

Umbelliferae of Taiwan⁽¹⁾

With 16 plates

By

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INTRODUCTION

The present paper is a revision of the genera and species of the UMBELLIFERAE of Taiwan. The naturalized and cultivated species are not included. A taxonomic study was followed by a cytological survey of chromosome numbers. For chromosome counts, fresh young buds were fixed in Farmer's solution, aceto-carmine smear technique was then employed to make temporary slides for chromosome determination. Drawings were made under the microscope with the aid of a camera lucida at the magnification of 1280 \times .

This paper includes 15 genera, 32 species and 1 variety of Umbelliferae of Taiwan. Four new species, one new variety and several new synonyms are listed herein. All specimens cited in this paper have been deposited in the Herbarium of the Department of Botany, National Taiwan University (TAI), Taiwan Forest Research Institute (TAIF), and the Herbarium of the Institute of Botany, Academia Sinica (AS). Voucher specimens for chromosome counts are all in the TAI and AS.

Key to the genera

1. Low creeping herbs; leaves simple; flowers in small axillary simple subcapitate umbels..... 2
2. Slender to stout, erect or ascending herbs; leaves simple or ternate or pinnately compound; flowers pedicellate in compound umbels (rarely simple or sessile)..... 3
3. Leaves with a pair of free stipules at base of petiole; fruits without secondary ribs; involucre wanting or inconspicuous *Hydrocotyle*

(1) The authors wish to express their gratitude to Dr. L. Constance, Department of Botany, California University for his invaluable suggestions; to Dr. C. E. DeVol, Department of Botany, National Taiwan University for his kind help during the progress of this study; to Mr. M. T. Kao for his assistance in collecting the specimens; and to Miss Wilma W. L. Hu and S. C. Kwan for making slides for chromosome counts. The illustrations of the new species were prepared by Mr. R. L. Wang and Mr. C. C. Kuo to whom the authors are deeply indebted.

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(3) We are indebted to the Institute of Botany, Academia Sinica for research support.

large, densely pubescent; peduncles stout, 5-15 cm. long; involucre 1-2 or wanting; rays 20-30, 4-7 cm. long, subequal, involucreis several, linear-lanceolate, shorter than flowers, pubescent, apex acute; pedicels 0.5-1.0 cm. long, spreading ascending. Flowers white; calyx-teeth obsolete; petals oval, with a narrower inflexed apex, dorsally hirsute; filaments 2 times as long as petals; styles short, reflexed, stylopodium depressed conic; ovary hirsute. Fruits strongly dorsally compressed, more or less pubescent, oblong 6-8 mm. long 4-6 mm. broad, apex and base emarginate; the dorsal ribs low and round, the lateral wings broad and corky thick; carpophore nearly entirely bifid. Vittae 2-3 in the interval, 7-8 on the commissure. Seed face plane.

The distribution of this new species is restricted in Taiwan. It is only found on the coastal area from Kantzuchioh (崁仔腳) to Shihmen (石門) in Taipei Hsien. This species is near *Angelica japonica* but is distinguished from it by its hirsute petals and ovary, and its corky thick wings and a larger number of oil tubes in its carpels.

Type locality—Shihmen, Taipei Hsien. T. I. Chuang 3979 type! (TAI).

Distribution—Endemic to Taiwan.

Specimens examined—Taipei Hsien: S. Suzuki, Oct. 14, 1935 (TAI); Kao, Tseng & Chuang 3346 (TAI, AS); Chuang 3979 type! (TAI) & isotype! (AS).
3. *Angelica Morii* HAY., Icon. Pl. Formos. 10:24, fig. 15, 1921 (Plate I, fig. 4; Plate XIII, fig. 2).

Robust herb, 30-50 cm. high. Stem straight, branches few. Leaves glabrous, 2-3-ternately compound, triangular in outline, 10-20 cm. long, about 13 cm. broad; ultimate-segments ovate-lanceolate, apex acuminate, base attenuate, margin serrate, 2-3 cm. long, 1 cm. broad; petioles about 7 cm. long, broadly sheathed at base; cauline leaves reduced upward. Umbel large, pubescent, 5-9 cm. long, 8-10 cm. in diameter; involucre wanting; rays 20-50. Flowers many. Fruits compressed dorsally, oblong, 3 mm. broad, more or less cordate at base, lateral ribs broadly winged. Vittae solitary in the interval, 2 on the commissure.

Type locality—Yushan (Mt. Morrison), Chiayi Hsien. U. Mori, Oct. 1906.

Distribution—Endemic.

Specimens examined—Chiayi Hsien: S. Sasaki 380407 (TAI); U. Mori, Oct. 1906 merotype! (TAIF); H. Ageta, Sept. 6, 1960 (TAI). Nantou Hsien: G. Masamune, June 23, 1931 (TAI). Hwallien Hsien: N. Fukuyama & T. Suzuki ST16296 & 15171 (TAI); S. Suzuki 2266 (TAI).

4. *Angelica morrisonicola* HAY., Mater. Fl. Formos. 129, 1911 et Icon. Pl. Formos. 2: 56, 1912. (Plate I, fig. 3; Plate XIII, fig. 3).

Peucedanum morrisonicola (HAY.) HIROE, Umbell. Asia 1:180, 1958. syn. nov.

Stout, glabrous to pubescent herb. Leaves bipinnate, long petiolate, triangular in outline, 25 cm. long, 30 cm. broad; petioles 25 cm. long; pinnulae shortly petiolate, oblong, 7 cm. long, 3 cm. broad, serrate, petiole 5 mm. long, terminal

pinnules tripartite, upper surface glabrous, pubescent along midrib and lateral nerves; cauline leaves reduced upward; the sheath widely inflated. Umbel compound; involucre linear, 1.5 cm. long, rays about 50, peduncles 4 cm. long, spreading-ascending; umbellules 1 cm. long, 1.5 cm. in diameter; involucels linear 2-4 mm. long, Calyx-teeth obsolete; petals oblong, entire, inflexed; stylopodium depressed entirely. Fruits very much dorsally compressed, 5 mm. long, 3.5 mm. broad, apex rotundate, base cordate, the dorsal ribs filiform, the lateral broadly winged. Vittae solitary in the interval, 2 on the commissure. Seeds dorsally compressed, face plane.

Type locality—Yushan (Mt. Morrison), Chiayi Hsien S. Nagasawa, Nov. 1905 (600); T. Kawakami & U. Mori, Nov. 1906 (2129).

Distribution—Endemic.

Specimens examined—Chiayi Hsien: Kao, Kuo, Tseng & Chuang 4011 (TAI, AS); T. Kawakami & U. Mori. 2129 isotype! & 18537 (TAIF). Hwalien Hsien: Y. Kudo & K. Mori 28 (TAI).

4a. *Angelica morrisonicola* HAY. var. *nanhutashanensis* LIU, CHAO et CHUANG var. nov.

A typo foliis minoribus utraque pagine dense hispidis differt.

The variety differs from the type species by having leaves which are smaller and densely hispid on both surfaces.

Type locality—Nanhutashan, Ilan Hsien S. Sasaki July 22, 1922 type (TAI).

Distribution—Endemic to Taiwan.

Specimens examined—Ilan Hsien: S. Sasaki, July 22, 1922 type! (TAI).

5. *Angelica tarokoensis* HAY., Icon. Pl. Formos. 10:27. 1921. (Plate IV, fig. 7; Plate XIII, fig. 4).

Stout herb. Leaves coriaceous, pinnate, ovate in outline, 20 cm. long, 10-15 cm. broad; pinnae opposite, terminal and upper pinnae oblong-lanceolate, 5-8 cm. long, 1-2 cm. broad, the apex acuminate, the base obtuse or attenuate, the margin serrate, lower pinnae usually ternate; petiole 5-10 cm. long, broadly sheathed at base. Umbel pubescent or glabrous, long pedunculate, about 5 cm. long, 10-12 cm. in diameter; rays 20-25; involucre deciduous, linear-lanceolate, about 1 cm. long; umbellule 1.5 cm. long, 2 cm. in diameter, involucels linear, 4-7 mm. long. Calyx-teeth 5, minute, deltoid; petals 5, oblong, inflated; stamens 5, the anther ovate, apex acute; style 2, short. Fruits strongly dorsally compressed, oblong, 7 mm. long, 3 mm. broad, the apex obtuse, the base truncate, dorsal ribs filiform, the lateral broadly winged. Vittae solitary in the interval, 2 on the commissure. Seeds dorsally compressed.

Type locality—Neitailuko (內太魯閣), Hwalien Hsien, B. Hayata and S. Sasaki Aug. 1917.

Distribution—Endemic.