

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*

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Stout herb, 1-2 m. tall, basal part of stem 5-8 cm. in diameter. Radical and lower leaves large, petiolate, ovate to deltoid, 50-80 cm. long, bi-tripinnately compound; the leaflets ovate to ovate-lanceolate 5-10 cm. long, 2-5 cm. broad, apex acute, margin serrate, sessile or petiolulate, nerves on upper surface scabrous, slightly pubescent beneath; petioles stout, broadly sheathing; cauline leaves reduced upward, with conspicuously dilated and often bladeless sheaths. Umbel large, densely pubescent; peduncles stout, 5-10 cm. long; rays 20-40, 4-7 cm. long, subequal; involucels several, linear-lanceolate, shorter than flowers; pedicels 5-10 mm. long. Flowers white; calyx-teeth obsolete; petals oval to obovate, glabrous; styles reflexed. Fruits dorsally compressed, oblong, 5-7 mm. long, 4-5 mm. broad, glabrous; commissure broad, the dorsal ribs low and rounded, the lateral wings very thin, broader than the body. Vittae solitary in the interval, 2 on the commissure. Seed dorsally compressed.

Type locality—Nertschinsky-zavod, Dahuria, Siberia. Fischer.

Distribution—Japan, Korea, Siberia, China.

Specimens examined—Taipei Hsien: Y. Shimada, Aug. 1, 1915 (TAI); S.

Suzuki, July 5, 1927 (TAI); S. Suzuki, May 12, 1929 (TAI); K. Mori, April 27, 1933; M. T. Kao K3616 (TAI, AS); T. Kawakami 18524 (TAIF); Y.

Shimada 18530 & 18532 (TAIF); G. Nakahara 18531 (TAIF); T. Kawakami

& S. Sasaki 18529 (TAIF). Hsinchu Hsien: Y. Shimada, June 14, 1923 (TAI).

2. *Angelica hirsutiflora* LIU, CHAO et CHUANG sp. nov. (Plate II, fig. 5).

Peucedanum decursivum sensu MATSUM. et HAY. Enum. 173, 1906 non MAXIM.

Herba robusta; caule erecto tereti late sulcato superne puberulo, 1-1.5 m. alto basi 3-6 cm. diam., foliis radicalibus longe-petiolatis ternato-pinnatisectis, segmentis crassis late ovatis 3-5-fidis 10-20 cm. longis, 5-15 cm. latis, apice obtusis, basi cordatis vel rotundatis, glabris, serratis; petiolis foliorum inferiorum amplexicaulibus, superioribus vaginis amplissimis oblongis margine papyraceis microphyllis glabris; involucris mollis vel 1-2-phyllis foliaceis; umbellis 20-35 radiatis; radiis 4-7 cm. longis, pubescentibus; involucellis polyphyllis lanceolato-linearibus, 3mm. longis, 1mm. latis, pubescentibus, apice acutis; umbellulis 20-30-floris, pedicellis 0.5-1 cm longis, calycis dentibus obsoletis, petalis albi ovatis apice acute involutis dorsalibus hispidis, filamentis quam petalis duplo longioribus, stylis brevibus stylopodi depresso conico; fructibus pubescentibus oblongis 6-8 mm. longis, 4-6 mm. latis, apice et basi emarginatis; jugis dorsalibus filiformibus, lateralibus in alas dilatatis, crassis; valleculis 2-3 vittatis, commissuris 7-(8)-vittatis.

Stout herb, 1-1.5 m. tall, basal part of stem 3-6 cm. in diameter. Radical and lower leaves large, deltoid, 50-100 cm. long, ternately-pinnately divided, the leaflets thick, pubescent on the nerves of both sides, broad ovate 15-20 cm. long, 10-15 cm. broad, apex obtuse base cordate or rotundate, veins elevated on both surfaces, margin obtuse serrate; petioles stout, broadly sheathing; cauline leaves reduced upward, with conspicuously dilated and often nearly bladeless sheaths. Umbel

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

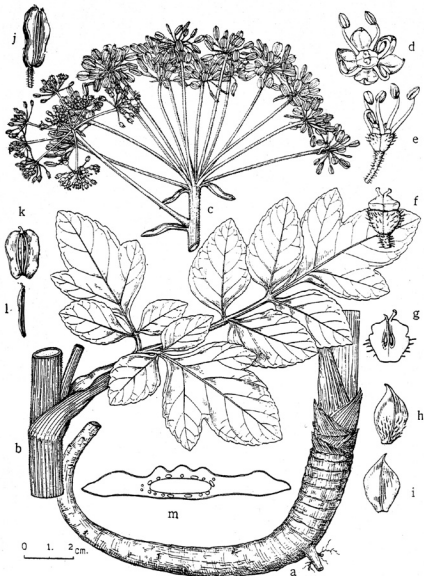


Fig. 5. *Angelica hirsutiflora* Liu, Chao et Chuang sp. nov.

- a. Part of main root and stem. b. Stem leaf. c. Inflorescence. d. Flower.
 e. Flower, petal removed. f. Pistil. g. Ovary, longitudinal section. h. Petal, outer side.
 i. Petal, inner side. j. Fruit, immature. k. Fruit, mature. l. Fruit, lateral view.
 m. Fruit, cross section.