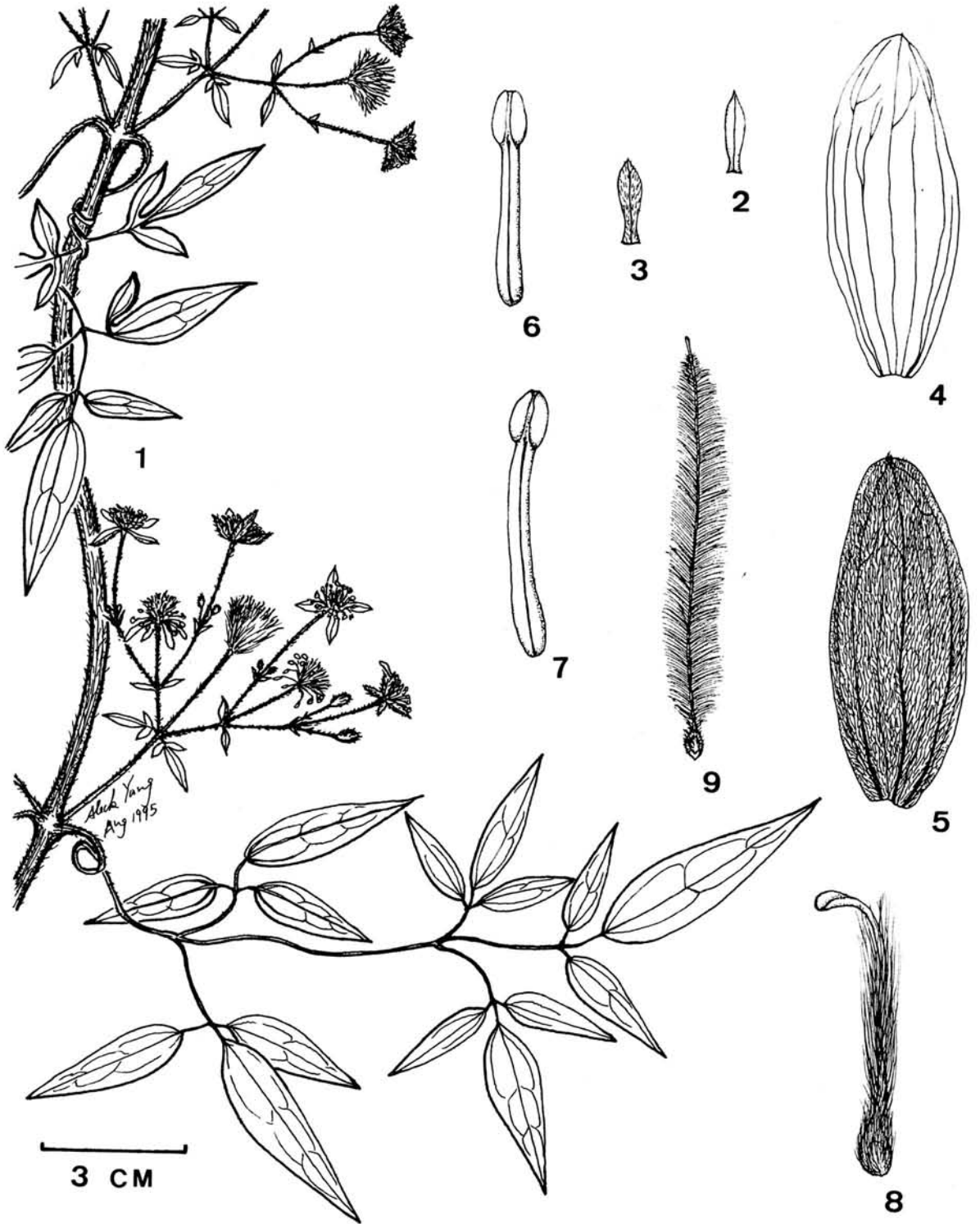


Fig. 16. *Clematis tamurae* T. Y. A. Yang et Huang (Ranunculaceae). 1. Habit; 2. & 3. Bracteoles, 2, adaxial and 3, abaxial sides; 4. & 5. Sepals, 4, adaxial and 5, abaxial sides; 6. & 7. Stamens; 8. Carpel; 9. Fruit.

Flowering season July to September; fruiting season August to October.

Distribution: Endemic to Taiwan.

Habitat and Ecology: It grows in open land or forest margins mainly around the southern part of the Island, but also on central and northern Taiwan at an altitude below 1500 m. Fig. 17

Specimens examined:

Taipei: Chutzuhu, *S. Sasaki s.n.* Aug 1931 (TAI). **Miaoli:** Erpensung to Hsuechien, 1200-1500m, *T.C. Huang & Huang 15385* (NY,TAI). **Kaohsiung:** Chihshan, Tengchi, 1500m, *T.C. Huang et al. 14436* (NY). **Pingtung:** Kuraru (Kueitzuchiaio). *E. Matuda s.n.* Aug 1915 (TAI); Ariko-Banti (Likang), *E. Matuda s.n.* Jul 1919 (TAI); Manchou, Nanjenshan, Nanshan Road, *S.P. Li 258*(HAST,TAI,TNM), *Yang 275* (TAI, TNM). Stone-plat-house area, *Yang 1077A* (TAI), *4121* (TAI,TNM). **Hualien:** Tafen, 1400m., *Yang 330* (TAI). **Taitung:** Chipen, *Y.C. Liu et al. 866* (CHIA, TCF); Tajen Hsiang, Tawu, Malousishan, 250-1000 m, *J.C. Wang et al. 8845* (TNU).

Note: This new taxon was first noted by Dr. M. Tamura on two sheets of Matuda's specimens collected in Pingtung (both specimens at TAI) and named as *C. austro-taiwanensis*. However, there was no legitimate effective publication of this taxon. We propose this name to commemorate Dr. Tamura in respect of his recognition this new taxon.

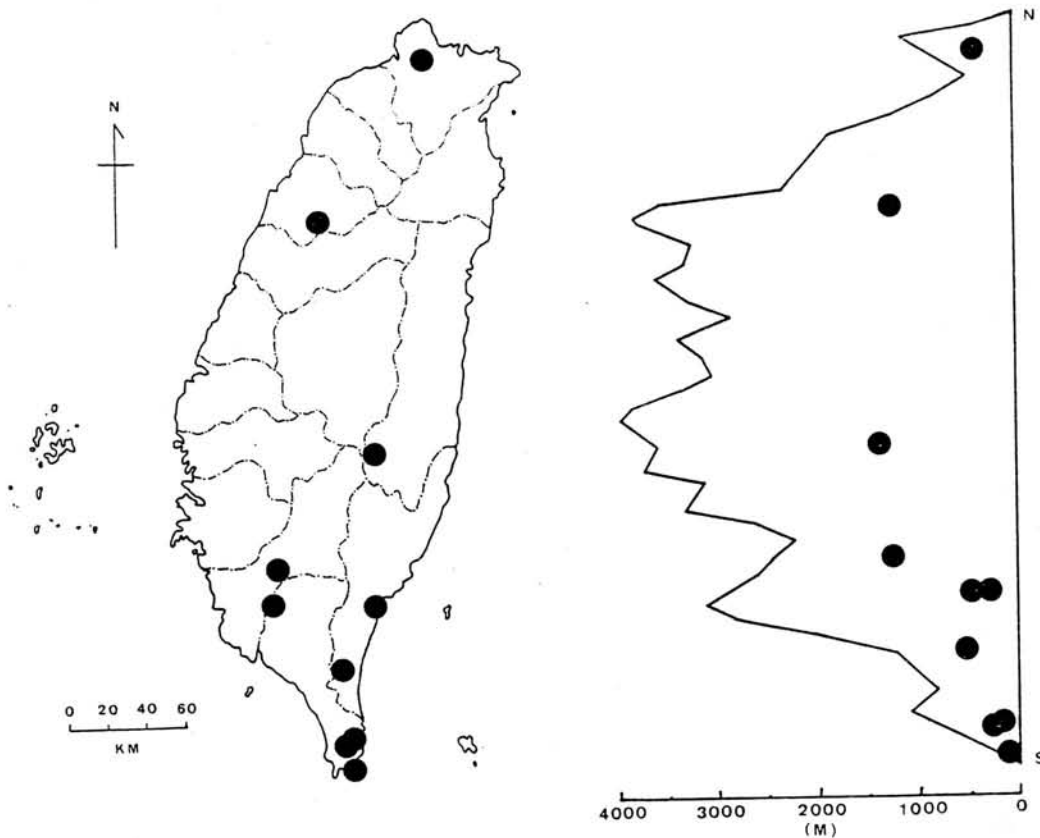


Fig. 17. Latitudinal and altitudinal distribution of *Clematis tamurae*.

- 15. *Clematis tashiroi*** Maxim. in Bull. Acad. Imp. Soc. St.-Petersb. **32**: 477. 1888; Sasaki, List Pl. Form. 184. 1928; Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. **2**: 77. 1932; Suzuki, Short Fl. Form. 65. 1936; Tamura in Act. Phytotax. Geobot. **15**(1): 18. 1953; Masamune, List Vasc. Pl. Taiwan 53. 1954; S. S. Huang in Biol. Bull. Nat. Taiwan Norm. Univ. **5**: 29. 1960; Hatusima, Fl. Ryukyus 277. 1971; Liu & Hsieh, Fl. Taiwan **2**: 492. 1976; T. C. Huang, Fl. Taiwan **6**: 48. 1979; Fang, Fl. Reip. Pop. Sinicae **28**: 232. 1980; T. I. Yang, List Pl. Taiwan 604. 1982. 田代氏鐵線蓮 Fig. 18

Type: Japan: Archipelago Yayama inter Liukiu et Formosa, *A. Tashiro* 40 (holotype: LE!; isotype: LE!).

Clematis longisepala Hayata in Journ. Coll. Sci. Univ. Tokyo **25**: 41. 1908. Type: Formosa: in monte Morrison, ad 6000 ped. alt., *T. Kawakami* et *Mori* s.n. Oct 1906 (holotype: TI!).

Clematis tozanensis Hayata in Journ. Coll. Sci. Univ. Tokyo **25**: 42. 1908. Type: Formosa: in Tozan, in montibus Morrison, *G. Nakahara* s.n. Oct 1906 (holotype: TI!).

Clematis yingtzulinia S.S. Ying in Q. Jour. Chin. For. **20**(4): 127; *syn. nov.* Type: Taiwan: Taipei: Pinglin, Yingtzulin, *S.S. Ying* s.n. Sept 1987 (NTUF).

A scandent perennial woody vine. Stem green, sulcate, sparsely pubescent, turning glabrous when mature. Leaves ternately or pinnately compound, subcoriaceous or chartaceous; petioles tendrillate, *c.* 52–94 mm long, combined together at the base and widely extended; stipules absent. Leaflets 3 to 5, *c.* (43-) 64–142 (-225) mm long, (31-) 45–84 (-125) mm wide, cordate or ovate; apex acuminate; base cordate; unlobed; margin sparsely serrulate, rarely entire; glabrous on both surfaces; main veins 5, nerves flat or sunken on adaxial side and elevated on abaxial side; petiolulate. Inflorescence dichasic or cymes, axillary; pedicels glabrous, trichotomously branched; bracts and bracteoles elliptic-lanceolate or subulate, subcoriaceous, glabrous on adaxial side and sparsely velutinous on abaxial side. Flowers *c.* 30–50 mm diam., dark purple, spreading. Sepals 6, sometimes 5 or more than 6, *c.* 18–30 mm long, 4–8 mm wide, oblong-lanceolate; apex acute; base cuneate; yellowish-brown and glabrous inside, dark purple and densely velutinous outside. Stamens numerous, glabrous, centripetal, inner ones shorter *c.* 6–8 mm long, outer ones *c.* 15–22 mm long; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective long excurrent beyond the pollen sacs, *c.* 0.6–2.0 mm long; filaments linear and flat. Carpels numerous, with white sericeous hairs. Fruits *c.* 46–74 mm long; achenes *c.* 6–8 mm long, narrowly ovate or elliptic, compressed laterally, dark brown, sparsely velutinous hairs; style persistent and lengthening to become caudate after anthesis, with white or pale yellow bearded hairs.

Flowering season starts from summer to Autumn, August to October; fruiting season is from October to January of the following year.

Distribution: Only distributed on Taiwan and the Ryukyu Islands.

Habitat and Ecology: It is widely distributed from low to middle altitudes (*c.* 50–2800 m) around beaches, streamsides, in open land or forest margins. Fig. 19

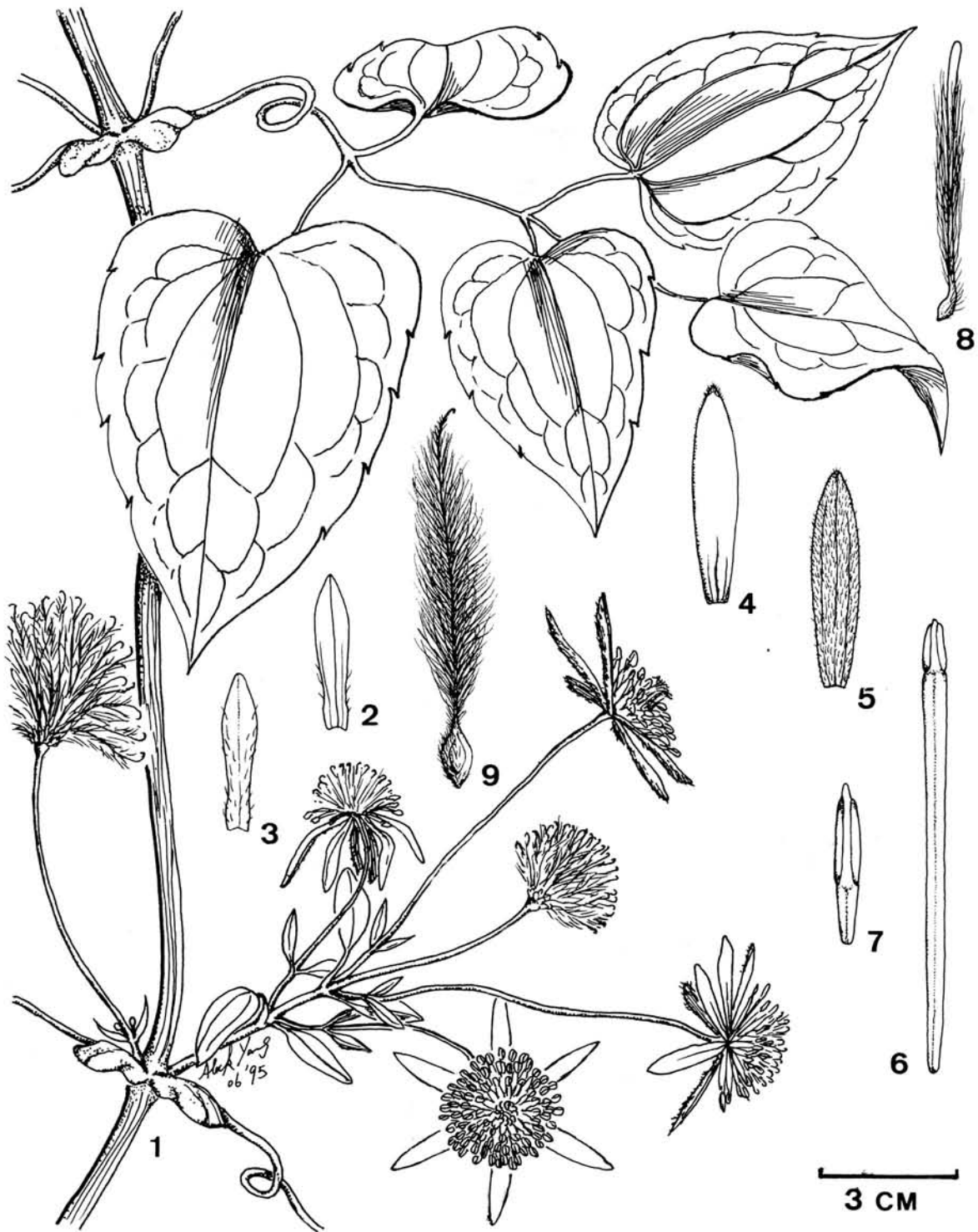


Fig. 18. *Clematis tashiroi* Maxim. (Ranunculaceae). 1. Habit; 2. & 3. Bracteoles, 2, adaxial and 3, abaxial sides; 4. & 5. Sepals, 4, adaxial and 5, abaxial sides; 6. & 7. Stamens; 8. Carpel; 9. Fruit.

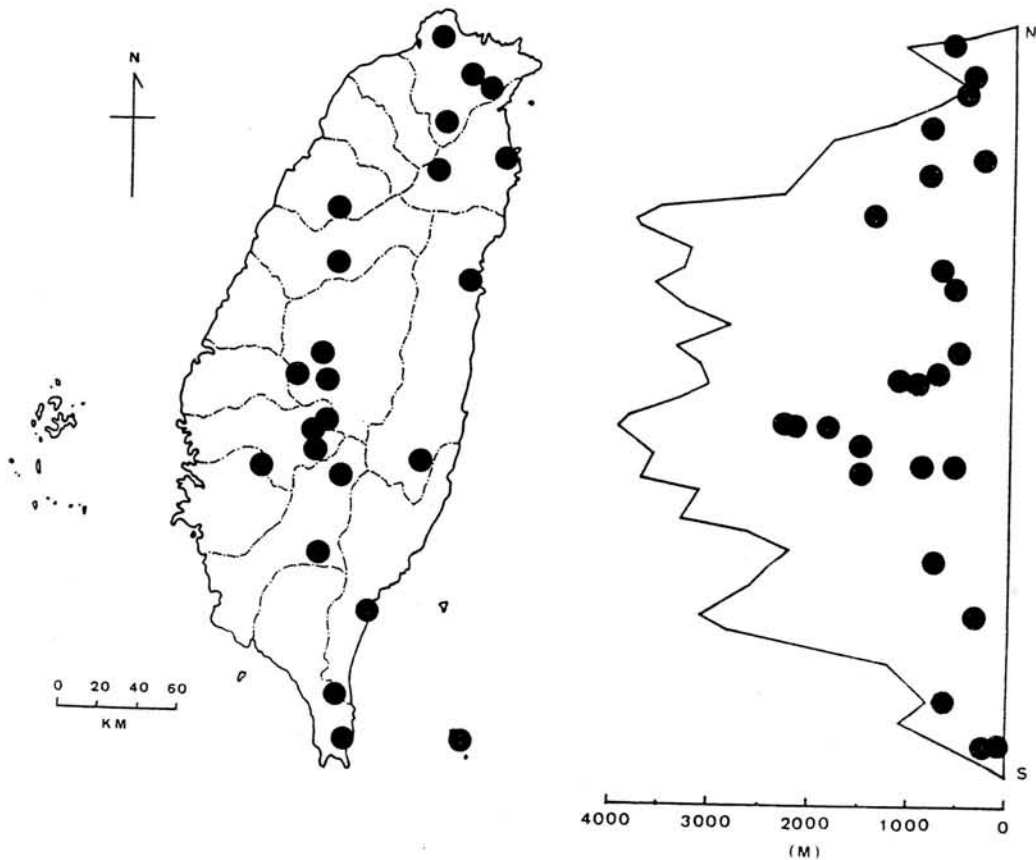


Fig. 19. Latitudinal and altitudinal distribution of *Clematis tashiroi* in Taiwan.

Specimens examined:

Taipei: Chihsinshan, Shimada s.n. Sept 1916 (TAI); Fushan, 650 m, D.E. Boufford et al. 25123(A); Hapen, Yang 2443 (TNM); Pihu, Yang 1871 (TAI); Shiting, T.C. Huang 9773 (TAI). **Ilan:** Tungauo, Yashikawa s.n. Mar 1923 (TAIF); Tuchan, S. Suzuki 4154 (TAI). **Miaoli:** Erpensung, Y.C. Liu & Ou 275 (CHIA). **Taichung:** Shaolaiping (Hoping), S. Sasaki s.n. Nov 1922(TAI). **Nantou:** Mt. Chichitashan, Yang & Chiang 5883 (TNM,TUNG); Chingshueigou, T.C. Huang 849 (TAI); Fonghuangshan, Yang 904 (TAI); Hsitou, Yang 905 (TAI), 1002 (TNM), 2518 (TNM), 2646 (TNM), 2775 (TNM), 2973 (TNM), 3237 (TNM). **Chiayi:** Mt. Alishan, U. Faurie 1312 (A), R. Kanehira & Sasaki s.n. Jan 1918 (TAIF), E.H. Wilson 9656 (A), 10797 (A,US), Mt. Tashan, T. Kawakami & Mori s.n. Oct 1906 (TAIF); Fengchihu, 1500 m, U. Faurie 1314 (A), R. Kanehira & Sasaki s.n. Oct 1918 (TAIF); Pinglin, M.T. Kao 10339 (TAI); Tsaoshantsun, S. Sasaki s.n. Oct 1927 (TAI). **Tainan:** Kuangtzulin, Yang 2445 (TAI). **Kaohsiung:** S. Cross Island Highway, Likuang, Yang 3124(TUNG); Touna, Yang et al. 3267(TNM). **Pingtung:** Changlou, C.C. Hsu & Kouh 8214 (TAI); Chioupen, Yang 230 (TAI), 1053 (TAI); Chulaoshushan, Yang 2842 TNM); Hengchun, S. Suzuki s.n. Jan 1933 (TAI), South Cape, A. Henry 846 (A,NY), 1320 (A); Mt. Lilongshan, Yang 1225 (TNM), 1245 (TNM); Nanjenshan, C.E. Chang 2458 (PPI), 4345 (PPI), 7243 (PPI), 724 (PPI), H.J. Chang 2109 (TAI), C.F. Hsieh 1417 (TAI), T.C. Huang 7898 (TAI), C.S. Kuoh & Kao 3040 (TAI), C.S. Kuoh 4106 (TAI), C. T. Moo 2203(A); Shuanliu, Yang & Hung 3307 (TNM), C.L. Yeh 1064 (PPI); Tashulinshan, T. Shimizu 3687 (TAI), E. Matuda s.n. Jan 1917 (TAI). **Hualien:** Cheankuangsi, C. I. Peng 7395 (HAST); Chingshuei Farm, Y.C. Liu et al. 1857 (CHIA). **Taitung:** Chipen, Y.C. Liu et al. 854 (CHIA); Kueitien, Yang 1154 (TAI); Isl. Lanyu, C.E. Chang 3179 (PPI), 3209 (PPI), 5462 (PPI), 7651 (PPI), 14917 (PPI,TAI), T.C. Huang & Kao 5193 (TAI), 5417 (TAI), M.T. Kao 8693 (TAI).

16. *Clematis terniflora* DC. var. *garanbiensis* (Hayata) M.C. Chang, Fl. Reip. Pop. Sinicae 28: 170. 1980. 鵝鑾鼻鐵線蓮 Fig. 20

Clematis garanbiensis Hayata, Icon. Pl. Form. 9: 1. 1920.

Type: Taiwan: Pingtung: Garanbi (Ooluanpi), T. Kawakami 1620 (holotype: TI!).

Clematis paniculata auct. non Thunb: Hayata in Journ. Coll. Sci. Univ. Tokyo 30: 18. 1911.

Clematis recta auct. non L.: Henry, List Pl. Form. 14. 1896.

Clematis terniflora DC. var. *robusta* auct. non (Carr.) Tamura: in Act. Phytotax Geobot 15(1): 18. 1953.

A scandent perennial deciduous herbaceous vine. Stem round, sulcate, sparsely velutinous when young and turning glabrous when mature. Leaves pinnately compound, subcoriaceous; petioles tendrillate, *c.* 17–34 mm long; stipules absent. Leaflets 5, sometimes upto 11, *c.* (20-) 30–46 (-53) mm long, (12-) 19–29 (-33) mm wide, ovate, cordate or oblong; apex obtuse-mucronulate; base truncate or cordate; unlobed, rarely 3-lobed; margin entire; glabrous on both surfaces; main veins 5, nerves flat or sunken on adaxial side; margin and nerves elevated on abaxial side; petiolulate. Inflorescence cymes, axillary; pedicels glabrous, trichotomously branched; bracts lanceolate, coriaceous, sparsely pubescent on adaxial side or glabrous on both sides. Flowers *c.* 12–28 mm diam., white, spreading. Sepals 4, *c.* 5–15 mm long, 2–6 mm wide, elliptic to oblong; apex acute-mucronulate; base cuneate; glabrous or nearly so inside and densely velutinous outside. Stamens numerous, *c.* 5–8 mm long, glabrous, centripetal; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective equal to or shortly excurrent beyond the pollen sacs, *c.* 0.05 mm long; filaments linear and flat. Carpels numerous, with white sericeous hairs. Fruits *c.* 37–46 mm long; achenes *c.* 5–6 mm long, orbicular or broadly elliptic, compressed laterally, yellowish-brown, pale golden velutinous hairs; style persistent and lengthening to become caudate after anthesis, with pale yellow bearded hairs.

Flowering season July to September; fruiting season July to October.

Distribution: Endemic to Taiwan.

Habitat and Ecology: It has a restricted distribution around coastal areas of southern Taiwan, especially among rocks. Fig. 21

Specimens examined:

Kaohsiung: Kaohsiung, *E. Matuda s.n.* Aug 1915 (TAI). **Pingtung:** Hengchun, Fenchuisha, 70–100 m, S.F. Huang K040 (TAI), Lungpang Park, *S.P. Li 242* (HAST,TAI,TNM,TNU), Maopitou, *Chune 1117* (PPI), *T. C. Huang 4782* (TAI), *T. C. Huang & Huang 13531* (TAI), *C.I. Peng 7178* (HAST), *Yang 300* (TAI), 2262 (TNM), 2263 (TNM), 2602 (TNM), 2995 (TNM), 3110 (TNM), 3111 (TNM), 3329 (TNM), Ooluanpi, *T. Tanaka 10418* (NY), *Y. Yamamoto s.n.* Aug 1925 (TAI); Manchou, Fongchueisa, *Yang 2859* (TNM), Nanjenshan, *T.C. Huang 7890* (TAI); Sichunghsi, *C.F. Hsieh 87* (TAI).



Fig. 20. *Clematis terniflora* DC. var. *garanbiensis* (Hayata) M. C. Chang (Ranunculaceae). 1. Habit; 2. Flower; 3. Bracteole, abaxial side; 4. & 5. Sepals, 4, adaxial and 5, abaxial sides; 6. & 7. Stamens; 8. Carpel; 9. Fruit.

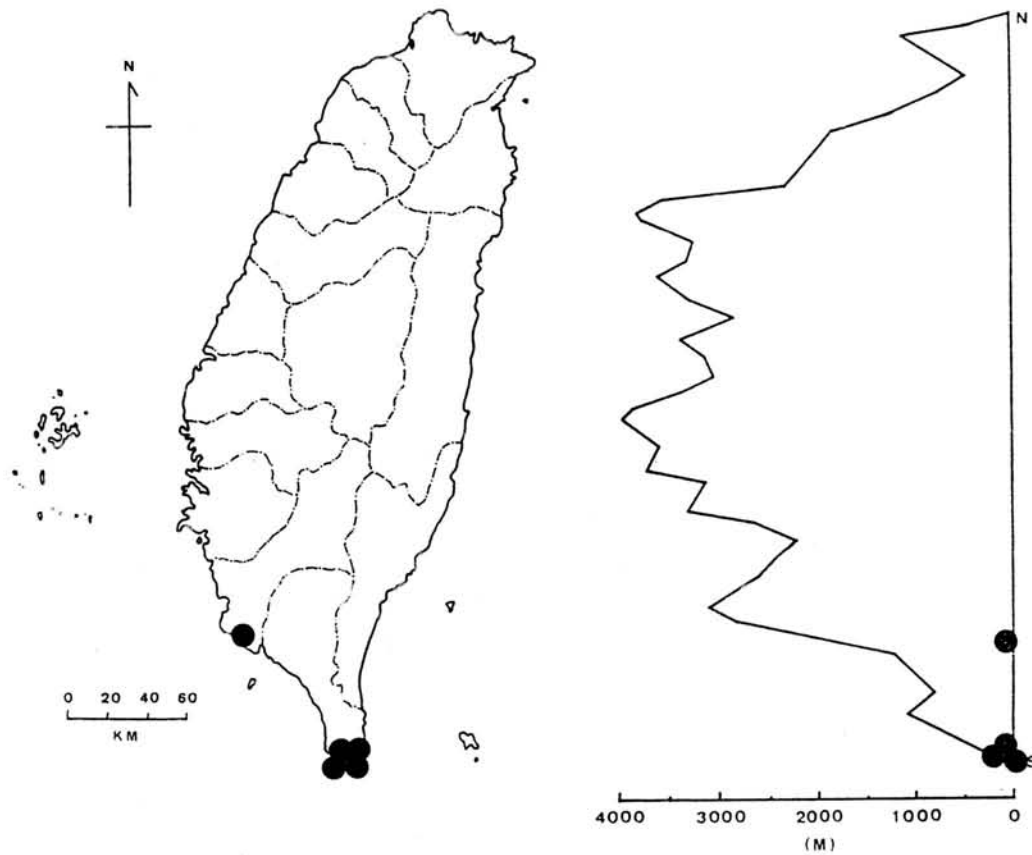


Fig. 21. Latitudinal and altitudinal distribution of *Clematis terniflora* var. *garanbiensis*.

17. *Clematis tsugetorum* Ohwi in Act. Phytotax. Geobot. **2**(3): 153. 1933; Suzuki, Short. Fl. Form. 65. 1936; Kitagawa in J. Jap. Bot. **13**: 358. 1937; Masamune, List Vasc. Pl. Taiwan 53. 1954; Liu & Hsieh, Fl. Taiwan **2**: 493. 1976; Fang, Fl. Reip. Pop. Sinicae **28**: 93. 1980; T.I. Yang, List Pl. Taiwan 605. 1982; Yang & Huang in Taiwania **37**(1): 48. 1992.

高山鐵線蓮

Type: Taiwan: Taichung: Mt. Nokogoe (Mt. Nengkaoshan), *J. Ohwi* 3277 (holotype: KYO!; isotype: TAI!)

An erect perennial deciduous small shrub, *c.* 30–60 cm tall. Stem round with shallowly sulcate, sparsely velutinous hairs, turning glabrous at maturity; branches possessing from the previous year axillary bud or older buds with scales. Leaves ternate or pinnate, opposite, chartaceous; petioles non-tendrillate, *c.* 33–48 mm long, densely velutinous. Leaflets 3 to 5, *c.* (13-) 20–34 (-38) mm long, (11-) 15–21 (-28) mm wide, ovate to elliptic; apex acuminate; base truncate or cuneate, lateral segments oblique; 1 to 3-lobed; margin irregularly serrate; pubescent or sparsely pubescent on adaxial surface, sparsely pubescent or subglabrous on abaxial surface; main veins 5, nerves flat or sunken on adaxial side and elevated on abaxial

side; petiolules on terminal segment and subsessile or sessile on lateral ones. Flowers solitary, rarely 3-flowered, *c.* 10–12 mm diam., polygamous, pale blue or purple, turning brown when dry, tubular, recurved at the tip; terminal; pedicels albo-velutinous hairs; bracts chartaceous, leaf-like, lobed, margin serrate, glabrous or nearly so inside and densely villose outside. Sepals 4, *c.* 15–20 mm long, 5–7 mm wide, oblong-lanceolate to linear, expanded wider above middle, *c.* 5 mm wide; apex cuspidate; base cuneate or obtuse; glabrous inside, villose outside. Stamens numerous, *c.* 6–10 mm long, glabrous on adaxial side sparsely pubescent on connective and filament; anthers linear, with lateral longitudinal dehiscence; connective excurrent beyond the pollen sacs, *c.* 0.1–0.3 mm long; filaments linear, dilated near anther. Carpels numerous, with albosericaceous hairs. In staminate flowers with normal stamens and sterile carpels. Fruits *c.* 21–30 mm long; achenes *c.* 4–5 mm long, elliptic, convex on both sides, reddish-brown or dark brown, velutinous hairs; style persistent and lengthening to become caudate after anthesis, with pale yellow or maize bearded hairs.

Flowering season July to September; fruiting season August to October.

Distribution: Endemic to Taiwan

Habitat and Ecology: It is represented in northern part of limestone regions at an altitude above 3000 m, e.g. Nengkaoshan, Chilaishan, Nanhutashan and Tapachienshan.

Specimens examined:

Ilan: Mt. Chuangyangchienshan, *M. Tamura et Koyama 23654* (KYO, TI). **Hsinchu:** Mt. Tapachienshan, *Yang 2352* (TAI, TNM, TUNG). **Taichung:** Mt. Nanhuta-shan, *Yang et al. 5092* (K, PE, RNG, TAI, TNM, TUNG). **Hualien:** Mt. Chilaishan, *Yang 6185* (TNM). See also in *Taiwania* **37**(1): 48–52. (1992)

18. Clematis uncinata Champ. ex Benth. in *Journ. Bot.* **3**: 255. 1851; Bentham, *Fl. Hongk.* **6**: 1861; Tamura in *Act. Phytotax. Geobot.* **15**(1): 18. 1953, *Act. Phytotax. Geobot.* **34**: 97. 1983. 柱果鐵線蓮 Fig. 22

Type: China: Hongkong: Mt. Parker, near Saywan, *Champion 34* (holotype: K!)

Clematis chinensis Retz. var. *uncinata* (Champ.) Kuntz. in *Verh. Bot. Ver. Brandenburg* **26**: 115. 1885.

Clematis leiocarpa Oliv. in Hook., *Icon. Pl. t.1533*. 1886. Type: China: Hupeh: Ichang, *A. Henry 309B (= 714A)* (lectotype is designated here K!; isolectotype: K!).

Clematis ovatifolia T. Ito ex Maxim. in *Bull. Acad. Imp. Sci. St.-Petersb.* **31**: 12. 1886. Type: Japan: Sikoku: Prov. Kii, in the montanus Kumano, *T. Ito 1* (lectotype is designated here, LE!; isolectotype: LE!)

Clematis uncinata var. *ovatifolia* (T. Ito ex Maxim.) Ohwi ex Tamura in *Act. Phytotax. Geobot.* **15**(1): 18. 1953.

Clematis drakeana Lévl. & Vant. in *Bull. Acad. Intern. Geogr. Bot.* **11**: 168. 1902.

Clematis gagnepainiana Lévl. et Vant. in *Bull. Soc. Bot. France* **51**: 219. 1904.

Clematis uncinata var. *floribunda* Hayata in *Journ. Coll. Sci. Univ. Tokyo* **30**: 18. 1911. Type: Taiwan: Taiko (Tahu), *T. Kawakami & Hayata 58* (holotype: TI!; isotype: TAI!)

- Clematis floribunda* (Hayata) Yamam. in Journ. Soc. Trop. Agr. 4: 188. 1932.
Clematis alsomitriifolia Hayata, Icon. Pl. Form. 3: 1. 1913. Type: Formosa: Loco non indicato, *U. Mori* s.n. Aug 1912 (TI!).
Clematis uncinata var. *coriacea* Pamp. in Nuov. Giorn. Bot. Ital. n. ser. 22: 288. 1915; *syn. nov.*
Clematis uncinata var. *biternata* W.T. Wang in Act. Phytotax. Sinica 6(4): 374. 1957; *syn. nov.* Type: China: Yunnan: Wenshan, *K.M. Feng 11018* (PE!).
Clematis uncinata var. *taitongensis* Liu & Ou in Q. Journ. Chin. For. 9(2): 122. f.5. 1976; *syn. nov.* Type: Taiwan: Taitong (Taitung): Tsupan (Chipen), *Y.C. Liu et al. 879* (TCF!)

18a. *Clematis uncinata* var. *uncinata*.

A scandent perennial deciduous woody vine. Stem sulcate, glabrous. Leaves pinnately to bipinnately compound, coriaceous; petioles tendrillate, *c.* 44–76 mm long; stipules absent. Leaflets 5 or 9, sometimes 7, *c.* (29-) 56–90 (-113) mm long, (7-) 23–38 (-51) mm wide, elliptic, ovate or oblong, sometimes lanceolate; apex acute or acuminate; base obtuse or truncate; unlobed; margin entire; glabrous on both surfaces; main veins 3 to 5, nerves flat or elevated on both sides; petiolulate, tendrillate, with 1 to 2 articulations. Inflorescence cymes, axillary or terminal; pedicels glabrous or nearly so, trichotomously branched; bracts and bracteoles subulate, coriaceous, glabrous or nearly so on both sides. Flowers *c.* 10–25 mm diam., white, spreading. Sepals 4, *c.* 10–15 mm long, 3–5 mm wide, oblong-lanceolate; apex acute-mucronulate; base cuneate; glabrous on both sides except margin velutinous outside. Stamens numerous, *c.* 3–10 mm long, glabrous, centripetal; anthers narrowly elliptic or linear, with lateral longitudinal dehiscence; connective shortly excurrent beyond the pollen sacs, *c.* 0.05–0.09 mm long; filaments linear and flat. Carpels numerous, ovary cylindrical, glabrous; style with white sericeous hairs. Fruits *c.* 20–40 mm long; achenes *c.* 6–8 mm long, cylindrical, sulcate, glabrous, black; style persistent and lengthening to become caudate after anthesis, with orange or golden bearded hairs.

Flowering season starts from early summer, June to October; fruiting season is from August to December.

Distribution: Distributed from Southwest China (Provs. Yunnan, Sichuan and Guizhou) eastwards to South and Central China (Provs. Shaanxi, Gansu, Hubei, Guangxi, Hunan, Anhui, Jiangxi, Guangdong, Fujian, Jiangsu, Zhejiang, Hainan), Hongkong, Taiwan and Veitnam, and northeastwards to South Japan (Kyushu and Honshu).

Habitat and Ecology: It is growing in sunny places or forest margins at altitudes between 1000 and 2500 m. Fig. 23

Specimens examined:

MAINLAND CHINA: JIANGSU: Ixing, Mt. Longdishan, *C.J. Fang et al. 152* (PE), *S.H. Mao 174*(PE). **ZHEJIANG:** Taishun, *S. Chen 3530* (PE); Yunhe, *S. Chen 773* (PE). **FUJIAN:** Chong'an, Fenshueiguan, 760 m, *S.P. Jien et al. 400431* (PE), Xinchun, 700 m, *Wuyi Exped. 136* (PE). **JIANGXI:** Shangyou, *Jiangxi*

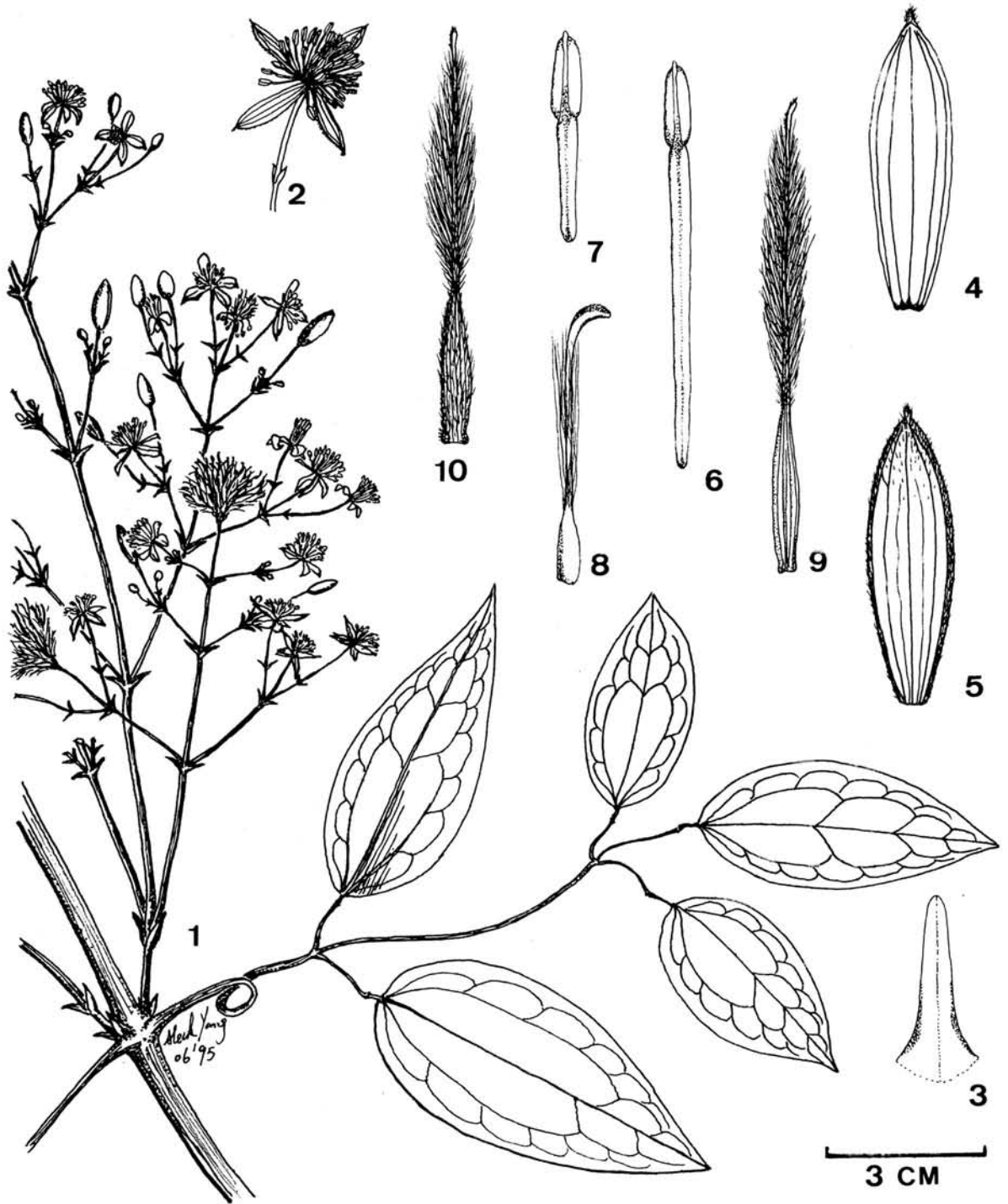


Fig. 22. *Clematis uncinata* Champ. ex Benth. var. *uncinata* (Ranunculaceae). 1. Habit; 2. Flower; 3. Bracteole, abaxial side; 4. & 5. Sepals, 4, adaxial and 5, abaxial sides; 6. & 7. Stamens; 8. Carpel; 9. Fruit. var. *okinawensis* (Ohwi) Ohwi. 10. Fruit.

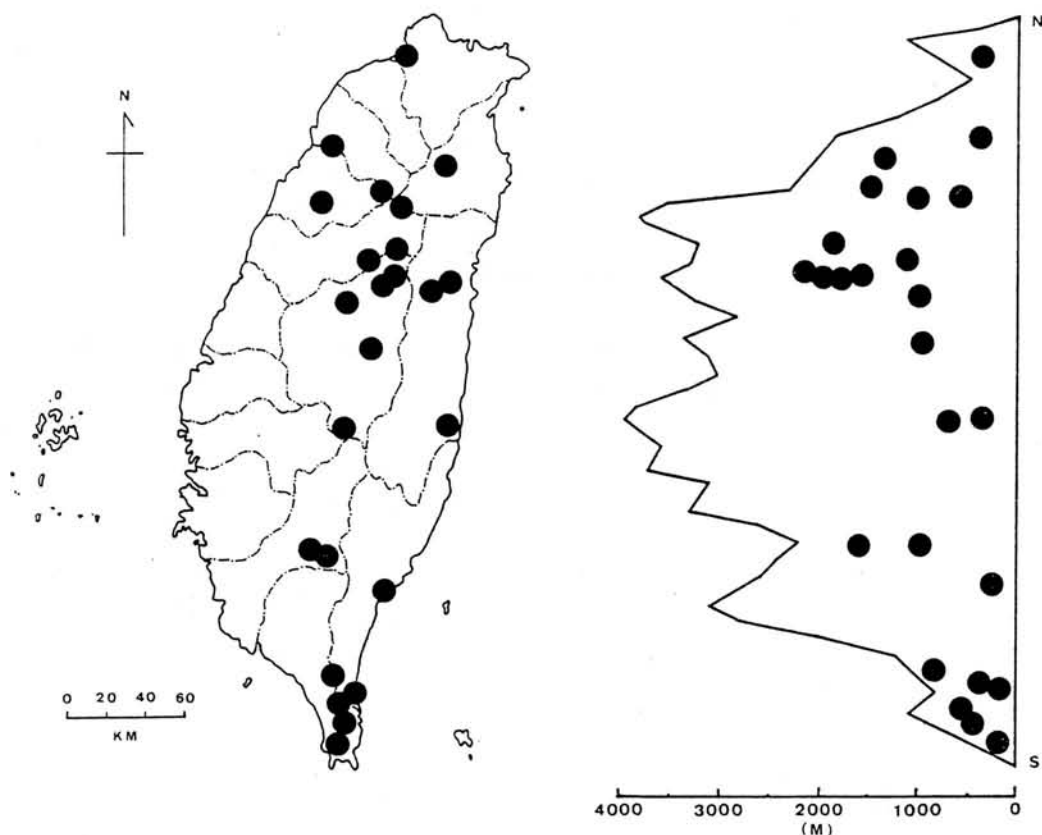


Fig. 23. Latitudinal and altitudinal distribution of *Clematis uncinata* var. *uncinata* in Taiwan.

Exped. 102(PE); Yushan Hsien, Huaiyushan, S.S. Lai 6219 (PE). **HUBEI**: Fang Hsien, 850 m, K.M. Liou 9174 (PE); Patung Hsien, H.C. Chow 596(PE); Xingshan Hsien, G.S. Fu & Zhang 321 (PE). **HUNAN**: Mt. Henshan, Nangou, Y. Liu 215 (PE). **GUANGDONG**: Yangshan Hsien, Yang-shan, T.M. Tsui 500 (PE); Zhaoqing, Chixingyien, G.L. Shi 13016 (PE). **GUANGXI**: He Hsien, Guposhan, S.C. Cheng & Ge 12373 (PE); Xincheng Hsien, Chengxian, W.G. Lu 61164 (PE). **SICHUAN**: Guangyuan, Zhaotien, S. Jian & Jin 108 (PE); Nanchuan, Nanping, C. H. Hsiung & Chow 91728 (PE); Omei, Mt. Omeishan, Baochangfong, 950 m, K. H. Yang 56846 (PE). **GUEIZHOU**: Gueiyang, Mt. Chienlinshan, 1400 m, Z.Y. Cao 217 (PE); Xinyi Hsien, Jinnan, 1100 m, *Anshun Exped.* 863 (PE). **YUNNAN**: Wenshan Hsien, Pyng-bah, 1700 m, K.M. Feng 11018(PE). **SHAANXI**: Mien Hsien, Tsilipian, K.T. Fu 3704 (PE); Xihsian, Zhacheng, P.C. Kuo 2117 (PE). **GANSU**: Wen Hsien, Bigou, 900 m, Z.Y. Zhang 15387 (PE).

TAIWAN: **Taipei**: Mt. Kuangyingshan, C.C. Chuang 3912 (TAI), Yang 354A (TAI), 2282 (TAI), 2283 (TAI), 3118(TAI), 3119(TAI), 3122 (TAI); Tinpingchuang, Shimada s.n. Aug 1915 (TAI). **Ilan**: Ssuyuan-yako, S. Sasaki s.n. Jul 1922 (TAIF), S.Y. Lu 16727 (TAIF), S. Suzuki s.n. Jul 1930 (TAI), 5017 (TAI); Mt. Taipingshan, S. Suzuki s.n. Jul 1929 (TAI). **Hsinchu**: Chutung, Matalahsi, Yang 2426 (TAI); Shitoushan, F.Y. Lu & Ou 1167 (CHIA, TCF). **Miaoli**: Shangdao, Yang 2440 (TAI), 2446 (TAI); Tahu, T. Kawakami et al. s.n. Aug 1908(TAIF). **Taichung**: E-W Cross Island Highway, Chinshan, Yang 2946 (TAI), 2947 (TAI), Lishan, Yang 781 (TAI), 1677 (TAI). **Nantou**: Hueison Forests Area, Yang 2857 (TAI); Kuangdaohsi, Y.C. Liu et al. 294 (TCF); Meifong, Yang 138 (TAI, TNM, TUNG), 3210 (TNM, TUNG), 3224 (TUNG); Nenkao Forests Area, T.C. Huang 6155 (TAI); Songkan, Yang 2500 (TAI, TNM, TUNG), 3211 (TAI); Yungpu, Yang 2892 (TAI); Mt. Yushan, S. Sasaki s.n. Jul 1926 (TAI). **Kaohsiung**: Tona, Yang et al. 3271 (TAI, TNM); S. Cross Island Highway, Likuang, Yang 3121(TAI). **Pingtung**: Hengchun, Kudo & Mori 1273 (TAI); Mt.

Kaoshifo-shan, *Kudo & Mori s.n.* Apr 1930(TAI); Mutan, *C.E. Chang 4411* (PPI); *F. Y. Lu & Ou 1122* (TCF); Shuanliu, *M.T. Kao 7256* (TAI); Souka, *Yang 1281* (TAI). **Hualien:** Chimei, *Liu 21910* (TAIF); Hoping logging tract, *Yang 2928* (TAI); Mataigansha, *Tanaka s.n.* Oct 1930 (TAI); Paiyang, *T.C. Huang & Huang 9886* (TAI); Mt. Tairokotashan, *S. Sasaki s.n.* Jun 1933 (TAI); Tienhsiang, *C. C. Chuang & Kao 4413* (TAI), *C.F. Hsieh & Yang 1500* (TAI), *Y.C. Liu et al. 824* (TCF); Tsuelu, *S. Suzuki s.n.* Oct 1932 (TAI). **Taitung:** Chishueiyin, *U. Mori s.n.* Jun 1912 (TAIF); Dolan Forests Area, *Yang 1425* (TAI), *1426* (TAI); Kueitien, *Yang 1156* (TAI); Pilu Hot Spring, *S.Y. Lu 21965* (TAIF); Tawu, *C.E. Chang 5328* (PPI).

HONGKONG: **Hongkong:** Big Wave Bay, *Y. W. Taam 2237* (US); Shek-O Road, *Y.S. Lau 86 7*(HK), *H.C. Tang 1056* (HK); Wong-Nei-Chong Gap Road, *L.T. Lo 146* (HK). **New Territories:** Mt. Lofaushan, Wong-Lung-Kun, *C. Ford s.n.* Aug 1883 (HK); Shing-Mun Resv. *Y.S. Lau 998* (HK).

Note: The species has variable leaflet number and shape. Linear and lanceolate leaflets occur in the young stage, and elliptic, ovate or oblong leaflets common when mature. There are two main numbers of leaflet, i.e. five and nine. The population of five leaflets is represented mainly in northern part of Taiwan and was named *C. uncinata*. The nine leaflets population has a disjunct distribution in Taiwan, i.e. northern and southern parts, and this taxon used to be recognised as *C. alsomitriifolia* (or *C. uncinata* var. *ovatifolia*). The diagnostic character of these two taxa is the leaflet number, *C. uncinata* has five leaflets and *C. alsomitriifolia* is nine. However, the number of leaflets varies from 5 to 7 or 9 on one plant, or sometimes leaves with 5–7-leaflets or 7–9-leaflets occur on the same plant. These two taxa are treated here as one taxon, i.e. *C. uncinata* but further work is needed.

18b. Clematis uncinata var. **okinawensis** (Ohwi) Ohwi, Fl. Japan ed. 1. 515. 1953, in Bull. Nat. Sci. Mus. (Tokyo) **33**: 71. 1953; Tamura in Act. Phytotax. Geobot. **34**: 98. 1983. 毛果鐵線蓮 Fig. 22

Clematis okinawensis Ohwi in Act. Phytotax. Geobot. **6**(3): 146. 1973.

Type: Japan: Isls. Ryukyu: Okinawa, Naha, *Y. Tokura s.n.* (KYO!)

Clematis alsomitriifolia auct. non Hay.: Tamura in Act. Phytotax. Geobot. **15**(1): 18. 1953.

Clematis trichocarpa Tamura in Act. Phytotax. Geobot. **16**: 79. 1956 Type: Formosa: Raisha, *T. Soma 1017* (holotype: TI!)

Clematis okinawensis Ohwi var. *trichocarpa* (Tamura) Tamura in Act. Phytotax. Geobot. **34**: 98. 1983.

Leaflets 5, 7 to 9, sometimes 11, *c.* (54-)60–85(-98) mm long, (22-)35–48(-52) mm wide. Sepals 4, *c.* 6–9 mm long, 3–7 mm wide. Carpels numerous, ovary cylindric, pubescent; style with white sericeous hairs. Fruits *c.* 23–34 mm long; achenes *c.* 5–7 mm long, cylindric, sulcate, pubescent.

Flowering season April to July; fruiting season August to November.

Distribution: Distributed from Southeast China (Prov. Zhejiang), Taiwan and the Ryukyu Islands.

Habitat and Ecology: It is growing in open land or forest margins, very rare on the southern part of the island below 600 m altitude.

Specimens examined:

Pingtung: Paiwan, *E. Matuda s.n.* 1916 (TAI). **Taitung:** Senyung, *S. Y. Lu 16167* (TAI, TAIF).

Note: This taxon was first reported in Taiwan by Yang and Huang (1986) from only two localities. There is only one diagnostic character whether the ovaries and achenes are pubescent or glabrous which is used to distinguish *C. uncinata* and *C. okinawensis*, and we treat them here as varieties, i.e. *C. uncinata* var. *uncinata* and var. *okinawensis*. However, this variety, var. *okinawensis* also has a variable leaflet number and shape. The number of leaflets varies from 5 to 9; when populations with 5 to 7 leaflets they were assigned to *C. trichocarpa*; when populations with 7 to 9 leaflets they were identified as *C. okinawensis*. As with var. *uncinata*, it is only the variation of leaflet number which give rise to the taxon.

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臺灣毛茛科植物之新見(5)－臺灣鐵線蓮屬

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摘 要

本文是臺灣毛茛科 (Ranunculaceae) 鐵線蓮屬 (*Clematis* L.) 植物的分類學研究，包括13種、2亞種及5變種，共計20個分類群。其中新種田村氏鐵線蓮 (*C. tamurae* T.Y.A. Yang et Huang) 及新組合巴氏鐵線蓮 (*C. parviloba* Gard. ex Champ. ssp. *bartlettii* (Yamam.) T.Y.A. Yang et Huang) 均是首次出現。文中對每一分類群皆有詳細描述，並附其檢索表及部分分類群之在臺分佈圖。

關鍵詞：鐵線蓮屬，毛茛科，分類學，臺灣。

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