

# New Taxa and Nomenclatural Changes in *Aralia* (Araliaceae)

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**ABSTRACT.** Based on work toward a revision of *Aralia* (Araliaceae), three new taxa are described: *Aralia chinensis* L. var. *longibractea*, *A. elata* (Miquel) Seemann var. *ryukyuensis*, and *A. gintungensis* C. Y. Wu var. *multinervis*. The following nomenclatural changes are made: *A. debilis* J. Wen, nom. nov., *A. dasyphyloides* (Handel-Mazzetti) J. Wen, comb. et stat. nov., *A. elata* (Miquel) Seemann var. *inermis* (Yanagita) J. Wen, comb. nov., *A. elata* (Miquel) Seemann var. *mandshurica* (Ruprecht & Maximowicz) J. Wen, comb. et stat. nov., and *A. bipinnata* Blanco var. *apoensis* (Elmer) J. Wen, comb. et stat. nov. A taxonomic key to the varieties of *A. elata* is provided.

*Aralia* L. (Araliaceae), as it was recently defined (Wen, 1993), consists of 51 species, distributed primarily in China and southeastern Asia (about 40 species). It also occurs in the Americas, from Canada to Argentina, Bolivia, and Peru. Two sections (sects. *Aralia* and *Dimorphanthus* Miquel) have a classical eastern Asian and North American disjunct distributional pattern. In-depth phylogenetic and biogeographic studies of *Aralia* are in progress, using both morphological characters and DNA sequencing data. Toward a comprehensive treatment of *Aralia*, three new varieties are recognized and a few nomenclatural changes are made.

***Aralia debilis*** J. Wen, nom. nov. Replaced name: *Aralia elegans* C. N. Ho, Acta Phytotax. Sin. 1: 77. t. 6. 1952; not *Aralia elegans* Linden ex Decaisne & Planchon, Rev. Hort. 3: 108. 1854. TYPE: China. Guangxi: Yao Shan, Kuchan, July 1931, S. S. Sin 21672 (holotype, IBSC).

**Distribution.** A rare species in Guangdong and Guangxi provinces of China; scattered in mountain valleys and thickets; 850 m.

**Additional specimens examined.** CHINA. **Guangdong:** Lechang Xian, Chen 213 (IBSC); Liannan Xian, Baimang Xiang, Bandong, 850 m, Tan 58970 (IBSC); Qingyuan Xian, Wang 30706 (IBSC); Bingjiang, Tian Tang Shan, Wen 493 (OS). **Guangxi:** Da Yao Shan Xian, on the way from Hengcong village to Wulingchang,

Li 400344 (IBSC); Yao Shan, Sin 853 (IBSC); Yao Shan, Tseungyuen, Wang 39596 (A, IBSC).

***Aralia dasyphyloides*** (Handel-Mazzetti) J. Wen, comb. et stat. nov. Basionym: *Aralia chinensis* L. var. *dasyphyloides* Handel-Mazzetti, Symb. Sin. 7: 704. 1933. TYPE: China. Guangdong: Mandse-schan, near the border with Hunan toward Guiyang, 1915, Mell 556 (holotype, WU).

This species has been widely misidentified as *Aralia dasyphylla* Miquel (e.g., Li, 1942; Ling, 1977; Hoo & Tseng, 1978; Shang, 1985). *Aralia dasyphylla* was described by Miquel in 1856 based on material from Java. *Aralia dasyphyloides* differs from *A. dasyphylla* in its oblong (vs. ovate) leaflets with acute (vs. acuminate) apices, pale grayish to yellowish green and tomentose (vs. green and appressed pubescent) abaxial leaflet surface, densely tomentose (vs. appressed pubescent) inflorescence, smaller, triangular and less pubescent bracts and bracteoles (vs. larger, narrowly triangular or lanceolate and densely pubescent), pink to purple (vs. greenish brown) infructescence, and globose to subglobose (vs. ovoid-globose) fruits. Geographically, *A. dasyphyloides* is distributed in southern, eastern, and central China, whereas *A. dasyphylla* occurs in Java, Sumatra, and the Malay Peninsula.

**Distribution.** In Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, and Zhejiang provinces of China; it may also occur in Vietnam; on rocky slopes, mountain slopes, hillsides, roadside, along streams and ravines, in thickets and secondary forests; mostly on dry sandy soil and in sunny habitats; a pioneer species; 200–1,300 m.

**Representative specimens.** CHINA. **Anhui:** Huangshan, Chen 1135 (NF). **Fujian:** Saowu Hsien, Huilin, Zhou 6135 (IBSC). **Guangdong:** Canton, Wat Shui Shan, Chun 7392 (E); Tsing Wan Shan, Wong Chuk I and vicinity, Wung Yuen District, Lau 2323 (GH); Yang-chi, Yao-shan, 600 ft., Sin 9944 (A), 11517 (A, NY); Paak Tuen Shek, Taai Tsan, Ying Tak, Tsang & Wong 2320 (A); Tin Tong Kin, Chong Uen Shan near Kau Fung, Loh Ch'ang District, Tsang 20811 (A, L, MO, NY, UC, W); Tung Koo Shan, Tapu District, Tsang 21777 (A, G, NY);

on the way to Jai-feng, Lokchang, *Tsiang* 1215 (E, UC), 1216 (A); Wat Shui Shan, Kook Kiang, North River region, *Wang & Ling* 7392 (UC). **Guangxi:** Po Yam Shan (along Guangdong border), near Tai Chung village, Sun-to District, *Tsang* 22989 (G, GH, W). **Guizhou:** Libo, Wong Ang Tree Farm, 620 m, *Song* 1122 (NF); Ta Ho Yen, Fan Ching Shan, 900 m, *Steward et al.* 829 (A, BM, N, NY, W); Tuhshan, 400–530 m, *Tsiang* 6884 (IBSC, MU, NAS, NY). **Hubei:** Hefeng, *Ling* 739 (HIB); Lichuan, Xing-dou-shan, Xiao-jia-wan, 780 m, *Tang & Song* 808 (HIB, NAS); Yingshan Xian, Tao Hua Cong (Peach Flower Valley), *Wen* 620 (OS). **Hunan:** Temple Wulingan in Mount Yun-schan near Wukang, 600–800 m, *Handel-Mazzetti* 12528 (WU); Hsinhwa, Hsikwangshan, 800 m, *Handel-Mazzetti* 12662 = 806 (A, WU). **Jiangxi:** Ping-xiang, Nanyuan, 300 m, *Jiangxi Exped. Team* 2693 (PE); Sai Hang Cheung near Tung Lei Village, Kiennan District, *Lau* 4224 (A, BM), 4363 (A, BM, G); Wu-yi-shan, 600 m, *Wang* 2539 (PE); Lushan, Gulin, *Wen* 607 (OS). **Sichuan:** Wuxi Xian, Banxi Xiang, Huang-jia-po, 1,300 m, *Yang* 65332 (IBSC). **Zhejiang:** Tianmushan, *He* 0322 (IBSC).

***Aralia chinensis* L. var. *longibractea* J. Wen, var. nov.** TYPE: Malaysia. Sarawak: Kelabit highland, Bario, 4th Division, 7 Nov. 1974, *P. Chai* S. 35356 (holotype, MO; isotypes, A, CGE not seen, K, L not seen, MO).

Plantae bracteis longis. Bracteae secundariae lanceolatae-lineares, 15–25 mm longae, interdum foliiformes vel cochleariformes, 5–7 cm longae; bracteolae lanceolatae-lineares, 5–15 mm longae. Pedicelli (10–)13–16(–21) mm longi.

Unbranched spiny shrubs or treelet, 4–7 m tall. Stem up to 15 cm diam., prickly, prickles conical, up to 8 mm long, outer bark brown, inner bark greenish yellow, sapwood white. Leaves bipinnate, 100–250 cm long, with ca. 5 pairs of lateral pinnae, tomentose. Inflorescence densely brownish tomentose, up to 150 cm long, branching in 2–4 orders; secondary bracts lanceolate to linear, 15–25 mm long, sometimes becoming ± leaflike, ± spoon-shaped, 5–7 cm long; bracteoles lanceolate to linear, 5–15 mm long; umbels 20–50-flowered, pedicels (10–)13–16(–21) mm long. Flowers greenish yellow or whitish, slightly lemon-scented.

*Vernacular names.* Tepak-paluk (Sarawak of Malaysia).

*Phenology.* Flowering from August to December.

*Distribution.* In Sabah and Sarawak; a pioneer species in weedy secondary thickets or forests; 200–1,250 m.

This variety differs from *A. chinensis* var. *chinensis* by its more densely pubescent leaves and inflorescences, larger, especially longer and more striking bracts and bracteoles, and longer pedicels (mostly 13–17 vs. 9–13 mm long). It also appears more robust than the typical variety.

The two varieties of *A. chinensis* are geographically separated by over 2,000 km. The origin of this long-distance disjunction is not clear at present. Three likely hypotheses are: (1) long-distance dispersal via birds; (2) dispersal through sea currents; and (3) extinction of geographical intermediates in Malaysia and South Asia. The fruits of *A. chinensis* var. *longibractea* have been recorded to be eaten by birds (*Chai* S.35356, MO).

*Paratypes.* MALAYSIA. **Sabah:** Mt. Kinabalu, Ulu Liwagu and Ulu Mesilau, 3,500 ft., *Chew et al.* 2626 (B, L, LE); Kiau, Mt. Kinabalu, *Clemens* 10284 (A, UC); Kota Belue, Mt. Templer, near boundary overlooking Sungei Talupit, 700 ft., *Shea & Minjulu s.n.* (L); Ranau District, Ranau Rd., 7 km E of Ranau town, *Stone* 12909 (KLU, MO). **Sarawak:** Bakelalan, 3,000 ft., *Brooke* 10399 (BM, G, L); Kelabit Highlands, Bario, tanah ranoon, 1,000 m, *Nooteboom & Chai* 01728 (B, L).

***Aralia gintungensis* C. Y. Wu ex K. M. Feng var. *multinervis* J. Wen, var. nov.** TYPE: Burma. Upper Burma, *R. J. Farrer* 1428, cultivated in L. de Rothchild, Exbury, U.K., 15 Sep. 1933, *M. A. Bedford* H. 2113/33 (holotype, K; isotypes, K[4]).

Foliola nervis lateralibus utroque costae latere 10–13, pubentia, glauca in pagina inferiore. Inflorescentia pubens.

Tree up to 10 m tall. Young branches purplish, with conical slender prickles. Leaves 35–70 cm long, with 2–3 pairs of pinnae, each 3–11-foliolate; petioles unarmed, 20–27 cm long; leaflets subcoriaceous, 5.5–10 cm long, 2–4 cm wide, narrowly ovate, acuminate at apex, rounded to obtuse at base, serrate, lateral veins 10–13 pairs, adaxial surface green, rugose, sparsely scabrous, abaxial surface glaucous, pubescent, with conspicuous veins and veinlets, petiolules 1–6 mm long, pubescent. Inflorescence 30–45 cm long, branching in 2 orders, primary branches 12–35 cm long, bracts and bracteoles narrowly triangular, clasping, furfuraceous and ciliate, primary bracts 10–13 mm long, secondary ones 4.5–8.5 mm long, bracteoles 3–6 mm long. Floral buds green. Flowers 10–15 in umbels, pedicels 4–6 mm long, furfuraceous. Styles slightly connate at base.

*Phenology.* Collected in mid-September in early anthesis.

*Distribution.* Only known from Upper Burma.

This variety is distinguished from *A. gintungensis* var. *gintungensis* by its 10–13 (vs. 5–8) pairs of lateral veins, pubescent and glaucous (vs. densely tomentose and brownish to grayish) abaxial leaflets, and its pubescent (vs. tomentose and sometimes hirsute near the base) inflorescence.

***Aralia elata*** (Miquel) Seemann var. ***inermis*** (Yanagita) J. Wen, comb. nov. Basionym: *Aralia hypoleuca* Presl var. *inermis* Yanagita, J. Jap. Forestry Soc. 19: 340. 1937. *Aralia bipinnata* Blanco var. *inermis* (Yanagita) Yamazaki, J. Jap. Bot. 62: 190. 1987. TYPE: Japan. Pref. Tokyo: Izu-sichito (holotype not located).

*Distribution.* Izu Archipelago of Japan.

This taxon has been treated as *Aralia bipinnata* (= *A. hypoleuca*; Yamazaki, 1987). It lacks a number of characteristics typical of *A. bipinnata*, suggesting that it should not be placed there; these features include: crenate leaflet margin, few umbels on secondary inflorescence branches (1–5 vs. 7–many), and very short styles (0.6–0.7 vs. 1–1.2 mm). On the other hand, this variety shares the following characteristics with *A. elata*: lack of a main inflorescence axis or sometimes with a very short one (less than 10 cm long), serrulate to serrate leaflet margin, usually more umbels (more than 7) on secondary inflorescence branches, and longer styles (1–1.2 mm long at anthesis). Based on these considerations, this variety is better placed within *A. elata*. The type of this taxon has not been located.

*Additional specimens examined.* JAPAN. **Tokyo:** Kozu-shima Island, Izu Archipelago, *Ohba 2988* (TI); Isl. Aoga-shima, Isls. Izu, en route from Yasundo-go to Hamaji along the somma ridge, Aogashima-mura, *Kato & Miki 22-a* (TI).

***Aralia elata*** (Miquel) Seemann var. ***mandshurica*** (Ruprecht & Maximowicz) J. Wen, comb. et stat. nov. Basionym: *Aralia mandshurica* Ruprecht & Maximowicz, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15: 134. 1857. *Dimorphanthus mandshuricus* (Ruprecht & Maximowicz) Ruprecht & Maximowicz, Mem. Acad. Imp. Sci. St.-Petersbourg Divers Savans 9: 133. 1859. *Aralia mandschurica* (Ruprecht & Maximowicz) Seemann, J. Bot. 6: 134. 1868. nom. illeg. *Aralia chinensis* L. var. *mandshurica* (Ruprecht & Maximowicz) Rehder in Bailey, Cycl. Amer. Hort. 1: 88. 1900. TYPE: On the lower Amur, 29 July 1855, *C. J. Maximowicz s.n.* (lectotype, inflorescence only, selected here, LE; islectotypes, BM, LE, leaves only).

*Distribution.* In Hebei, Helongjiang, and Jilin provinces of China, Korea, and eastern Russia.

Seemann (1868) made the combination *Aralia mandschurica* (Ruprecht & Maximowicz) Seemann based on *Dimorphanthus mandshuricus*, apparently unaware of the original description of this taxon as *Aralia mandshurica* (1857). Rehder (1900) also

regarded *Dimorphanthus mandshuricus* as the basionym of his *Aralia chinensis* var. *mandshurica*. An orthographic variant as *Aralia manshurica* Ruprecht & Maximowicz appeared in Komarov (1907: 123).

*Additional specimens examined.* CHINA. Chihli, *Chagnet 83* (A); Hsiaoling State Forest, *Skvortzov s.n.* (A). **Hebei:** Eastern Tomb, 1,200 m, *Li 10058* (NY), *Tsai 50222* (A). **Heilongjiang:** Harbin, *Skvortzov s.n.* (A). **Jilin:** Huadian, Changshan Tun, Chao-yang-gou, 500–800 m, *Ma 51* (PE); Changbai Shan, Manjiang, 1,000 m, *Qian 814* (PE); Jiaohe Xian, Shuan-shan-tou village, *Zhou & Fu 2281* (PE). CHINA–RUSSIA. **Amur:** *Korshinsky s.n.* (A), 1859, *Maximowicz s.n.* (G, NY). **KOREA.** Shinkabachin, between Heizanchin and Chochin, S Hankyo–N Heian divide, *Wilson 9096* (A). **Hogen:** Hongo-san, *Wilson 10691* (A). **RUSSIA. Primorski Krai:** valley of river Suifun near the village of Nezhin, *Nefedova & Pashchenko s.n.* (LE), *Palczewsky s.n.* (LE); near Vladivostok, *Popov 1382* (LE), *Sargent s.n.* (A), *Topping 2424* (A); valley of river Suifun, *Vasilev et al. s.n.* (MO).

***Aralia elata*** (Miquel) Seemann var. ***ryukyuensis*** J. Wen, var. nov. TYPE: Japan. Okinawa: Kunigami, near mura Taihofukujiyama, between Shioya wan and Taira wan, 27 July 1951, *E. H. Walker, S. Sonohara, S. Tawada & T. Amano 7151* (holotype, GH; isotype, UC).

Folia bipinnata; foliola chartacea–subcoriacea, anguste ovata–lanceolata, 5–10 cm longa, 2.5–5.5 cm lata, glabra in superficiebus ambabus, apice anguste acuminata–acuminata. Pedicelli 1–2 mm longi.

Shrubs 2–3 m tall. Leaves bipinnate, with 3–4 pairs of pinnae, each 5–17-foliolate; petioles glabrous, unarmed or slightly prickly at base, with many lenticel-like scars, 18–25 cm long; rachises unarmed, glabrous; leaflets narrowly ovate to ovate, 5–10 cm long, 2.5–5.5 cm wide, chartaceous to subcoriaceous, long acuminate to acuminate at apex, rounded to obtuse, rarely subcordate at base, margins serrulate to serrate, sometimes teeth slightly rounded, lateral veins 7–9 pairs, adaxial surfaces green, glabrous, abaxial surfaces glaucous, glabrous, petiolules 1–8 mm long. Inflorescence without a main axis, branching in 3 orders, primary branches 30–35 cm long, pubescent, secondary branches pubescent, 5–12 cm long, each with 9–many, rarely 7, umbels, tertiary branches consisting of one umbel; secondary bracts narrowly triangular, ciliate, 5–7 mm long, bracteoles lanceolate, ciliate, 2–2.5 mm long. Umbels with ca. 10 flowers, pedicels 1–2 mm long, pilose. Filaments ca. 2.5 mm long; anthers oblong, 1–1.3 mm long. Styles distinct, erect, 1–1.2 mm long at anthesis.

*Vernacular names.* Urajiro-taranoki (white beneath [leaved] *Aralia*).

*Phenology.* Flowering from July to August.

*Distribution.* Ryukyu Islands of Japan; on edges of forests; 100–300 m.

This variety has a controversial taxonomic history. Hatusima (1975: 447) treated plants from the Ryukyu Islands as *Aralia elata*. Walker (1976: 787) considered them as *A. bipinnata*. These plants are, however, distinguished from *Aralia bipinnata* by their serrulate to serrate (vs. sparsely crenate) leaflet margins, more umbels on secondary inflorescence branches (7–many vs. 1–5), shorter pedicels (1–2 vs. 4.5–10 mm), and longer styles (1–1.2 vs. 0.6–0.7 mm). However, they share the characteristics of *A. elata*, as described under *A. elata* var. *inermis*, and are therefore treated as part of *A. elata*.

*Paratypes.* JAPAN. **Kagoshima:** Isl. Tokunoshima, interior of Boma, Tokunoshima-cho, Ooshima-gun, 100–300 m, *Iwatsuki et al.* 532 (MO). **Okinawa:** Ameno 6693 (A). Locality unknown, *Yokohama Nursery Co. s.n.* (A).

#### KEY TO THE VARIETIES OF *ARALIA ELATA*

- 1a. Abaxial leaflet surface glabrous or nearly so.
  - 2a. Leaflet chartaceous, glabrous on both surfaces, pedicels short, ca. 1–3 mm long.
    - 3a. Leaves bipinnate, leaflet narrowly ovate to lanceolate .....  
..... *Aralia elata* var. *ryukyuensis*
    - 3b. Leaves tripinnate, leaflet broadly ovate to rounded, occasionally ovate .....  
..... *Aralia elata* var. *inermis*
  - 2b. Leaflet membranaceous, glabrous on both surfaces or slightly pilose on veins, pedicels relatively long, 5–10 mm .....  
..... *Aralia elata* var. *mandshurica*
- 1b. Abaxial leaflet surface pubescent or sometimes becoming glabrescent, leaves bipinnate, leaflets chartaceous, pedicels 1–6 mm long .....  
..... *Aralia elata* var. *elata*

***Aralia bipinnata* Blanco var. *apoensis* (Elmer) J. Wen, comb. et stat. nov.** Basionym: *Aralia apoensis* Elmer, *Leafl. Philipp. Bot.* 7: 2325. 1914. TYPE: Philippines. Mindanao: Davao, Todaya (Mt. Apo), 1909, *A. D. E. Elmer 11608* (holotype, A; isotypes, BISH not seen, BM, E, GH, L, LE, MO, NSW not seen, NY, W).

*Distribution.* Endemic to Mt. Apo of Mindanao, the Philippines; in forests; 1,200–2,300 m.

This taxon is distinguished from the typical variety by its pubescent abaxial leaflet surface or at least the nerves soft brownish tomentose (vs. glabrous) and shorter pedicels (1–3.5 mm vs. 4.5–10 mm).

*Additional specimens examined.* PHILIPPINES. **Mindanao:** Mt. Apo, Lake Linao, 2,300 m, *Edanao 1392* (A, L), *Clemens 1903* (L, NY, UC).

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#### Literature Cited

- Hatusima, S. 1975. Flora of the Ryukyus (Including Amami Islands, Okinawa Islands, and Sakishima Archipelago). Okinawa Association for Biology Education, Okinawa. [In Japanese.]
- Hoo, G. & C. J. Tseng. 1978. Angiospermae, Dicotyledoneae, Araliaceae. *In: Flora Reipublicae Popularis Sinicae*, Vol. 54. Science Press, Beijing. [In Chinese.]
- Komarov, V. L. 1907. *Flora Manshuriae*, Vol. 3. Petropoli [St. Petersburg].
- Li, H. L. 1942. The Araliaceae of China. *Sargentia* 2: 1–134.
- Ling, Y. R. 1977. Materials for the Araliaceae from Kwangtung. *Acta Phytotax. Sin.* 15(2): 84–86. [In Chinese.]
- Miquel, F. A. W. 1856. Araliacearum indicarum genera et species aliquod novae. *Bonplandia* 4: 137–139.
- Rehder, H. 1900. *Aralia*. *In: L. H. Bailey, Cyclopaedia of American Horticulture*, 1: 87–88. MacMillan, London.
- Seemann, B. 1868. Revision of the natural order Hederaeae. L. Reeve, London.
- Shang, C. B. 1985. Araliaceae. *In: W. C. Cheng (editor), Silva Sinica* 2: 1720–1823. Chinese Forestry Press, Beijing.
- Walker, E. H. 1976. Flora of Okinawa and the Southern Ryukyu Islands. Smithsonian Institution Press, Washington, D.C.
- Wen, J. 1993. Generic delimitation of *Aralia* (Araliaceae). *Brittonia* 45: 47–55.
- Yamazaki, T. 1987. On *Aralia bipinnata* Blanco and *A. hypoleuca* Presl. var. *inermis* Yanagita. *J. Japan. Bot.* 62: 189–190. [In Japanese.]