

NOTES ON THE FLORA OF TAIWAN (5)—

The *Thalictrum* Tournef. ex L. (Ranunculaceae)⁽¹⁾TSUNG-YU YANG⁽²⁾ and TSENG-CHIENG HUANG⁽³⁾

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Abstract: This is a taxonomic study of the *Thalictrum* Tournef. ex L. (Ranunculaceae) of Taiwan. Four species and two varieties, including one new record *T. javanicum* Bl. var. *puberulum* W. T. Wang, one uncertain status are recognized. The taxonomic descriptions and distribution maps for each taxon are also given.

INTRODUCTION

Thalictrum, a genus of the Ranunculaceae, was first reported by Matsumura and Hayata (1906) to occur in Taiwan. Since then, several papers on *Thalictrum* of Taiwan were published by Hayata (1911, 1913), Koidzumi (1925), Ohwi (1933), Masamune (1934), S. S. Huang (1960), Shimizu (1963), Tsai (1972), Liu and Hsieh (1976) and Wang and Wang (1979) successively. Six species and one variety were described by their studies. Currently, *Thalictrum* is classified in the subfamily Thalictroideae, tribe Thalictreae (Tamura 1966, 1968; Wang and Wang 1979).

Four species, two varieties, including one new record, *i. e.* *T. javanicum* Bl. var. *puberulum* W. T. Wang, and one insufficiently known species are recognized in this taxonomic study. A key and detailed descriptions to the treated taxa are given.

Specimens examined in this study are marked with acronym of the herbaria excluding TAI (the herbarium of Department of Botany, National Taiwan University). Collections on which the illustrations are based are marked with an asterisk(*). Acknowledgement is hereby made to the curators of the following herbaria for their kindly loan of the cited specimens.

CKH: Herbarium of Department of Biology, Cheng-Kung University, Tainan, Taiwan;

HAST: Herbarium of Institute of Botany, Academic Sinica, Taipei, Taiwan;

KYO: Herbarium of Department of Botany, Faculty of Science, Kyoto University, Kyoto, Japan;

TAIF: Herbarium of Taiwan Forestry Research Institute, Taipei, Taiwan;

TCF: Herbarium of Department of Forestry, Chung-Hsing University, Taichung, Taiwan;

THAI: Herbarium of Department of Biology, Tunghai University, Taichung, Taiwan;

TI: Herbarium of Department of Botany, the University Museum, the University of Tokyo, Tokyo, Japan.

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TAXONOMIC TREATMENT

Thalictrum Tournef. ex L. Gen. Pl. ed. 5, 242, no. 617, 1754.

An erect perennial herb; stem usually branching, cylindrical or sulcate; roots system usually fibrous rarely tuberiferous. Leaves tritermately to pentatermately compound; leaflets palmatilobate, few dentate, rarely unlobed; petiole base widely sheathed, often stipulate and stipellate. Inflorescence usually a monochasium, when more flowers, paniculate, corymbose, few racemose, terminal or axillary. Flowers small, bisexual or unisexual (dioecious), rarely polygamous. Sepals 4-6 or more, greenish or white, sometimes rose-colored and petaloid, caducous or deciduous; petals absent; stamens numerous, prominent, with or without connective, the filaments filiform, linear or clavate, more or less thickened or/and dilate at apex, the anthers small; carpels few to many, free, stipitate or sessile, with one pendulous ovule, the style beak-like, short or long bearing a deltoid to linear, stigma on inner side; receptacle minute. Fruits a small head of achenes; achenes stipitate or not, elongate, commonly laterally flattened, sometimes narrowly winged, usually nerved.

About 200 species, widely distributed in the temperate and frigid zones of Northern Hemisphere, few extending to South America and S. Africa; about 70 species in China, and 6 species in Taiwan.

Key to the species of *Thalictrum*

1. Achenes stipitate or subsessile; leaflets less than 27
 2. Achenes more than 30.....(3) *T. rubescens*
 2. Achenes less than 25
 3. Flower smaller than 2 cm wide; sepals usually 4(5a) *T. urbaini*
 3. Flower large, 2-3 cm wide; sepals usually 6(5b) *T. urbaini* var. *majus*
1. Achenes sessile; leaflets more than 27
 4. Leaflets more than 81, small, less than 0.7 cm long(2) *T. myriophyllum*
 4. Leaflets 27-81, more than 1.0 cm long
 5. Plant glabrous; sepals acute or obtuse at apex; achenes with shallowly striate, the nerves not elevated on adaxial surface and the margin not thickened on abaxial surface(4) *T. sessile*
 5. Plant pubescent; sepals retuse at apex; achenes with deeply striate, the nerves elevated on adaxial surface and the margin thickened at abaxial surface(1) *T. javanicum* var. *puberulum*

1. ***Thalictrum javanicum* Bl. var. *puberulum* W.T. Wang in Fl. Reip. Pop. Sinicae 27: 617. 1979.**
微毛爪哇唐松草 Figs. 1 & 2; Pl. 1

Thalictrum sessile sensu Wang & Wang in Fl. Reip. Pop. Sinicae 27: 521. 1971,
non Hayata.

A perennial herb; stem branched above, rarely simple, cylindrical, erect, ca. (30)-50-150 cm high, sparsely velutinous, especially on the sheath of the petiole, but glabrous in old stem; roots fibrous. Radical leaves wilted when blooming; cauline leaves tritermately to tetratermately, 27-81-leaflets, the leaflet ovate, obovate or deltoid, chartaceous, ca. (0.9)-1.01-1.45-(1.7) cm long, (0.6)-0.81-1.27-(1.8) cm wide, the base truncate, obtuse or cuneate and lateral segments often oblique at the base, entire, 3-7-lobed, dark green and glabrous above, beneath glaucous and sparsely velutinous;



Fig. 1. Distribution map of *T. javanicum* var. *puberulum* W.T. Wang in the world.

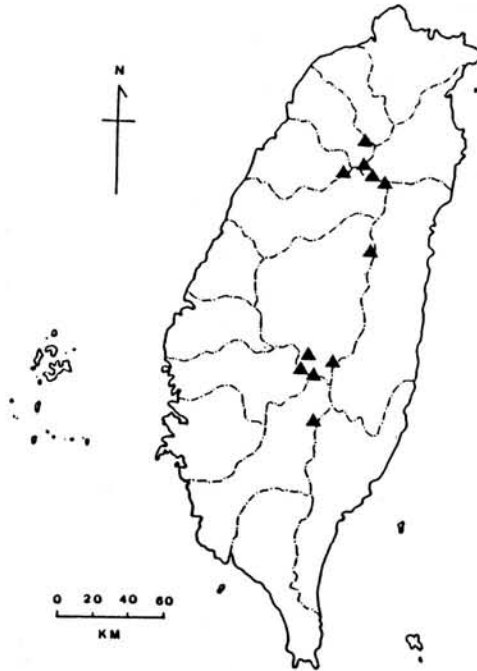


Fig. 2. Distribution map of *T. javanicum* var. *puberulum* W.T. Wang in Taiwan.

nerves elevated on both surfaces and margin thickened beneath; petiolules velutinous; petiole base widely sheathed and with membranous stipules. Inflorescence corymb-paniculate, terminal or lateral. Flowers greenish-white, the pedicel sparsely velutinous; sepals 3-4, elliptic or broadly elliptic, 0.25-0.35 cm long, 0.10-0.22 cm wide, acute or obtuse at apex and dentate, 3-main-veined, almost glabrous and few velutinous on abaxial side near the base, caducous; stamens numerous, ca. 0.20-0.42 cm long, the anthers linear, 0.06-0.09 cm long, the filaments linear dilated above, whitish, the connective mucronulate; carpels ca. 15-30, glabrous, 0.20-0.27 cm, sessile or near sessile. Achenes fusiform, glabrous, with deeply striate, 0.35-0.40 cm long, sessile or nearly sessile, with persistent long recurved-circinate style.

Ranging from Yunnan, western Kuechio, west southern Sichuan to Taiwan. In Taiwan, occurring in grassy places or under forests and distributed in the Central Mountains and Yushan Mountains at altitudes of 2000-3000 m.

ILAN: Mt. Chungyangchienshan to Nanshan, *Tamura & Koyama 23709* (KYO), *23785* (KYO); Mt. Nanhutashan, *Sasaki s.n.* Jul. 23, 1922 (TAIF). NANTOU: Tungpu to Paiyunshanchuang, *Lu & Ou 3648* (TCF), *Tamura, Shimizu & Kao 22011*; Tentzu to Yin Hai, *T. C. Huang, Hsieh & Kao 5862*; Mt. Nengkao, *Sasaki s.n.* Aug. 25, 1929 (TAIF), *Tamura & Koyama 23332* (KYO, TI); Shalihshienhsi, *C. C. Chen 4282**. CHAYI: Tataka, *Masamune & Mori s.n.* Jul. 1, 1931, *Tagawa 328* (KYO, TI), *Yamazaki & Yamazaki 764* (TI), *Yang 3608** (THAI), *4113** (THAI). KAOHSIUNG: Mt. Kwanshan: Kwaiku, *Okamoto s.n.* Jul. 25, 1938 (KYO); Kwanshan pass, *Okamoto s.n.* Jul. 26, 1938. HUALIEN: Mt. Muhkwasan, *Kao 4154**.

2. *Thalictrum myriophyllum* Ohwi in Act. Phytotax. Geobot. 2: 156. 1933; Suzuki, Short Fl. Form. 67. 1936; S. S. Huang in Biol. Bull. Nat. Taiwan Norm. Univ. 5: 50. 1960; Liu & Hsieh, Fl. Taiwan 2: 510. 1976; T. C. Huang, Fl. Taiwan 6: 49. 1979; T. I. Yang, List Pl. Taiwan 608. 1982. 密葉唐松草 Fig. 3; Pl. 2

Holotype: Ilan: Mt. Nanhutashan, *Ohwi 4188* (KYO!).

Paratype: Ilan: Mt. Nanhutashan, *Ohwi 3997* (KYO!).

A perennial herb; stem branched or rarely simple, sulcate, erect, ca. 20-70 cm high, with sparsely velutinous at first, soon glabrous; roots fibrous. Radical and lower leaves long petiole, tetraternate or tetrapinnate to pentaternate, 81-240-leaflets, the leaflets ovate or obovate, sometimes elliptic, chartaceous, ca. (0.2)-0.41-0.61-(0.8) cm long, (0.1)-0.32-0.52-(0.7) cm broad, the base cuneate, obtuse or truncate, sometimes oblique, entire, 3-lobed, dark green and glabrous above, beneath glaucous and sparsely velutinous along venation or glabrous; nerves elevated on both surfaces and the margin thickened on beneath; petiolulate; petiole base widely sheathed, with membranous stipules. Cauline and upper leaves biternate or triternate, segments sometimes bigger than lower parts. Inflorescence corymb-paniculate, terminal or lateral. Flowers greenish-pale, the pedicel sparsely velutinous; sepals 4, elliptic, 0.20-0.30 cm long, 0.13-0.15 cm broad, acute or obtuse at apex and dentate, 2-3-veined, almost glabrous, caducous; stamens 25-40, ca. 0.18-0.25 cm long, the anthers elliptic-linear, 0.05-0.08 cm long, the filaments linear dilated above, whitish, the connective retuse; carpels about 20, glabrous, 0.15-0.17 cm long, sessile. Achenes fusiform, glabrous, with deeply striate, ca. 0.25-0.28 cm long, sessile, with persistent recurved-circinate style.

Endemic. Under forests and near forest margin or in the open land. Distributed



Fig. 3. Distribution map of *T. myriophyllum* Ohwi

in the Central Mountains, Hsuehshan Mountains and Yushan Mountains above 3000 m altitudes.

ILAN: Mt. Nanhutashan, *Kojima et al.* 2023 (KYO), *Masamune, Hukuyama & Simada* 3122, *Sasaki s.n.* Jul. 23, 1922 (TAIF), *S. Suzuki s.n.* Jul. 17, 1937, *T. Suzuki, Hukuyama & Simada* 17479, 17789, *Yamazaki & Yamazaki* 251 (TAI, TI); Chiliting to Nanhushanchuang, *C. C. Hsu* 5982A. HSINTSU: Mt. Tapachienshan, *Wu* 1307*, *Yang* 2355*. TAICHUNG: Mt. Hsuehshan, *K. Mori s.n.* Oct. 24, 1936; Shancha Shelter to Hsuehshanpeifeng, *Wang, S. F. Huang & K. C. Yang* 4980. Mt. Tugitaka, *Masamune* 1252, *Simada* 2573B. NANTOU: Kiraisyunanpo, *Sasaki s.n.* Aug. 24, 1929, *S. Suzuki* 2331, 2386; Mt. Maborasushan, *T. Suzuki* 13674; Mt. Yushan, *Kojima et al. s.n.* Jul. 31, 1933 (KYO); Mt. Yushanpeifeng, *Yang* 3551* (THAI). KAOHSIUNG: Mt. Kwanshan, *Okamoto s.n.* Jul. 24, 1938 (KYO). Uncertainly known place: Karantatsukun, *Sasaki s.n.* Jul. 21, 1932.

3. ***Thalictrum rubescens*** Ohwi in Act. Phytotax, Geobot. 2: 156. 1933; Suzuki, Short Fl. Form. 67, 1936; S. S. Huang in Biol. Bull. Nat. Taiwan Norm. Univ. 5: 48. 1960; Liu & Hsieh, Fl. Taiwan 2: 512. 1976; T. C. Huang, Fl. Taiwan 6: 49. 1979; Wang & Wang, Fl. Reip. Pop. Sinicae 27: 526. 1979; T. I. Yang, List Pl. Taiwan 609. 1982.

南湖唐松草 Fig. 4; Pl. 3

Holotype: Ilan: Mt. Nanhutashan, *Ohwi* 4152 (KYO!).

A perennial herb; stem unbranched or few short branched, sulcate or sometimes cylindrical, erect, ca. 10-30 cm high, glabrous; roots tuberous. Radical leaves long petiolate, biternate to triternate, 9-27-leaflets, the leaflets ovate or obovate, chartaceous, about (0.5)-0.81-1.26-(1.5) cm long, (0.3)-0.55-1.01-(1.4) cm wide, the base obtuse,

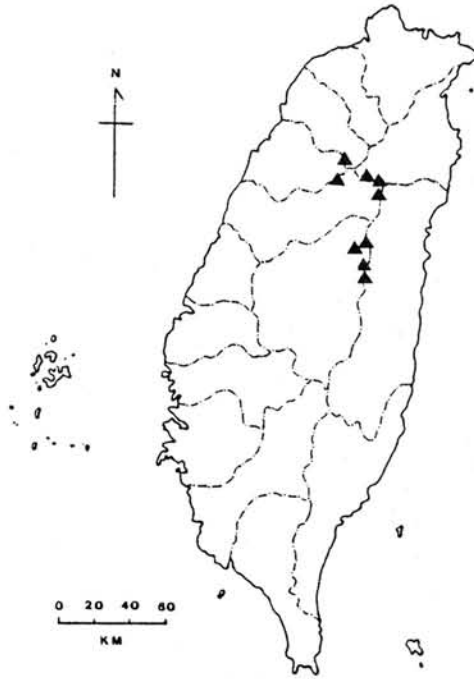


Fig. 4. Distribution map of *T. rubescens* Ohwi

entire, 3-lobed, dark green and glabrous above, beneath glaucous; nerves elevated on both surfaces and margin not thickened on beneath or few; petiolulate, the petiole with membranous stipules, glabrous and near entire. Inflorescence scorpioid cymous, terminal. Flowers white, pedicel glabrous; sepals 4-6, elliptic, ca. 0.45-0.58 cm long, 0.18-0.32 cm wide, obtuse at apex, nearly entire at margin, caducous; stamens numerous, ca. 0.40-4.50 cm long, the anthers elliptic-linear, the filaments linear dilated above, the connected retuse; carpels numerous, ca. 40-60 or more, glabrous, 0.30-0.35 cm long, subsessile. Achenes numerous, ca. 30-50, fusiform, glabrous, with deeply striate, 0.35-0.50 cm long, subsessile or short stipitate, with short persistent recurved style.

Endemic. In wet places at high altitudes in the north of the island, found only along the Central Mountains and on Hsuehshan Mountains.

ILAN: Mt. Nanhutashan, *T. C. Huang* 7804, 7816, *Kuo* 5158, *T. Suzuki*, *Hukuyama* & *Simada* 17637, 17788, *Yamazaki*, *Namba* & *Tani* 597 (TI). HSINTSU: Mt. Tapa-chienshan, *Do* s. n. Jul. 1, 1934*; Mt. Chunyangchienshan, *Fukuyama* & *T. Suzuki* 15080, 15190*, *Kano* s. n. Aug. 10, 1929; Shancha Shelter to Hsuehshanpeifeng, *Wang*, *S. F. Huang* & *K. C. Yang* 4590; Mt. Hsuehshan, *Sasaki* s. n. Jul. 21, 1932. NANTOU: Mt. Chilaichushan, *S. Suzuki* s. n. Aug. 4, 1926, 2346; Mt. Nengkaoshan, *Matuda* R-39, s. n. Aug. 1, 1919.

4. *Thalictrum sessile* Hayata, *Icon. Pl. Form.* 3: 6. f. 2, 1913, *Gen. Index Fl. Form.* 2. 1917; *Sasaki*, *List Fl. Form.* 185. 1928; *Kudo* et *Masamune* in *Ann. Rep. Taihoku Bot. Gard.* 2: 79. 1932; *Suzuki*, *Short Pl. Form.* 67. 1936; *Masamune*, *List Vasc. Pl. Taiwan* 54. 1954; *S. S. Huang* in *Biol. Bull. Nat. Taiwan Norm. Univ.* 5: 49. 1960; *Liu* & *Hsieh*, *Fl. Taiwan* 2: 512. 1976; *T. C. Huang*, *Fl. Taiwan*

6: 49. 1979; T. I. Yang, List Pl. Taiwan 609. 1982. 玉山唐松草 Fig. 5; Pl. 4

Holotype: Chiayi: Mt. Yushan, *U. Mori* s. n. Dec. 1909 (TI!).

A perennial herb; stem branched or rarely simple, sulcate, erect, about 50-150 cm high, glabrous; roots fibrous. Radical leaves wilted during the flowering season; cauline leaves triternate to tetraternate, 27-45-leaflets, the leaflets ovate, obovate or deltoid, chartaceous, ca. (0.7)-1.22-2.52-(3.4) cm long, (0.5)-1.05-2.47-(3.8) cm wide, the base truncate, cuneate or obtuse, entire, 3-deeply-lobed and the middle segment 3-lobed, the lateral segments 2-lobed usually, dark green above, beneath glaucous and both glabrous; nerves elevated beneath only, and the margin not thickened; petiolulate petiolate base widely sheathed, with membranous stipules. Inflorescence cymous paniculate, terminal or lateral. Flowers yellowish-green: pedicel, glabrous; sepals 4, elliptic, ca. 0.20-0.27 cm long, 0.10-0.14 cm wide, retuse at apex and dentate, 3-main-veined, caducous; stamens numerous, ca. 0.45-0.55 cm long, the anthers linear, 0.09-0.13 cm long, the filaments linear, dilated above, whitish, the connectives mucronulate; carpels ca. 8-10-(15), glabrous, 0.20-0.27 cm, sessile. Achenes fusiform, glabrous, with striate but shallowly, 0.45-0.58 cm long, sessile, with long persistent recurved-circinate style.

Endemic. Beside streams, near wet places, or under forests. Distributed in the Central Mountains, Hsuehshan Mountains, Yushan Mountains and Alishan Mountains at altitudes above 2500 m.

ILAN: Nanshantsun (Piyanan-anbu), *Ohwi* 2832 (KYO), 2864 (KYO); Mt. Nanhutashan, *Ohwi* 4214 (KYO), *Yamazaki, Namba & Tani* 426 (TI); Mt. Chungyangchienshan to Nanshan, *Tamura & Koyama* 23776 (TI); Chungyangchienhsi to

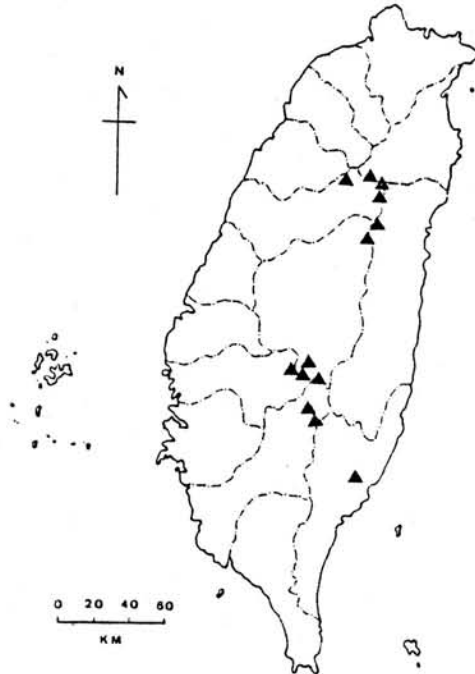


Fig. 5. Distribution map of *T. sessile* Hayata

Nanhuhsi, Wang, S. F. Huang, Tang & K. C. Yang 3818*. TAICHUNG: Huanshan to Hsuehshan, Koyama 24008 (KYO); Mt. Nanhutashan, Tausai, T. Suzuki, Hukuyama & Simada 17589; Mt. Hsuehshan, K. Mori s. n. Oct. 24, 1936. NANTOU: Mt. Hohuan-shan, Kao 8808; Mt. Yushanpeifeng, Yang 3769 (THAI), 3795* (THAI); Mt. Yushantungfeng, Yamazaki & Yamazaki 1002 (TI), Yang 3789* (THAI); Salihshienhsi, Chiang 27335, J. W. Hsu 2384. CHAYI: Mt. Alishan to Tataka, Ohwi 3595 (KYO), Tamura, Shimizu & Kao 22183*; Lulinshanchuang, Yang 4199* (G. S. Wang coll. THAI). KAOHSIUNG: Kwanshan pass, Okamoto s. n. May 15, 1939 (KYO); Mt. Kwanshan, Sasaki s. n. Oct. 19, 1933; Kwanshanyakou, Ou 1338 (TCF); Mt. Kwanshanlin, C. J. Chen et al. s. n. Jul. 26, 1986 (CKH), Tsen s. n. Jul. 26, 1986 (CKH), Kuoh 11951A (CKH), 12486 (CKH); Nanheng-highway, Kuoh 10449-2 (CKH). HUALIEN: Tayulin, Kao 7757. TAITUNG: Luyieh, Yienpin, Ou 1910 (TCF), 1934 (TCF).

5. *Thalictrum urbaini* Hayata, Icon. Pl. Form 1: 25. 1911; Masamune in J. Soc. Trop. Agr. 3: 21. 1931; Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. 2: 79. 1932; Suzuki, Short Fl. Form. 67. 1936; Masamune, List Vasc. Pl. Taiwan 54. 1954; Wang & Wang, Fl. Reip. Pop. Sinicae 27: 550. pl. 125. 1979.

Thalictrum fauriei Hayata in J. Coll. Sci. Univ. Tokyo 22: 7. t. 1, 1906, l. c. 25: 44. 1908; Kawakami, List Pl. Form. 3. 1910; Hayata, Gener. Index Fl. Form. 2. 1917; S. S. Huang in Biol. Bull. Nat. Taiwan Norm. Univ. 5: 50. 1960; Liu & Hsieh, Fl. Taiwan 2: 510. 1976; T. C. Huang, Fl. Taiwan 6: 49. 1979; T. I. Yang, List Pl. Taiwan 608. 1982, non Lévl. & Vít. (1906).

Thalictrum micrandrum Hayata, Icon. Pl. Form. 3: 4. pl. 1, 1913, Gener. Index Fl. Form. 2. 1917; Sakaki, List Pl. Form. 185. 1928; Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. 2: 79. 1932; Suzuki, Short Fl. Form. 66. 1936; Masamune, List Vasc. Pl. Taiwan 54. 1964; S. S. Huang in Biol. Bull. Nat. Taiwan Norm. Univ. 5: 48. 1960; Wang & Wang, Fl. Reip. Pop. Sinicae 27: 551. 1979.

Thalictrum morii Hayata, Icon. Pl. Form. 3: 5. 1913, Gener. Index Fl. Form. 2. 1917; Sasaki, List Pl. Form. 185, 1928; Kudo & Masamune in Ann. Rep. Taihoku Bot. Gard. 2: 79. 1932; Suzuki, Short Fl. Form. 66. 1936; Masamune, List Vasc. Pl. Taiwan 54. 1954; S. S. Huang Biol. Bull. Nat. Taiwan Norm. Univ. 5: 48. 1960; Wang & Wang, Fl. Reip. Pop. Sinicae 27: 551. 1979.

Thalictrum hayatanum Koidz. in Bot. Mag. Tokyo 30: 20. 1925; Sasaki, List Pl. Form. 185. 1928; S. S. Huang in Biol. Bull. Nat. Taiwan Norm. Univ. 5: 47. pl. 1, 1960.

Holotype: Taipei: Mt. Tatunshan, *Faurie* 197 (TI!).

5a. *Thalictrum urbaini* var. *urbaini*.

傅氏唐松草 Fig. 6; Pl. 6

A perennial herb, with tubers; stem unbranched, cylindrical, erect, ca. 10-30-(40) cm high, glabrous; roots fibrous. Radical leaves long petiole, biternate to triternate, 9-27-leaflets, the leaflet ovate, obovate or elliptic, chartaceous, ca. (0.6)-1.06-2.15-(3.9) cm long, (0.5)-0.87-1.87-(3.5) cm wide, the base cuneate, obtuse or truncate, sometimes cordate, entire, 3-lobed or 5-7-lobed sometimes, dark green above and beneath glaucous, glabrous on both surfaces; nerves elevated and margin slightly thickened on beneath; petiolulate, the petiole with membranous stipules, glabrous and entire or nearly so. Inflorescence a scorpioid cyme or panicle, terminal.



Fig. 6. Distribution map of *T. urbaini* var. *urbaini* (▲);
var. *majus* T. Shimizu (△).

Flowers white or pinkish white; pedicel, glabrous; sepals 4, obovate, ca. 0.30–0.35 cm long, 0.15–0.20 cm wide, acute or obtuse at apex and more or less dentate, 3-main-veined, almost glabrous, caducous; stamens numerous, ca. 0.50–0.72 cm long, the anthers elliptic, the filaments linear, dilated above, the connective retuse; carpels ca. 15–30, glabrous, 0.20–0.35 cm long, stipulate. Achenes ca. 10–25, fusiform, glabrous, with deeply striate, 0.40–0.70 cm long, with long stipitate and short persistent recurved style.

Endemic. Widely distributed over the whole island, especially in wet places under forests or near forests margin.

TAIPEI: Mt. Tatunshan, *Faurie* 1880 (KYO), *C. C. Hsu* 5196, 5555, *T. C. Huang & K. C. Yang* 10836, *Inoue, Sugiyama & Liu* s.n. Mar. 22, 1977 (TI), *S. Y. Lu* 15846 (TAIF), *Masamune*, s.n. Dec. 1, 1929, *J. Murata & Yang* 17860 (TI), *Sasaki* 838. *Sho* 24, 39, 40, *Simada* s.n. Nov. 14, 1913 (TAIF), *T. Suzuki* 6761, *Yang* 2453 (*Tang* coll.), *Yang & Minoru Tamura* 2884, 2886 (KYO, THAI); Mt. Yangminshan (Tsaoshan), *C. C. Hsu* 10405, *Kudo & S. Suzuki* 3281, *Kudo, Suzuki & Mori* s.n. Apr. 21, 1929, *Masamune* s.n. Sept. 1943, *Shimizu* 678; Mt. Chishinshan, *Tsutzihu, Kawakami & Simada* s.n. Apr. 2, 1911 (TAIF, TI), *Nagasawa* 318 (TI), *Simada* 346, 1380, s.n. Mar. 22, 1915 (TAIF); Liuhuanguku, *Tang* 1409; Shenkeng to Hsienkongmiao, *Kuo* 9328; Shihiting, *T. C. Huang* 10376; Pichashan, *K. C. Yang* 1180; Huangtitien, *Yang* 2074* (THAI), 2452 (*Tang* coll.); Kinkwashi, *Kawakami & Simada* s.n. May 14, 1912 (Holotype of *T. micrandrum* Hayata, TI!); Shantiaoling, *Masamune* 2647, *Sasaki* s.n. Mar. 26, 1918 (TAIF). KEELUNG: Mutanken, *Kawakami* 4238 (TAIF). ILAN: Mt. Taipinshan, *C. C. Hsu* 15311, *S. Suzuki* 3787. HSINTSU: Mt. Tapachienshan, *Hwang* 3 (THAI), *Yang* 2378. TAICHUNG: Hsinta Campus to Shancha Shelter, *Wang, S. F.*

Huang & K. C. Yang 4529; 369 to Mt. Sylvia (Hsuehshan), T. C. Huang 7215; Mt. Shikayangtashan, Masamune 1230, S. Suzuki 5243. NANTOU: Patungkuan to Kuankao, Yang 3410 (THAI); Tungpu to Patungkuan, Tamura, Shimizu & Kao 21980; Chenyulanhsi, Chiang 27018, J. W. Hsu 2137; Paiyunshanchuang, Yang 3506 (THAI), 3556 (THAI). CHAYI: Tataka to Paiyunshanchuang, Yamazaki & Yamazaki 777 (TI), Yang 3491 (THAI); Mt. Yushanchenshan, Y. F. Chen 9802, Jan & Kao s. n. Jul. 13, 1957; Monroo cliff to Tungpu, C. C. Hsu 5359; Tataka-anbu, Yang 3697* (THAI), Y. S. Tsen s. n. Jul. 3, 1986 (TCF); Tungpu to Chuchung, C. C. Hsu & Kuoh 7409; Mt. Alishan to Tungpu, C. C. Hsu & Kuoh 7518; Mt. Alishan, Faurie 580 (TI), s. n. Jun. 1914 (TAIF), Lu & Ou 1450 (TCF), Ou 5090 (TCF), Sasaki s. n. Mar. 1911, s. n. May 1913 (TAIF), Yang 3084 (THAI), 3090 (THAI). KAOHSIUNG: Nanheng-Highway, Kuoh 10449-1 (CKH), 11841 (CKH), 11869 (CKH); Mt. Kwanshanlin, Kuoh 11951B (CKH), Y. C. Tsen s. n. Jul. 26, 1986 (CKH). PINGTUNG: Mt. Tawushan, T. C. Huang et al. 13696, Ohwi 1779 (KYO); Kuaiku, Namba et al. 719 (TI), s. n. Jul. 19, 1968 (TI). HUALIEN: Hsiukuluanhsi, U. Mori s. n. Apr. 1910 (Holotype of *T. morii* Hayata, TI!; Isotype, TAIF!), Kawakami & U. Mori s. n. Apr. 16, 1910 (TAIF); Taroyuhsi, Ohwi 1139 (KYO); Totokun-Midori, Tagawa 3519 (KYO); Mt. Chingshuishan, Chiou & Mo s. n. Apr. 27, 1983 (TAIF); Yienhailintao, Chiou s. n. Apr. 4, 1983 (TAIF). TAITUNG: Chijakantohsi, Kawakami & U. Mori 4557 (TAIF).*

- 5b. *Thalictrum urbaini* var. *majus* T. Shimizu in J. Fac. Tex. Sci. Technol., Shinshu Univ. n. 36. ser. A. (Biol.), n. 12: f. 4. 1936; Wang & Wang, Fl. Reip. Pop. Sinicae 27: 551. 1979. 大花傅氏唐松草 Fig. 6

Holotype: Hualien: Tienchang cliff, Shimizu 11271 (KYO!).

Paratypes: Hualien: Tienchang cliff, Shimizu 11301 (KYO!); Mt. Chinshuishan, Shimizu & Kao 11802 (KYO!), 11776 (KYO!, TAI!).

From the typical variety, it differs by the large plant, ca. (10)-20-70 cm high, and the large flowers, usually 6-sepaliferous flowers, which are ca. 2-3 cm wide, with sepals 0.8-1.5 cm long, and 0.3-0.8 cm wide.

Endemic. Found in the eastern part of the island on the limestones at medium altitudes.

Hualien: Mt. Chinshuishan, Shimizu & Kao 11963 (KYO, TAI); Panpien to Tienchang, Shimizu 11234; Chilai to Panpien, Fukuyama 4420, 4421, 4422.

INSUFFICIENTLY KNOWN SPECIES

1. *Thalictrum oshimae* Masamune in J. Soc. Trop. Agr. 6: 569. 1934; Suzuki, Short Fl. Form. 67. 1936; Masamune, List Vasc. Pl. Taiwan 54. 1954; Liu & Hsieh, Fl. Taiwan 2: 510. 1976; T. C. Huang, Fl. Taiwan 6: 49. 1979; T. I. Yang, List Pl. Taiwan 609. 1982. 大唐松草

The type specimen cited by Masamune was: Hsintsu: Izawayamasita, Masamune s. n. Jul. 5, 1934, which was not seen by the authors.

ACKNOWLEDGEMENTS

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臺灣植物誌之觀察 (5)

臺灣唐松草屬 (毛茛科)

楊宗愈 黃增泉

摘 要

本文為臺灣毛茛科唐松草屬 (*Thalictrum*) 之訂正研究，共計 4 種 2 變種 (包括一新記錄變種：微毛爪哇唐松草——*Thalictrum javanicum* Bl. var. *puberulum* W.T. Wang)，存疑名一種，文中除了對每一分類羣加以描述外，並附其繪圖及分佈圖。

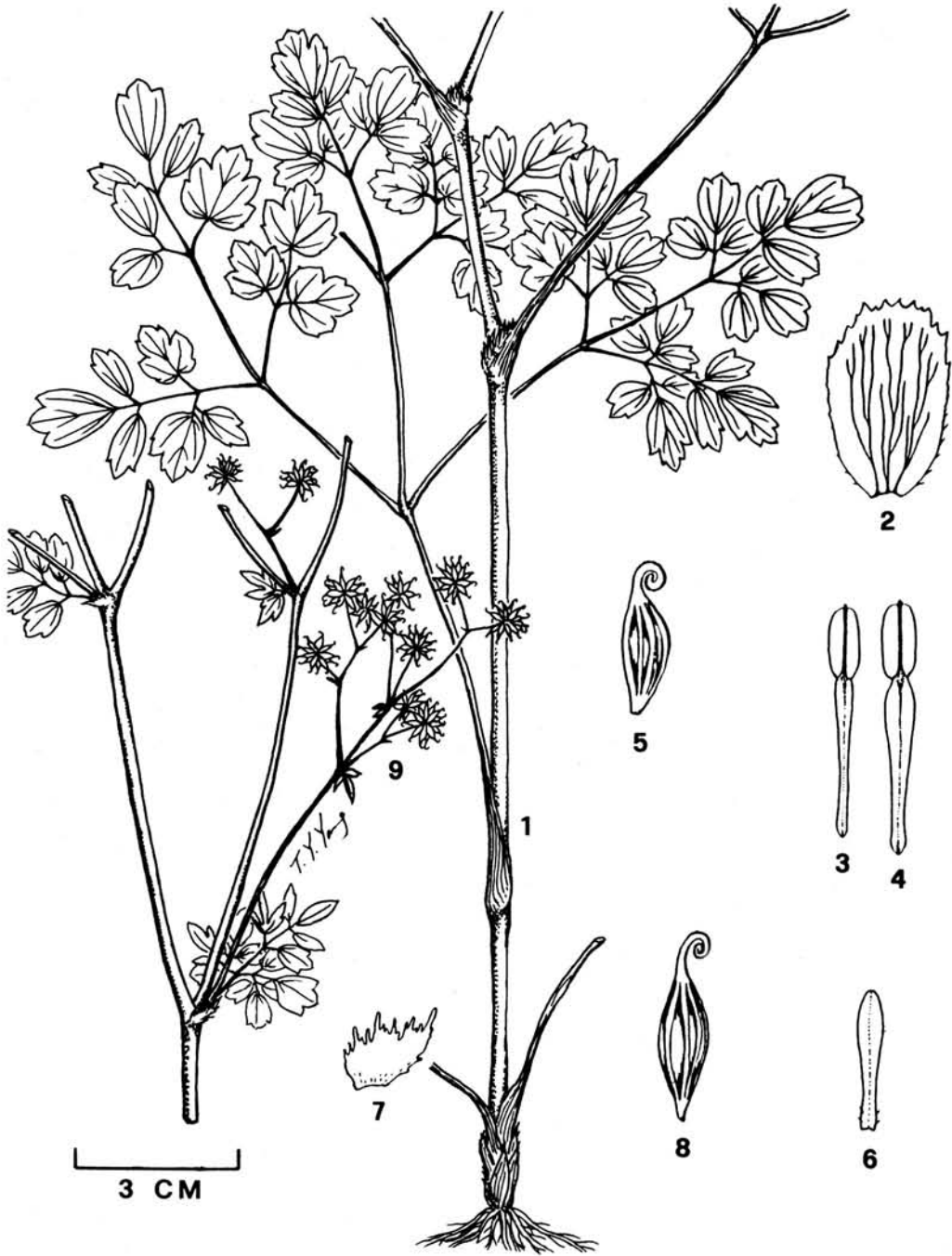


Plate 1. *Thalictrum javanicum* Bl. var. *puberulum* W. T. Wang (Ranunculaceae).

1. Habit; 2. Sepal; 3. & 4. Stamens; 5. Carpel;
6. Bract; 7. Stipule; 8. Achene; 9. Branch with infructescence



Plate 2. *Thalictrum myriophyllum* Ohwi (Ranunculaceae).

1. Habit; 2. Sepal; 3. Stamen; 4. Carpel;
5. Bract; 6. Stipule; 7. Achene; 8. Branch with fruits and flowers.

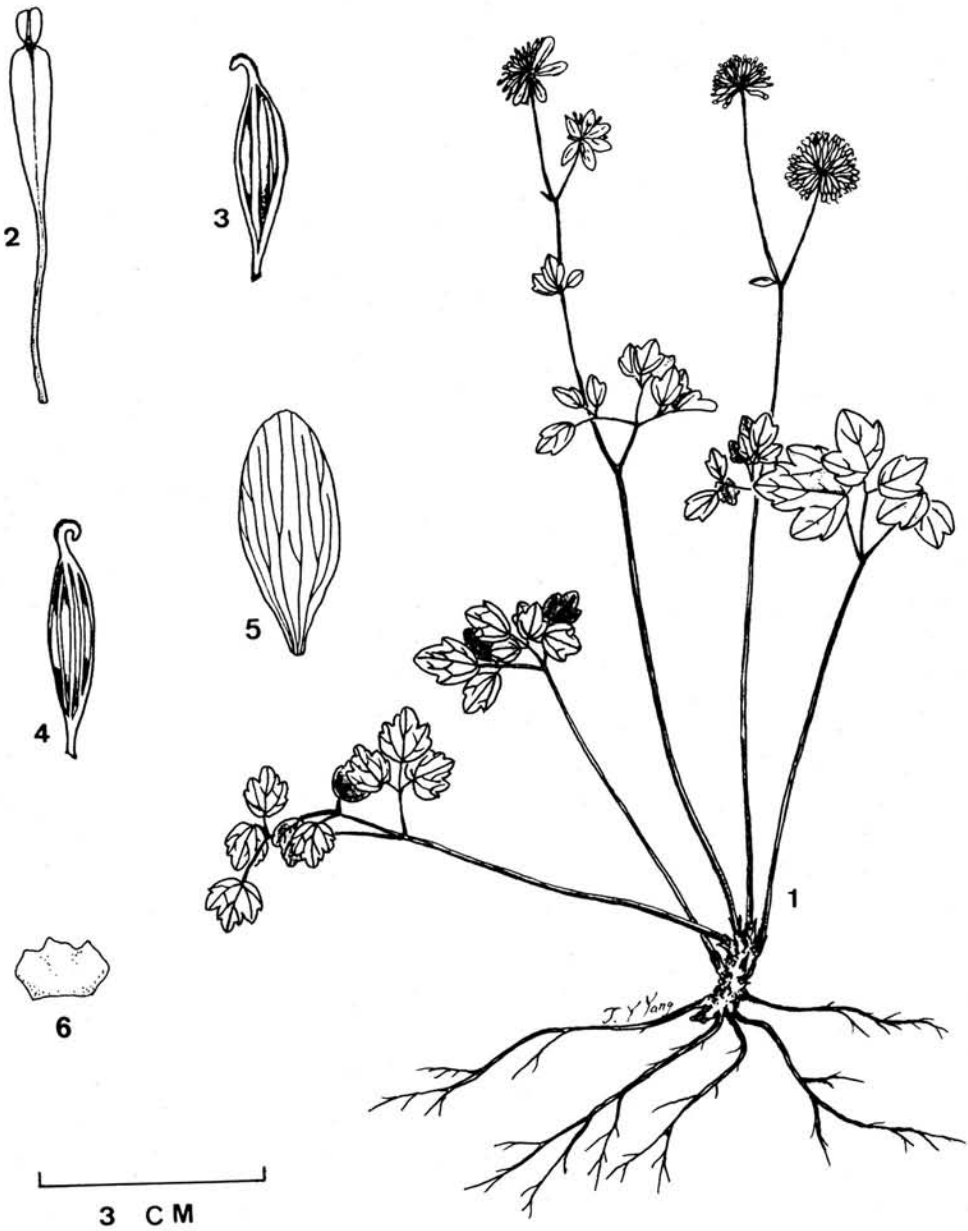


Plate 3. *Thalicttrum rubescens* Ohwi (Ranunculaceae).

- 1. Habit; 2. Stamen; 3. Carpel;
- 4. Achene; 5. Sepal; 6. Stipule.

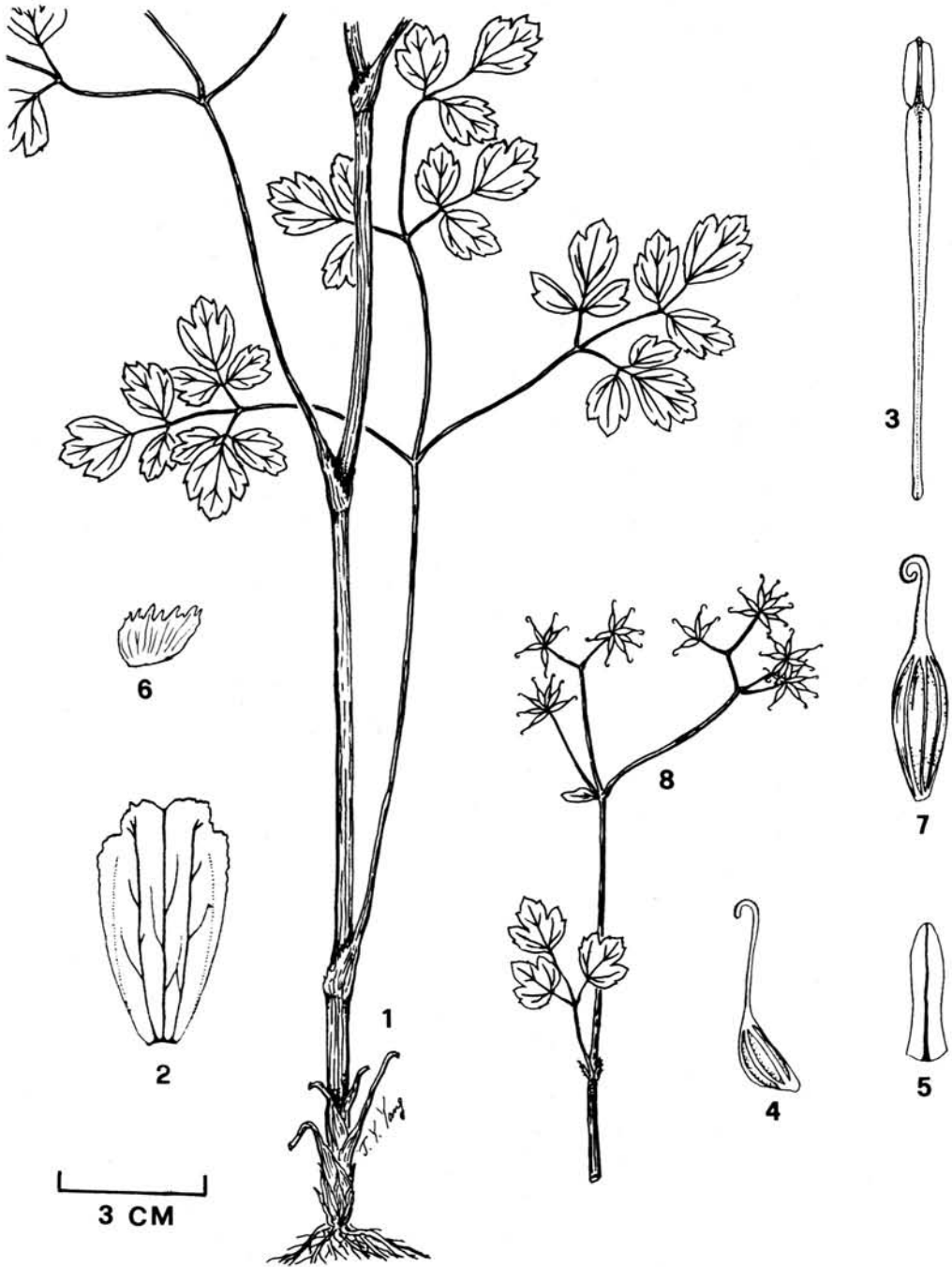


Plate 4. *Thalicttrum sessile* Hayata (Ranunculaceae).

1. Habit; 2. Sepal; 3. Stamen;
 4. Carpel; 5. Bract; 6. Stipule;
 7. Achene; 8. Branch with infructescence.

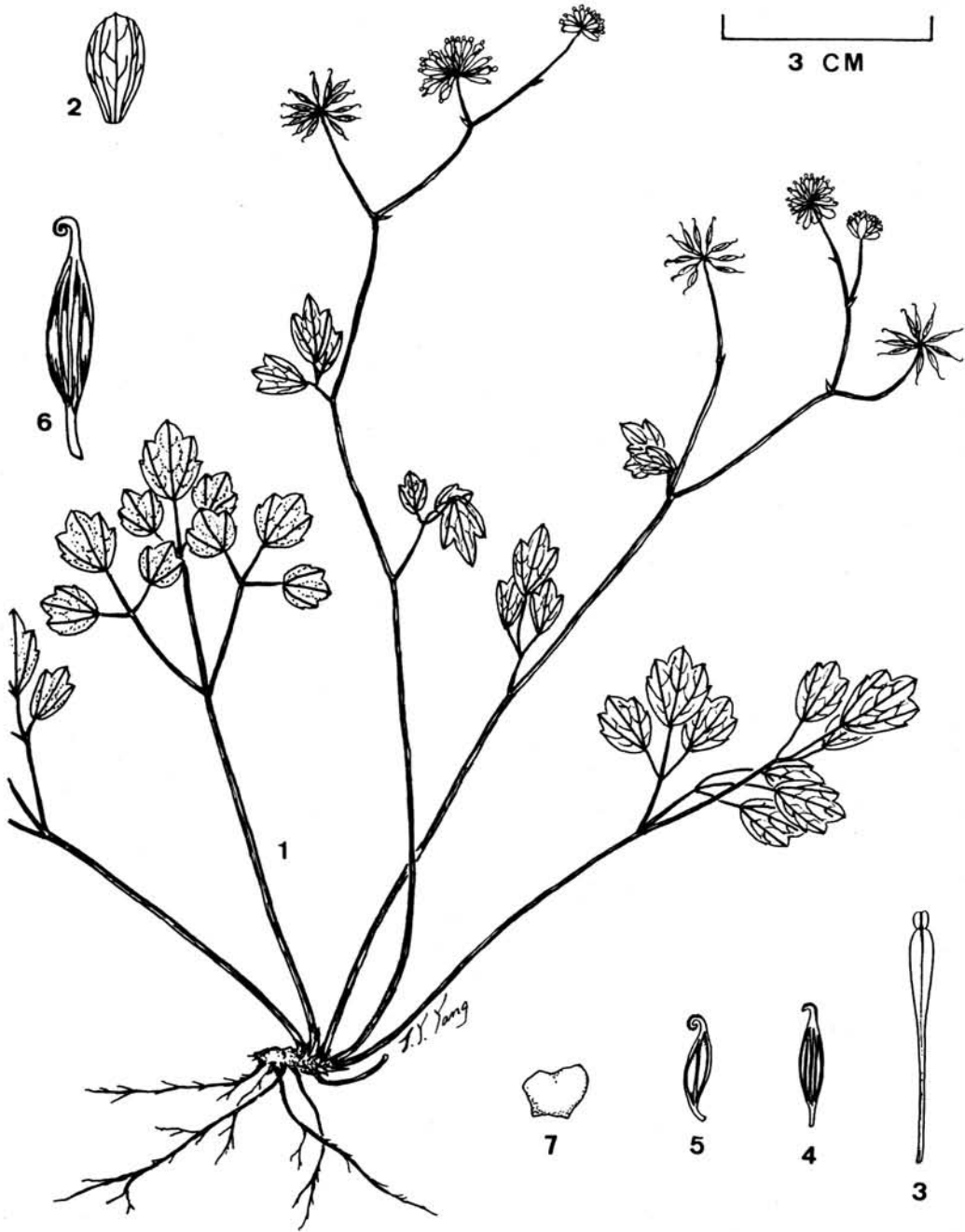


Plate 5. *Thalictrum urbaini* Hayata (Ranunculaceae).

- 1. Habit; 2. Sepal; 3. Stamen;
- 4. & 5. Carpels; 6. Achene; 7. Stipule.