

## ARALIACEAE

五加科 wu jia ke

Xiang Qibai (向其柏 Shang Chih-bei)<sup>1</sup>; Porter P. Lowry II<sup>2</sup>

Trees or shrubs, sometimes woody vines with aerial roots, rarely perennial herbs, hermaphroditic, andromonoecious or dioecious, often with stellate indumentum or more rarely simple trichomes or bristles, with or without prickles, secretory canals present in most parts. Leaves alternate, rarely opposite (never in Chinese taxa), simple and often palmately lobed, palmately compound, or 1–3-pinnately compound, usually crowded toward apices of branches, base of petiole often broad and sheathing stem, stipules absent or forming a ligule or membranous border of petiole. Inflorescence terminal or pseudo-lateral (by delayed development), umbellate, compound-umbellate, racemose, racemose-umbellate, or racemose-paniculate, ultimate units usually umbels or heads, occasionally racemes or spikes, flowers rarely solitary; bracts usually present, often caducous, rarely foliaceous. Flowers bisexual or unisexual, actinomorphic. Pedicels often jointed below ovary and forming an articulation. Calyx absent or forming a low rim, sometimes undulate or with short teeth. Corolla of (3–)5(–20) petals, free or rarely united, mostly valvate, sometimes imbricate. Stamens usually as many as and alternate with petals, sometimes numerous, distinct, inserted at edge of disk; anthers versatile, introrse, 2-celled (or 4-celled in some non-Chinese taxa), longitudinally dehiscent. Disk epigynous, often fleshy, slightly depressed to rounded or conic, sometimes confluent with styles. Ovary inferior (rarely secondarily superior in some non-Chinese taxa), (1 or)2–10(to many)-carpellate; carpels united, with as many locules; ovules pendulous, 2 per locule, 1 abortive; styles as many as carpels, free or partially united, erect or recurved, or fully united to form a column; stigmas terminal or decurrent on inner face of styles, or sessile on disk, circular to elliptic and radiating. Fruit a drupe or berry, terete or sometimes laterally compressed, occasionally vertically compressed, exocarp fleshy; pyrenes cartilaginous or membranous, often laterally compressed. Seeds 1 per pyrene, embryo small, endosperm uniform or ruminant.

About 50 genera and 1350 species: widespread in tropical and subtropical regions of both hemispheres, much less diverse in temperate areas; 23 genera (two endemic, one introduced) and 180 species (82 endemic, seven introduced) in China.

The two endemic genera are *Sinopanax* and *Tetrapanax*.

Chinese genera of economic importance include *Aralia*, *Eleutherococcus*, *Heteropanax*, *Panax*, and *Tetrapanax* (medicinal), *Hedera* (ornamental), *Fatsia* and *Schefflera* (medicinal and ornamental), and *Kalopanax* (timber).

Recent phylogenetic studies (Plunkett and Lowry, *Molec. Phylogen. Evol.* 19: 259–276. 2001; Wen et al., *Syst. Bot.* 26: 144–167. 2001; Chandler and Plunkett, *Bot. J. Linn. Soc.* 144: 123–147. 2004; Mitchell and Wen, *Taxon* 53: 29–41. 2004; Plunkett et al., *S. Afr. J. Bot.* 70: 371–381. 2004) have shown that *Hydrocotyle* Linnaeus belongs to Araliaceae, despite being traditionally included in Apiaceae (see *Fl. China* 14: 14–18. 2005).

*Diplopanax* Handel-Mazzetti was at one time placed in Araliaceae but is now regarded as a member of Mastixiaceae (see *Fl. China* 14: 231–232. 2005).

Hoo Gin & Tseng Chang-jiang. 1978. Araliaceae. *Fl. Reipubl. Popularis Sin.* 54: i–ix, 1–210.

### Key emphasizing flower and fruit characters

- 1a. Petals imbricate in bud.
  - 2a. Herbs; leaves 3–5, verticillate at apex of stem; ovary 2- or 3(–5)-carpellate ..... 23. *Panax*
  - 2b. Shrubs or trees, rarely herbs; leaves alternate, borne on branches; ovary (4 or)5- or 6-carpellate.
    - 3a. Inflorescence developing from specialized floral buds, usually surrounded by numerous persistent bracts at base; plants unarmed ..... 21. *Pentapanax*
    - 3b. Inflorescence developing from mixed buds also producing leaves, without persistent bracts at base; plants armed or unarmed ..... 22. *Aralia*
- 1b. Petals valvate in bud.
  - 4a. Leaves 1–5-pinnately compound.
    - 5a. Pedicels articulate below ovary; ovary 5–8-carpellate; cultivated plants usually with pungent aromatic odor ..... 19. *Polyscias*
    - 5b. Pedicels not articulate below ovary; ovary 2-carpellate; native plants without pungent aromatic odor ..... 20. *Heteropanax*
  - 4b. Leaves simple, palmately lobed, or palmately compound.
    - 6a. Leaves palmately compound.
      - 7a. Stamens 25 or more; ovary 20–70-carpellate ..... 1. *Tupidanthus*
      - 7b. Stamens 10 or fewer; ovary 2–12-carpellate.
        - 8a. Plants with prickles on stems.
          - 9a. Leaves palmately compound or trifoliolate, never simple, leaflets 3–5, petiole shorter than 12 cm, petiolules 0–1 cm; styles distinct or united at base ..... 18. *Eleutherococcus*

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- 9b. Leaves simple (entire or palmately lobed) or palmately compound, leaflets (3 or)4–9(–11), petiole longer than 12 cm, petiolules usually longer than 1.5 cm; styles united into a column ..... 12. *Brassaiopsis*
- 8b. Plants unarmed.
- 10a. Pedicels conspicuously articulate below ovary.
- 11a. Styles free or united to only 2/3 their length; fruit laterally compressed; endosperm uniform ..... 16. *Metapanax*
- 11b. Styles united into a column; fruit terete, ribbed when dry; endosperm ruminant or rugose ..... 17. *Macropanax*
- 10b. Pedicels not articulate below ovary.
- 12a. Ovary (4 or)5–11-carpellate; margin of leaflets usually entire, rarely remotely serrate; branches with long shoots only (short shoots absent) ..... 15. *Schefflera*
- 12b. Ovary 2(–4)-carpellate; margin of leaflets usually serrulate; branches with both short and long shoots (the latter not always preserved on specimens).
- 13a. Inflorescence a large, corymbose panicle of umbels; petals and stamens 5; ovary 2-carpellate, styles united into a column ..... 14. *Chengioplanax*
- 13b. Inflorescence small, a simple or compound panicle of umbels; petals and stamens 4(or 5); ovary 2–4(or 5)-carpellate; styles free at least apically ..... 13. *Gamblea*
- 6b. Leaves simple or palmately lobed, occasionally deeply cleft.
- 14a. Woody climbers, with aerial roots ..... 9. *Hedera*
- 14b. Shrubs or trees, erect, without aerial roots.
- 15a. Plants with prickles on stems.
- 16a. Ovary 7–12-carpellate; fruit usually 1–2 cm in diam. .... 2. *Trevesia*
- 16b. Ovary 2–5-carpellate; fruit to 1(–1.2) cm in diam.
- 17a. Fruit red-yellow at maturity; calyx with 2 spinelike lobes; inflorescence with dense, stiff prickles throughout; shrubs ..... 7. *Oplonanax*
- 17b. Fruit black or bluish black at maturity; calyx 5-toothed; inflorescence glabrous or with scattered to fairly dense prickles; shrubs or trees.
- 18a. Deciduous trees, hermaphroditic; styles united at base, with free arms; endosperm smooth; leaves clustered on short shoots and alternate on long shoots ..... 8. *Kalopanax*
- 18b. Evergreen shrubs or small trees, andromonoecious or hermaphroditic; styles completely united into a column; endosperm ruminant or uniform; short shoots lacking, leaves borne only on long shoots ..... 12. *Brassaiopsis*
- 15b. Plants without prickles on stems.
- 19a. Flowers sessile, arranged in small ca. 15-flowered heads ..... 4. *Sinoplanax*
- 19b. Flowers distinctly pedicellate, arranged in umbels.
- 20a. Ovary (4 or)5–10-carpellate.
- 21a. Petiole basally pectinate or fimbriate-lacerate; inflorescence trifid, with a central umbel of sterile bacciform flowers (“pseudo-fruit”) ..... 5. *Osmoxylon*
- 21b. Petiole basally not pectinate or fimbriate-lacerate; inflorescence a panicle of umbels, or a simple or compound umbel.
- 22a. Leaves 5–9(–11)-lobed, margin regularly toothed; ovary 5- or 10-carpellate ..... 3. *Fatsia*
- 22b. Leaves entire or 2- or 3(–5)-lobed, margin entire or with scattered irregular teeth; ovary (3–)5-carpellate ..... 10. *Dendropanax*
- 20b. Ovary 2-carpellate.
- 23a. Pedicels articulate below ovary ..... 16. *Metapanax*
- 23b. Pedicels not articulate below ovary.
- 24a. Branches stout, with an evident white pith; stipules 2, awl-shaped, 7–8 cm ..... 6. *Tetrapanax*
- 24b. Branches slender, without an evident white pith; stipules obsolete or inconspicuous.
- 25a. Leaves red or yellow glandular punctate, glabrous, margin entire or with few narrow triangular teeth ..... 10. *Dendropanax*
- 25b. Leaves not glandular punctate, glabrous or stellate pubescent, margin usually serrate.
- 26a. Inflorescences both terminal and axillary; styles free or united at base; disk inconspicuous ..... 11. *Merrillioanax*
- 26b. Inflorescences either terminal or axillary; styles completely united into a column; disk conspicuous, convex ..... 12. *Brassaiopsis*

#### Key emphasizing vegetative characters

- 1a. Plants armed with prickles.
- 2a. Leaves pinnately or palmately compound.
- 3a. Leaves 1–3-pinnately compound ..... 22. *Aralia*

- 3b. Leaves palmately compound.
- 4a. Leaflets 3–5, petiole shorter than 12 cm, petiolules 0–1 cm; styles distinct or united at base ..... 18. *Eleutherococcus*
- 4b. Leaflets (3 or)4–9(–11), petiole longer than 12 cm, petiolules usually longer than 1.5 cm; styles united into a column ..... 12. *Brassaiopsis*
- 2b. Leaves simple.
- 5a. Ovary 7–12-carpellate; fruit usually 10–18 cm in diam. .... 2. *Trevesia*
- 5b. Ovary 2–5-carpellate; fruit to 10(–14) mm in diam.
- 6a. Shrubs, deciduous; fruit red-yellow at maturity; calyx with 2 spinelike lobes; inflorescence with dense, stiff prickles throughout ..... 7. *Oplonanax*
- 6b. Shrubs or trees, evergreen; fruit black or blue-black at maturity; calyx 5-lobed; inflorescence glabrous or with scattered to fairly dense prickles.
- 7a. Leaves clustered on short shoots and alternate on long shoot; styles united at base, with free arms ..... 8. *Kalopanax*
- 7b. Branches without distinctly differentiated short and long shoots; styles completely united into a column ..... 12. *Brassaiopsis*
- 1b. Plants unarmed.
- 8a. Leaves simple, entire or palmately lobed.
- 9a. Ovary 2-carpellate.
- 10a. Leaves red or yellow glandular punctate, glabrous, margin entire or with few narrow triangular teeth ..... 10. *Dendropanax*
- 10b. Leaves not glandular punctate, glabrous or stellate pubescent, margin usually serrate.
- 11a. Flowers sessile, arranged in small ca. 15-flowered heads ..... 4. *Sinopanax*
- 11b. Flowers pedicellate, arranged in umbels.
- 12a. Branches stout, with evident white chambered pith; inflorescences terminal; stipules 2, awl-shaped, 7–8 cm ..... 6. *Tetrapanax*
- 12b. Branches slender, pith narrow and solid; inflorescences both terminal and axillary; stipules obsolete or inconspicuous ..... 11. *Merrillioanax*
- 9b. Ovary (4 or)5–10-carpellate.
- 13a. Leaves entire or 2- or 3-lobed, lobes usually entire or with few narrow triangular teeth.
- 14a. Plant creeping or climbing, with aerial roots; leaves not glandular punctate ..... 9. *Hedera*
- 14b. Erect shrubs or trees without aerial roots; leaves usually red or yellow glandular punctate ..... 10. *Dendropanax*
- 13b. Leaves 3–10-lobed, lobes usually dentate or serrate.
- 15a. Leaves 3–7-lobed, petiole basally pectinate or fimbriate-lacerate; inflorescence trifid, central axis with an umbel of sterile bacciform flowers (“pseudo-fruit”) ..... 5. *Osmoxylon*
- 15b. Leaves 5–9(–11)-lobed, stipule indistinct; inflorescence a panicle of umbels ..... 3. *Fatsia*
- 8b. Leaves palmately or pinnately compound.
- 16a. Leaves pinnately compound.
- 17a. Petals valvate in bud.
- 18a. Cultivated plants with a pungent aromatic odor, usually glabrous; leaves 1-pinnate (rarely 2- or 3-pinnate, and then leaflets less than 2 cm wide); ovary 5–8-carpellate; fruit terete, ovoid or globose ..... 19. *Polyscias*
- 18b. Native plants without a pungent aromatic odor, usually pubescent when young; leaves 2–5-pinnate; ovary 2-carpellate; fruit laterally compressed or compressed-globose ..... 20. *Heteropanax*
- 17b. Petals imbricate in bud.
- 19a. Deciduous shrubs or small trees, unarmed; inflorescences developing from specialized floral buds, basally usually surrounded by numerous persistent bracts ..... 21. *Pentapanax*
- 19b. Perennial herbs, unarmed or prickly; inflorescences developing from mixed buds also producing leaves, basally without persistent bracts ..... 22. *Aralia*
- 16b. Leaves palmately compound.
- 20a. Herbs; leaves verticillate at apex of stem ..... 23. *Panax*
- 20b. Shrubs or trees; leaves alternate along stem.
- 21a. Ovary 5- to many carpellate.
- 22a. Ovary (4 or)5–11-carpellate; stamens 5–11; petals 5–8, usually distinct and separating at anthesis, thin, papery or leathery ..... 15. *Schefflera*
- 22b. Ovary 20–70-carpellate; stamens 25 or more; petals united into a calyptra, thick, leathery, becoming woody when dry ..... 1. *Tupidanthus*
- 21b. Ovary 2–4(or 5)-carpellate.
- 23a. Pedicels articulate below ovary; leaves abaxially without domatia or secretory structures.
- 24a. Styles free or united to only 2/3 their length; fruit laterally compressed; endosperm uniform ..... 16. *Metapanax*
- 24b. Styles united into a column; fruit terete, ribbed when dry; endosperm ruminant or rugose ..... 17. *Macropanax*

- 23b. Pedicels not articulate below ovary; leaves abaxially with domatia or secretory structures in axils of secondary veins.
- 25a. Inflorescence a large, corymbose panicle of umbels; petals and stamens 5; ovary 2-carpellate, styles united into a column ..... 14. *Chengiopanax*
- 25b. Inflorescence small, a simple or compound umbel or panicle of umbels; petals and stamens 4(or 5), ovary 2–4(or 5)-carpellate; styles free at least apically ..... 13. *Gamblea*

## 1. TUPIDANTHUS J. D. Hooker & Thomson, Bot. Mag. 82: t. 4908. 1856.

多蕊木属 duo rui mu shu

Small trees or woody vines, evergreen, hermaphroditic, unarmed. Leaves palmately compound; leaflets 7–10, entire; stipules united with petiole. Inflorescence a pseudo-lateral compound umbel or small panicle of umbels. Pedicels stout, not articulate below ovary. Calyx a low rim. Petals indefinite in number, thick, leathery, becoming woody when dry, valvate, united into a calyptra, early deciduous. Stamens 25 or more, in 2 to several series. Ovary 20–70-carpellate; styles absent; stigmas sessile, as many as carpels. Fruit a drupe, leathery. Seeds many, endosperm uniform.

One species: NE India to S China (Yunnan) and N Indochina.

Recent phylogenetic studies have shown that *Tupidanthus* is part of a well-supported Asian *Schefflera* clade (Plunkett et al., Pl. Syst. Evol. 245: 1–39. 2004; Plunkett et al., Ann. Missouri Bot. Gard. 92: 202–224. 2005) and may therefore not warrant recognition as a distinct genus.

**1. *Tupidanthus calyptratus*** J. D. Hooker & Thomson, Bot. Mag. 82: t. 4908. 1856.

多蕊木 duo rui mu

*Schefflera pueckleri* (K. Koch) Frodin; *Tupidanthus pueckleri* K. Koch.

Trees, small, at first erect, later becoming lofty climbers, to 30 m tall, glabrous. Stem to ca. 15 cm in diam. at base. Leaves 7–10-foliolate; petiole 15–35(–60) cm; petiolules 3–5 cm; leaflets elliptic to obovate or oblong-lanceolate, 12–23 × 4–8.5 cm, lateral veins 20–30 pairs, base acute to attenuate, margin entire, apex shortly acuminate. Inflorescence pseudo-lateral, a compound umbel or panicle of umbels; secondary axes 3–5, each 4–8 cm, very stout, with large ovate sheathing leathery

bracts at base; umbels 3–7 flowered; pedicels 1.5–2 cm, stout. Flowers 1.5–3 cm in diam. Calyx tube leathery, smooth. Stamens 30–70, densely packed. Fruit depressed-globose, 2–3.5 cm in diam., stigmatic crest usually forming an irregular “Y” or “H”; exocarp fleshy.

Climbing on forest trees; 900–1700 m. Xizang, S Yunnan [Bangladesh, Cambodia, India, Laos, Myanmar, Thailand, Vietnam].

This species is used medicinally and as an ornamental.

*Tupidanthus calyptratus* has been included in *Schefflera* (where the combination *S. pueckleri* must be used) by some authors (e.g., Frodin and Govaerts, World Checklist Bibliogr. Araliaceae. 2004 [“2003”]; Lowry, Bull. Mus. Natl. Hist. Nat., B, Adansonia 11: 117–155. 1989).

## 2. TREVESIA Visiani, Giorn. Tosc. Sci. Med. 1: 72. 1840.

刺通草属 ci tong cao shu

Shrubs or trees, evergreen, hermaphroditic, with few to many spines, glabrous or stellate pubescent. Leaves simple, palmately lobed or appearing almost palmately compound, with a fanlike base and lobes constricted to midvein, margin serrate; stipules ligulate, partly or fully united. Inflorescence a terminal or pseudo-lateral raceme or panicle of umbels; bracts small to large, persistent or caducous. Pedicels not articulate below ovary. Calyx margin entire or minutely lobed. Petals 7–12, valvate, often cohering and calyptrate, falling as a single unit or abscising separately. Stamens as many as petals. Ovary 6–16-carpellate; styles united into a short column. Fruit a drupe, globose to ovoid. Seeds depressed; endosperm uniform.

About 10 species: SE Asia, Indochina, India, Nepal; one species in SW China.

**1. *Trevesia palmata*** (Roxburgh ex Lindley) Visiani, Mem. Reale Accad. Sci. Torino, ser. 2, 4: 262. 1842.

刺通草 ci tong cao

*Gastonia palmata* Roxburgh ex Lindley, Bot. Reg. 11: t. 894. 1825; *Brassaiopsis papayoides* Handel-Mazzetti; *Fatsia cavaleriei* H. Léveillé; *Gilibertia palmata* (Roxburgh ex Lindley) Candolle; *Plerandra jatrophifolia* Hance; *Trevesia cavaleriei* (H. Léveillé) Grushvitzky & Skvortsova; *T. palmata* (Roxburgh ex Lindley) Visiani var. *costata* H. L. Li.

Trees, evergreen, to 8 m tall. Trunk to ca. 15 cm d.b.h.;

branches prickly, farinose stellate pubescent. Leaves simple; petiole often prickly, 30–70(–90) cm; stipules united into a 2-lobed sheath; blade large, 60–90 cm wide, leathery, both surfaces glabrous or with scattered stellate hairs, lateral veins distinct on both surfaces, deeply 5–9-lobed; lobes narrowly ovate-lanceolate, margin serrate, apex acuminate. Inflorescence a panicle of umbels, ca. 45 cm, densely farinose stellate pubescent when young, glabrescent; peduncles 4–17 cm; umbels 4–5 cm in diam., 25–45-flowered; pedicels 1.5–2 cm. Calyx rim 1–2 mm, farinose stellate pubescent. Stamens 7–12. Ovary 7–12-carpellate. Fruit subglobose to compressed-globose, 1–1.8 cm

in diam., smooth or ribbed; styles united, conic, 2–4 mm, stout, persistent. Fl. Oct, fr. May–Jul.

Mixed forests on mountain slopes; 600–2000 m. S Guangxi, Guizhou, S Yunnan [Bangladesh, Cambodia, India, Laos, Nepal, Thailand, Vietnam].

This species is used medicinally and as an ornamental.

Two varieties (*Trevesia palmata* var. *palmata* and var. *costata*, the latter from S Yunnan) have sometimes been distinguished on the basis of minor differences in fruit shape and the presence or absence of ribs on dry fruit, but they do not appear to be worthy of recognition.

### 3. **FATSIA** Decaisne & Planchon, Rev. Hort. (Paris), sér. 4, 3: 105. 1854.

八角金盘属 ba jiao jin pan shu

*Diplofatsia* Nakai.

Shrubs or small trees, evergreen, andromonoecious, unarmed. Leaves simple, palmately lobed, serrate; stipules united with petiole, sheathing at base. Inflorescence a terminal panicle of umbels; bracts large, membranous, caducous. Pedicels not articulate below ovary. Calyx rim obsolete or 5-toothed. Petals 5, valvate. Stamens 5. Ovary 5- or 10-carpellate; styles 5 or 10, free. Fruit a subglobose drupe. Seed ± compressed laterally, endosperm smooth.

Two or three species: one or two native to Japan, one widely cultivated, one endemic to China (Taiwan).

1a. Leaves 7–9-lobed, glabrous, margins crenate to crenate-serrate, teeth rounded to blunt; ovary 5-carpellate ..... 1. *F. japonica*

1b. Leaves 5–7-lobed, brown tomentose when young, margins serrate, teeth sharply pointed; ovary

(8–)10(or 11)-carpellate ..... 2. *F. polycarpa*

**1. *Fatsia japonica*** (Thunberg) Decaisne & Planchon, Rev. Hort. (Paris), sér. 4, 3: 105. 1854.

八角金盘 ba jiao jin pan

*Aralia japonica* Thunberg in Murray, Syst. Veg., ed. 14, 300. 1784.

Shrubs, to ca. 5 m tall. Young branches, leaves, and inflorescences densely woolly tomentose, later glabrescent. Petiole 10–30 cm; leaf blade nearly orbicular, (5–)7–9(–11) cm wide, leathery, with 7–9 deeply cleft, narrowly ovate-elliptic lobes, both surfaces glabrous, base cordate to truncate-cordate, margin crenate to crenate-serrate, teeth rounded to blunt, apex acuminate. Inflorescence a panicle of umbels; primary axis 20–40 cm; peduncles 10–15 cm; umbels 3–4 cm in diam., with numerous flowers; pedicels 1–1.5 cm. Calyx rim indistinctly denticulate. Petals ovate, 3–4 mm. Ovary 5-carpellate; styles 5, free, ca. 1.5 mm. Fruit globose, ca. 5 mm in diam. Fl. Oct–Nov, fr. Feb–May.  $2n = 24, 48$ .

Widely cultivated or occasionally naturalized in gardens or secondary vegetation; below 200 m. Anhui, Fujian, Jiangsu, Jiangxi, Zhejiang [native to Japan].

Many cultivars are used as ornamentals.

**2. *Fatsia polycarpa*** Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25: 105. 1908.

多室八角金盘 duo shi ba jiao jin pan

*Diplofatsia polycarpa* (Hayata) Nakai.

Trees, small, to ca. 8 m tall. Young branches, leaves, and inflorescences densely brown tomentose, later glabrescent. Petiole 15–30 cm; leaf blade orbicular, 15–30 cm wide, with 5–7(–9) deeply cleft, ovate-oblong or elliptic lobes, tomentose, glabrous when older, base attenuate, margin serrate, teeth sharply pointed, apex caudate. Inflorescence a panicle of umbels; primary axis 30–40 cm; peduncles ca. 1.5 cm; umbels ca. 2.5 cm in diam., ca. 20-flowered; pedicels ca. 1 cm. Calyx rim subentire. Ovary (8–)10(or 11)-carpellate; styles (8–)10(or 11), free, ca. 0.5 mm. Fruit globose, ca. 4 mm in diam. Fl. Dec–Jan, fr. Jan–May.

• Shaded and humid places in broad-leaved forests; 2000–2800 m. Taiwan.

This species is used as an ornamental.

### 4. **SINOPANAX** H. L. Li, J. Arnold Arbor. 30: 231. 1949.

华参属 hua shen shu

Shrubs or small trees, evergreen, hermaphroditic, unarmed, stellate pubescent. Leaves simple, entire or palmately lobed, margin coarsely dentate, otherwise entire; stipules deciduous. Inflorescence a terminal panicle of heads; bracts triangular; bracteoles 3 per flower, central one larger. Pedicels not articulate below ovary. Calyx rim 5-toothed. Petals 5, valvate. Stamens 5. Ovary 2-carpellate; styles 2, free, erect, short, persistent. Fruit a drupe, broadly globose, 1-seeded by abortion. Seeds ovoid, endosperm ruminant.

• One species: China (Taiwan).

*Sinopanax* strongly resembles *Oreopanax* Decaisne & Planchon from tropical America, and recent phylogenetic studies confirm that they are closely related (e.g., Lowry et al., S. Afr. J. Bot. 70: 382–392. 2004; Plunkett et al., Pl. Syst. Evol. 245: 1–39. 2004).

**1. *Sinopanax formosanum*** (Hayata) H. L. Li, J. Arnold Arbor. 30: 231. 1949 [“*formosana*”].

华参 hua shen

*Oreopanax formosanum* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25: 108. 1908 [“*formosanum*”].

Trees, evergreen, to 12 m tall. Branches, petioles, adaxial

leaf surfaces, and inflorescences densely minutely stellate pubescent. Leaf blade broadly orbicular, ca. 20 × 23 cm, entire or with 3–5 broad lobes, base broadly cuneate to truncate or cordate, margin irregularly dentate, apex acute to shortly acuminate. Inflorescence a terminal panicle; primary axis 15–20 cm; secondary axes to ca. 15 cm; heads 6–7 mm in diam., 8–12-

flowered. Fruit ca. 4 × 5 mm in diam. Fl. Sep, fr. Mar, May–Oct, Dec.

- Open areas in forests; 2300–2600 m. Taiwan.

This species is occasionally cultivated as an ornamental.

## 5. OSMOXYLON Miquel, Ann. Mus. Bot. Lugduno-Batavi 1: 3, 5. 1863.

兰屿加属 lan yu jia shu

*Boerlagiodendron* Harms; *Eschweilera* Zippelius ex Boerlage (1887), not *Eschweilera* Martius ex Candolle (1828).

Trees or shrubs, evergreen, hermaphroditic, unarmed, glabrous or pubescent. Leaves simple, palmately lobed or compound, margin entire to crenate or serrate, base of petiole expanded with 1 to several spiral or transverse crests or collars, stipules forming a ligule. Inflorescence a terminal compound umbel; secondary axes trifid, each with a central head or umbel of sterile, bacciform flowers (“pseudo-fruit”) and two lateral heads or umbels of bisexual flowers; bracts deciduous. Pedicels not articulate below ovary. Calyx obsolete or denticulate. Petals few to many, valvate, united below into a short tube. Stamens 4–30. Ovary (4 or)5- to many carpellate; styles united, forming a column; stigmas pustular. Fruit a drupe. Seeds triangular, endosperm smooth or wrinkled.

About 50 species: Borneo and the Philippines east to New Guinea, a few species in Micronesia and Melanesia, one species extending north to China (Taiwan).

**1. *Osmoxylon pectinatum*** (Merrill) Philipson, Blumea 23: 111. 1976.

兰屿加 lan yu jia

*Boerlagiodendron pectinatum* Merrill, Philipp. J. Sci. 3. 253. 1908; *B. kotoense* Nakai.

Trees, evergreen, to ca. 8 m tall, hermaphroditic. Branches robust, glabrous. Leaves simple; petiole 15–25 cm, base with bristles 1–2 cm; leaf blade broadly ovate, 20–25 cm wide, leath-

ery, abaxially pubescent on veins, adaxially glabrous, (3–)5–7-lobed, base broadly cuneate, margin coarsely crenate-serrate, apex obtuse to acute or shortly acuminate. Inflorescence a compound umbel; primary axis ca. 1 cm; secondary axes 4–15(–25), 2–3 cm; peduncles 3 per secondary axis, 1–3 cm; pedicels 1.5–4 mm. Calyx rim with 4 or 5 small teeth. Corolla lobes 4 or 5, tubular basally. Stamens 4 or 5. Ovary (4 or)5(or 6)-carpellate. Fruit globose, ca. 5 mm in diam., ribbed when dry. Fl. Apr, Jul, fr. Oct.

Taiwan (Huoshao Dao, Lan Yu) [N Philippines].

## 6. TETRAPANAX (K. Koch) K. Koch, Wochenschr. Gärtnerei Pflanzenk. 2: 371. Nov 1859.

通脱木属 tong tuo mu shu

*Didymopanax* subg. *Tetrapanax* K. Koch, Wochenschr. Gärtnerei Pflanzenk. 2: 70. Mar 1859.

Shrubs to small trees, evergreen, hermaphroditic, unarmed, stellate pubescent. Leaves simple, palmately lobed, margin entire to coarsely serrate; stipules 2, awl-shaped, prominent, 7–8 cm. Inflorescence a terminal panicle of umbels, densely farinose stellate when young, glabrescent. Pedicels not articulate below ovary. Calyx nearly obsolete. Petals 4(or 5), valvate, abaxially tomentose. Stamens 4(or 5). Ovary 2-carpellate; styles 2, free, erect at anthesis, later recurved. Fruit a drupe, globose, slightly compressed laterally. Seeds laterally compressed, endosperm smooth.

- One species: China.

**1. *Tetrapanax papyrifer*** (Hooker) K. Koch, Wochenschr. Gärtnerei Pflanzenk. 2: 371. 1859.

通脱木 tong tuo mu

*Aralia papyrifera* Hooker, Hooker’s J. Bot. Kew Gard. Misc. 4: 50. 1852; *A. mairei* H. Léveillé; *Fatsia papyrifera* (Hooker) Miquel ex Witte.

Shrubs or small trees, to 3.5 m tall, densely ferruginous or pale brown stellate tomentose. Trunk to 9 cm in diam.; pith homogeneous, white, large. Petiole terete, to 50 cm, glabrous; leaf blade ovate-oblong, 50–75 cm wide, papery or subleathery, abaxially densely ferruginous or stellate tomentose, adaxially glabrous, 7–12-lobed, base obtuse to cordate, margin entire to coarsely serrate, apex acuminate. Inflorescence terminal, peduncles 1–1.5 cm; umbels 1–2 cm in diam., many flowered. Flow-

ers yellowish white. Calyx ca. 1 mm, densely stellate tomentose. Corolla petals 4(or 5), ca. 2 mm, densely stellate tomentose. Stamens 4(or 5); filaments ca. 3 mm. Fruit dark purple at maturity, globose, ca. 4 mm in diam. Fl. Oct–Dec, fr. Jan–Feb.  $2n = 48^*$ .

- Mixed thickets; 100–2800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, SW Sichuan, Taiwan, NW Yunnan, Zhejiang.

This species is widely cultivated in China for the traditional medicine “tong cao” and as an ornamental elsewhere in the tropics. The stem pith cut into sections is used as a paper (“rice paper”).

Frodin and Govaerts (World Checklist Bibliogr. Araliaceae, 400. 2004 [“2003”]) indicated that *Tetrapanax papyrifer* is probably native to Taiwan and introduced in S China.

## 7. OPLOPANAX (Torrey & A. Gray) Miquel, Ann. Mus. Bot. Lugduno-Batavi 1: 4, 16. 1863.

刺参属 *ci shen shu*

*Panax* [unranked] *Oplopanax* Torrey & A. Gray, Fl. N. Amer. 1: 648. 1840; *Echinopanax* Decaisne & Planchon ex Harms.

Shrubs, annually dying back, hermaphroditic, armed with numerous prickles. Leaves simple, palmately lobed, margins serrate, stipules united with petiole, sheathing at base. Inflorescence a terminal panicle or raceme of umbels. Pedicels not articulate below ovary. Calyx 5-toothed, 3 teeth spinelike. Petals 5, valvate. Stamens 5. Ovary 2-carpellate; styles 2, free or united below. Fruit a drupe, red-yellow at maturity, to 1.2 mm in diam. Seeds depressed; endosperm uniform.

Three species: E Asia, North America; one species in China.

### 1. *Oplopanax elatus* (Nakai) Nakai, Fl. Sylv. Kor. 16: 38. 1927.

刺参 *ci shen*

*Echinopanax elatus* Nakai, J. Coll. Sci. Imp. Univ. Tokyo 26: 276. 1909.

Shrubs, deciduous, to 3 m tall, hermaphroditic. Branches stout, with dense yellow-orange prickles. Petiole 3–10 cm, densely setose; leaf blade suborbicular to oblate, 15–30(–44) cm wide, both surfaces pubescent or setose on veins, 5–7-lobed; lobes triangular or broadly triangular, base cordate, margin ir-

regularly serrate, apex acute to slightly acuminate. Inflorescence terminal, a raceme of umbels, 8–25 cm, densely setose toward base, stiffly pubescent throughout; umbels 0.9–1.3 cm in diam., 6–12-flowered; proximal peduncles ca. 2.5 cm, distal ones short or flowers borne directly on primary axis. Calyx 5-toothed, glabrous. Styles united to middle, slender, apically recurved. Fruit yellow-red at maturity, obovoid, sometimes globose, 0.4–1.2 cm. Fl. Jun–Jul, fr. Sep.  $2n = 48$ .

Mixed forests; 1400–1600 m. E Jilin [Korea, Russia].

This species is used medicinally.

## 8. KALOPANAX Miquel, Ann. Mus. Bot. Lugduno-Batavi 1: 4, 16. 1863.

刺楸属 *ci qiu shu*

Trees, deciduous, hermaphroditic. Stems and branches often armed with prickles. Leaves simple, palmately lobed, borne on long and short shoots, margin serrate; stipules united with petiole, sheathing at base. Inflorescence a terminal, corymbose panicle of umbels, glabrous. Pedicels not jointed below ovary. Calyx shortly 5-toothed. Petals 5, valvate. Stamens 5. Ovary 2-carpellate; styles united at base, 2-cleft apically. Fruit a drupe, subglobose. Seeds flat; endosperm uniform.

One species: E Asia.

### 1. *Kalopanax septemlobus* (Thunberg) Koidzumi, Bot. Mag. (Tokyo) 39: 306. 1925.

刺楸 *ci qiu*

*Acer septemlobum* Thunberg in Murray, Syst. Veg., ed. 14, 912. 1784; *Acanthopanax ricinifolius* (Siebold & Zuccarini) Seemann; *A. ricinifolius* var. *maximowiczii* (Van Houtte) C. K. Schneider; *A. septemlobus* (Thunberg) Koidzumi ex Rehder; *A. septemlobus* var. *magnificus* (Zabel) W. C. Cheng; *A. septemlobus* var. *maximowiczii* (Van Houtte) W. C. Cheng; *Acer pictum* Thunberg; *Aralia maximowiczii* Van Houtte; *Kalopanax pictus* (Thunberg) Nakai; *K. pictus* var. *magnificus* (Zabel) Nakai; *K. pictus* f. *maximowiczii* (Van Houtte) H. Hara; *K. pictus* var. *maximowiczii* (Van Houtte) H. L. Li; *K. ricinifolius* (Siebold & Zuccarini) Miquel; *K. ricinifolius* var. *chinensis* Nakai; *K. ricinifolius* var. *magnificus* Zabel; *K. ricinifolius* var. *maximowiczii* (Van Houtte) Nakai; *K. septemlobus* var. *magnificus* (Zabel) Handel-Mazzetti; *K. septemlobus* f. *maximowiczii* (Van Houtte) H. Ohashi; *K. septemlobus* var. *maximowiczii* (Van Houtte) Handel-Mazzetti; *Panax ricinifolius* Siebold & Zuccarini.

Trees, to 30 m tall. Trunk to ca. 1 m in diam.; branches

stout, with numerous prickles. Petiole glabrous, 8–50 cm; leaf blade suborbicular, 9–25(–35) cm wide, papery, abaxially dark green and glabrous or nearly so, adaxially light green and usually slightly pubescent when young, 5–7-lobed; lobes broadly triangular-ovate to oblong-ovate, base cordate or rounded to nearly truncate, margin serrate, apex acuminate. Inflorescence 18–25 × 20–30 cm; peduncle 2–6 cm; umbels 1–2.5 cm in diam.; pedicels 5–10 mm, glabrous or slightly pubescent. Corolla white or yellowish green. Fruit dark blue at maturity, 3–5 mm in diam.; styles 2, united below, apical branches recurved. Fl. Jul–Aug, fr. Sep–Oct.  $2n = 48$ .

Forests; near sea level to 2500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea, Russia].

This species is used for timber, medicinal purposes, and as an ornamental.

Two varieties (*Kalopanax septemlobus* var. *septemlobus* and var. *magnificus*) have sometimes been distinguished on the basis of minor leaf characters, but they were not retained in the most recent authoritative treatment of the genus (Ohashi, J. Jap. Bot. 69: 28–31. 1994).

## 9. HEDERA Linnaeus, Sp. Pl. 1: 202. 1753.

常春藤属 *chang chun teng shu*

Woody vines, evergreen, hermaphroditic or andromonoecious, creeping or climbing by aerial roots, unarmed. Leaves simple,

entire or coarsely lobed, those of fertile shoots differentiated; stipules absent. Inflorescence a terminal, compact raceme of umbels, or occasionally umbels solitary. Pedicels not articulate below ovary. Calyx subtire or 5-toothed. Petals 5, valvate. Stamens 5. Ovary 5-carpellate; styles united into a short column. Fruit a drupe, globose. Seeds ovoid; endosperm ruminant.

About 15 species: N Africa, tropical and subtropical Asia, Europe; two species in China.

Among recent literature the following are relevant: Ackerfield and Wen, A morphometric analysis of *Hedera* L. (the ivy genus, Araliaceae) and its taxonomic implications (Adansonia, sér. 3, 24: 197–212. 2002); Ackerfield and Wen, Evolution of *Hedera* (the ivy genus, Araliaceae): insights from chloroplast DNA data (Int. J. Pl. Sci. 164: 593–602. 2003).

*Hedera hypoglauca* Hance is the basionym of *Ampelopsis hypoglauca* (Hance) C. L. Li in the Vitaceae (see Fl. China 12).

- 1a. Young branches and inflorescences with ferruginous scales; calyx subtire, ca. 2 mm; petals 3–3.5 mm; fruit red or yellow at maturity ..... 1. *H. nepalensis*  
 1b. Young branches and inflorescences stellate pubescent; calyx 5-lobed, ca. 1 mm; petals 2–2.5 mm; fruit black at maturity ..... 2. *H. rhombea*

**1. *Hedera nepalensis*** K. Koch var. **sinensis** (Tobler) Rehder, J. Arnold Arbor. 4: 250. 1923.

常春藤 chang chun teng

*Hedera himalaica* (Hibberd) Carrière var. *sinensis* Tobler, Hedera 79. 1912; *H. potaninii* Pojarkova; *H. robusta* Pojarkova; *H. shensiensis* Pojarkova; *H. sinensis* (Tobler) Handel-Mazzetti.

Shrubs scandent. Young branches with ferruginous scales. Petiole 2–9 cm, slender; leaves dimorphic, those on sterile branches entire or 3-lobed, usually triangular-ovate or triangular-oblong, rarely triangular or sagittate; those on fertile branches elliptic-ovate or elliptic-lanceolate, rarely ovate or lanceolate, blade glabrous or with sparse scales abaxially, venation distinct on both surfaces, base broadly cuneate, margin entire, apex acuminate. Inflorescence a terminal umbel or a small raceme, with ferruginous scales; primary axis 1–3.5 cm. Calyx rim ca. 2 mm, subtire. Petals 5, 3–3.5 mm. Ovary 5-carpellate. Fruit red or yellow at maturity, globose, 7–13 mm. Fl. Sep–Nov, fr. Mar–May.

Forests, roadsides, rocky slopes, usually climbing on trees or rocks; from near sea level to 3500 m. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S

Shaanxi, Shandong, Sichuan, S Xizang, Yunnan, Zhejiang [Laos, Vietnam].

This taxon is used medicinally and as an ornamental.

*Hedera nepalensis* var. *nepalensis* is native to Nepal and Thailand.

**2. *Hedera rhombea*** (Miquel) Bean var. **formosana** (Nakai) H. L. Li, Woody Fl. Taiwan, 669. 1963.

台湾菱叶常春藤 tai wan ling ye chang chun teng

*Hedera formosana* Nakai, J. Arnold Arbor. 5: 25. 1924.

Shrubs scandent. Young branches sparsely stellate pubescent. Petiole to ca. 5 cm, stout. Leaves dimorphic, those on sterile branches usually 3–5-lobed, those on fertile branches ovate or ovate-lanceolate, blade stellate pubescent, venation raised abaxially, impressed adaxially in dry material, base cuneate, margin entire, apex acute to acuminate. Inflorescence a terminal umbel or corymb, stellate pubescent; primary axis to ca. 5 cm. Calyx ca. 1 mm, minutely 5-lobed. Petals 5, 2–2.5 mm. Ovary 5-carpellate. Fruit black at maturity, globose, 8–10 mm in diam. Fl. Sep–Nov, fr. Nov–May.

• Forests in valleys; 800–2500 m. Taiwan.

This taxon is used medicinally and as an ornamental.

*Hedera rhombea* var. *rhombea* is native to Japan and Korea.

## 10. DENDROPANAX Decaisne & Planchon, Rev. Hort. (Paris), sér. 4, 3: 107. 1854.

树参属 shu shen shu

*Gilibertia* Ruiz & Pavón (1794), not J. F. Gmelin (1791), nor *Gilibertia* Cothenius (1790); *Textoria* Miquel.

Trees or shrubs, evergreen, hermaphroditic or andromonoecious, unarmed, glabrous. Leaves simple or palmately 2- or 3(–5)-lobed, often with yellow or red glandular punctae (glands sometimes evident only under transmitted light), margins entire or with few irregular teeth; stipules small and united or absent. Inflorescence a terminal simple umbel, a small raceme of umbels, or a compound umbel. Pedicels not articulate below ovary. Calyx entire or 5-toothed. Petals 5, valvate. Stamens 5. Ovary (2–)5-carpellate; styles distinct or united basally or throughout into a column. Fruit a drupe. Seeds laterally compressed; endosperm uniform.

About 80 species: tropical America, E Asia; 14 species (seven endemic) in China.

- 1a. Styles united throughout their length into a single column, not divided apically in fruit, stigmas sessile.  
 2a. Secondary and tertiary veins on leaves prominently raised on both surfaces, leaves all unlobed ..... 11. *D. caloneurus*  
 2b. Secondary and tertiary veins on leaves weakly raised or obscure, leaves often dimorphic, some unlobed and some deeply 2- or 3-cleft.  
 3a. Trees to 18 m tall; inflorescence a panicle of (2 or)3–5 umbels, with an evident primary axis  
 1–4(–5.5) cm ..... 12. *D. hainanensis*  
 3b. Shrubs or small trees to ca. 3 m tall; inflorescence of 1(or 2) or 3–5 umbels usually borne from a single point.



- 4a. Plants andromonoecious, inflorescence often with 1 umbel of bisexual flowers and (2 or)3 or 4 umbels of later-blooming male flowers; peduncles of bisexual umbels 3–6 cm; leaves usually glandular punctate ..... 13. *D. trifidus*
- 4b. Plants hermaphroditic, inflorescence of 1–3(–5) umbels of bisexual flowers; peduncles 0.5–2.5 cm; leaves usually not glandular punctate ..... 14. *D. proteus*
- 1b. Styles partially or entirely divided, with evident (sometimes small) free arms apically.
- 5a. Ovary 2–4-carpellate, style arms 2–4; fruit not ribbed when dry.
- 6a. Ovary (3 or)4-carpellate, styles (3 or)4; calyx with 5 persistent triangular teeth 0.5–0.8 mm high ..... 7. *D. oligodontus*
- 6b. Ovary 2- or 3-carpellate, styles 2 or 3; calyx entire or minutely 5-toothed.
- 7a. Styles appressed into a column at anthesis, then divided only apically in fruit ..... 8. *D. kwangsiensis*
- 7b. Styles free for at least 1/2 their length, divergent apically in flower and fruit.
- 8a. Leaves ovate-oblong, 7–18(–22) × 2–5(–7) cm, with 6–12 pairs of lateral veins ..... 9. *D. stellatus*
- 8b. Leaves obovate-oblong to elliptic, 5–11 × 1.5–4.5 cm, with 6–8 pairs of lateral veins ..... 10. *D. bilocularis*
- 5b. Ovary 5-carpellate, style arms 5; fruit usually ribbed when dry.
- 9a. Fruit (7.5–)8–12 mm high; styles divided to base (even in flower), without an evident column above broadly conic disk; largest leaf blades (9–)14–19 cm ..... 1. *D. chevalieri*
- 9b. Fruit less than 8 mm high; styles united at least basally (sometimes obscurely so), forming an evident column above disk; largest leaf blade usually no more than 12 cm.
- 10a. Glandular punctae prominent, usually visible to naked eye ..... 2. *D. pellucidopunctatus*
- 10b. Glandular punctae minute, visible only with a hand lens.
- 11a. Secondary and tertiary venation of leaves evident on both surfaces.
- 12a. At least some leaf blades obovate-elliptic, broadest above middle, tertiary veins usually impressed adaxially in dry material ..... 3. *D. burmanicus*
- 12b. Leaf blades ovate-elliptic or ovate-lanceolate to elliptic, broadest at or below middle, tertiary veins usually prominently raised adaxially in dry material ..... 4. *D. dentiger*
- 11b. Secondary and tertiary venation of leaves obscure, especially abaxially.
- 13a. Fruit oblong-ovoid; styles 1.5–1.8 mm in fruit ..... 5. *D. productus*
- 13b. Fruit globose; styles ca. 1 mm in fruit ..... 6. *D. confertus*

**1. *Dendropanax chevalieri*** (R. Viguier) Merrill, J. Arnold Arbor. 19: 59. 1938.

大果树参 da guo shu shen

*Gilibertia chevalieri* R. Viguier in Lecomte, Fl. Indo-Chine 2: 1181. 1923; *Dendropanax hoi* C. B. Shang; *D. macrocarpus* C. N. Ho (1952), not Cuatrecasas (1946).

Trees, to ca. 14 m tall, hermaphroditic. Petiole 3–10 cm; leaf blade oblong-elliptic to ovate-elliptic, (7–)12–19 × (3–)5–9 cm, subleathery to papery, with distinct glandular punctae, 3(–5)-veined at base, secondary veins 3–5 pairs, secondary and tertiary venation distinct on both surfaces, base broadly cuneate to rounded, margin entire, sometimes minutely revolute, apex acuminate to shortly acuminate. Inflorescence terminal, a simple umbel, or with 2–4 umbels, 1.5–2.5 cm in diam. in flower, 10–20-flowered; pedicels 4–8 mm in flower, 6–20 mm in fruit; peduncle 1.5–3 cm. Calyx rim entire. Ovary 5(or 6)-carpellate; styles 5(or 6), free, ca. 0.5 mm in flower. Fruit globose to broadly ellipsoid, 8–12 mm in diam., ribbed when dry; styles recurved, 1–1.5 mm, persistent. Fl. Jun, Aug–Sep, fr. Sep–Dec.

Evergreen broad-leaved forests; 1600–2000 m. Guangxi (Napo), SE Yunnan (Pingbian, Xichou) [E India, C and N Vietnam].

**2. *Dendropanax pellucidopunctatus*** (Hayata) Kanehira, Trans. Nat. Hist. Soc. Taiwan 29: 158. 1939.

台湾树参 tai wan shu shen

*Gilibertia pellucidopunctata* Hayata, Icon. Pl. Formosan.

2: 111. 1912; *Textoria pellucidopunctata* (Hayata) Kanehira & Sasaki.

Shrubs or small trees, hermaphroditic. Petiole 1–12 cm; leaf blade elliptic to oblong-ovate or lanceolate, (4–)8–14 × (2–)2.5–5 cm, papery to subleathery, with prominent glandular punctae usually visible to naked eye, 3-veined at base, secondary veins 4 or 5 pairs, distinct on both surfaces, tertiary venation sometimes obscure, entire or deeply 2- or 3-lobed, base cuneate to broadly cuneate, margin entire, minutely revolute, apex acuminate to nearly caudate. Inflorescence terminal; umbels solitary (or 2–4), ca. 2 cm in diam., 6–20-flowered; peduncle ca. 1 cm in fruit; pedicels 5–6 cm in flower, expanding only slightly in fruit. Calyx rim 5-toothed. Ovary 5-carpellate; styles united basally. Fruit globose, 3.5–6 mm in diam., ribbed when dry; styles persistent, 1–1.5 mm, free arms divergent. Fl. Jul–Sep, fr. Aug–Feb.

• Broad-leaved forests; 800–2500 m. Taiwan.

**3. *Dendropanax burmanicus*** Merrill, Brittonia 4: 129. 1941.

缅甸树参 mian dian shu shen

*Dendropanax yunnanensis* C. J. Tseng & G. Hoo.

Shrubs or small trees, to 5 m tall, hermaphroditic. Petiole 1–6 cm; leaf blades at least some obovate-elliptic, others oblong to oblong-elliptic, 7–14 × 2.5–7 cm, papery or subleathery, glandular punctate, 3-veined at base, secondary veins 3 or 4 pairs, secondary and tertiary venation distinct on both surfaces, base obtuse to rarely rounded, margin entire, revolute, apex acu-

minate, curved downward, often becoming falcate and folded in pressed material. Inflorescence terminal; umbels solitary (or 2–4), ca. 2 cm in diam., 12–15-flowered; peduncle 1–3 cm; pedicels 4–7 mm in flower, expanding slightly in fruit. Calyx rim entire, sometimes undulate. Ovary 5-carpellate; styles 5, free nearly to base. Fruit subglobose, 3.5–4 mm in diam., ribbed when dry; styles recurved. Fl. Aug–Sep, fr. Oct–Nov.

Forests; 1300–1800 m. NW and SW Yunnan [N Myanmar, N Vietnam].

**4. *Dendropanax dentiger*** (Harms) Merrill, *Brittonia* 4: 132. 1941 [*“dentigerus”*].

树参 shu shen

*Gilibertia dentigera* Harms, *Bot. Jahrb. Syst.* 29: 487. 1900; *Dendropanax chevalieri* var. *dentiger* (Harms) H. L. Li; *D. inflatus* H. L. Li; *D. inflatus* f. *multiflorus* C. J. Tseng & G. Hoo; *D. inflatus* f. *paniculatus* C. J. Tseng & G. Hoo; *D. inflatus* f. *prominens* C. J. Tseng & G. Hoo; *G. dentigera* var. *anodonta* Handel-Mazzetti; *G. intercedens* Handel-Mazzetti; *G. sinensis* Nakai; *Textoria dentigera* (Harms) Nakai; *T. sinensis* (Nakai) Nakai.

Shrubs or small trees, to ca. 10 m tall, hermaphroditic. Petiole (0.5–)1–9 cm; leaf blade sometimes dimorphic, glandular punctate or not; unlobed blades ovate-elliptic or elliptic, less often oblong-elliptic to elliptic (or lanceolate especially in young plants), (4–)7–13(–27) × 1.5–6(–8) cm, 3-veined, secondary veins 2–6 pairs; lobed blades (when present) palmately 2- or 3-lobed, lobes narrowly triangular-ovate or ovate-lanceolate; tertiary veins raised on both surfaces, leathery (less often papery), base broadly cuneate to rounded, margin entire, often with irregularly scattered narrowly triangular teeth to ca. 1.5 mm, sometimes minutely revolute, apex acute to acuminate (rarely caudate). Inflorescence terminal; umbels solitary or 2 or 3(–5); 2–5 cm in diam., 10–25(–50)-flowered; peduncle 1–5 cm, stout; pedicels 0.2–1.5 cm in flower, to 3 cm in fruit. Calyx rim entire to minutely 5-toothed. Ovary 5-carpellate; styles 5, united at base (sometimes free nearly to base). Fruit ellipsoid to subglobose, rarely obloid, globose, or pyriform, 5–12 × 4–7 mm, ribbed when dry; styles persistent, 1.5–2 mm, free arms divergent to recurved apically. Fl. Jun, Aug–Sep, fr. Jul, Oct–Dec.

Evergreen broad-leaved forests or scrub, from near sea level to 1800 m. S Anhui, Fujian, Guangdong, Guangxi, Guizhou, W Hubei, Hunan, Jiangxi, Sichuan, NE and SE Yunnan, Zhejiang [Cambodia, Laos, Thailand, Vietnam].

**5. *Dendropanax productus*** H. L. Li, *Sargentia* 2: 44. 1942.

长萼树参 chang e shu shen

Shrubs or small trees, to 5 m tall, hermaphroditic. Petiole 0.5–7 cm; leaf blade elliptic, oblong-elliptic, or ovate-elliptic, 10–15.5 × 3.5–5.5 cm, papery, glandular punctate, 3-veined at base, secondary veins 6–10 pairs, visible, weakly raised on both surfaces, tertiary veins obscure, base cuneate, margin sparsely serrulate apically, apex long acuminate. Inflorescence terminal, umbel solitary, 1.5–2 cm in diam., 10–15-flowered; peduncle 0.8–2.5 cm, slender to stout; pedicels ca. 5 mm in flower, to 8

mm in fruit. Calyx a low rim, obscurely 5-toothed. Ovary 5-carpellate; styles 5, united 4/5 of their length. Fruit oblong-ovoid, ca. 7 × 3.5 mm, ribbed when dry; styles persistent, 1.5–1.8 mm, free arms spreading.

• Forests in valleys; 300–900 m. Guangdong (Liannan, Shixing, Xinfeng).

This species is used as an ornamental.

**6. *Dendropanax confertus*** H. L. Li, *Sargentia* 2: 42. 1942.

挤果树参 ji guo shu shen

Trees, to ca. 20 m tall, hermaphroditic. Petiole 0.5–6 cm; leaf blade ovate-elliptic (rarely 2- or 3-lobed), 6–14 × 2–6 cm, papery, glandular punctate, 3-veined at base, secondary veins 6–16 pairs, visible, weakly raised on both surfaces, tertiary veins obscure, rarely visible and impressed adaxially in dry material, base broadly cuneate to nearly rounded, margin entire or with irregularly scattered narrowly triangular teeth to 1 mm, apex long acuminate. Inflorescence terminal; umbels solitary, 2–3 cm in diam., 15–25-flowered; peduncle 5–10 mm, stout; pedicels 3–5 mm in flower, 3–10 mm in fruit. Ovary 5-carpellate; styles 5, united 1/2–2/3 their length. Fruit globose, 6–7 mm in diam., ribbed when dry; styles persistent, ca. 1 mm, free arms divergent apically. Fl. Aug–Sep, fr. Sep, Nov–Dec.

• Forests on mountain slopes. Guangdong, Guangxi, Hunan, Jiangxi.

**7. *Dendropanax oligodontus*** Merrill & Chun, *Sunyatsenia* 5: 151. 1940.

保亭树参 bao ting shu shen

Shrubs, to 3 m tall, hermaphroditic. Petiole 1–10 cm, stout. Leaf blade dimorphic, glandular punctate; unlobed blades elliptic to oblong or elliptic-lanceolate, rarely oblanceolate, 9–17(–23) × 3–6 cm, 3-veined at base, secondary veins 8–10 pairs, distinct; lobed blades (when present) obtriangular to lanceolate, deeply 2- or 3-cleft, papery, base cuneate to rounded, margin entire, minutely revolute, apex abruptly acute to acuminate. Inflorescence terminal; umbels solitary or 2–4, 2–3 cm in diam. in flower, to 4 cm in fruit, ca. 25-flowered; peduncle 1–1.5 cm; pedicels 3–4 mm in flower, to 1.2 cm in fruit. Calyx a low rim, with 5 persistent triangular teeth 0.5–0.8 mm. Ovary (3 or)4-carpellate; styles (3 or)4, ca. 1 mm in flower, united for ca. 4/5 their length. Fruit globose, 4–6 mm in diam., without ribs; styles persistent, ca. 2 mm, free arms spreading. Fl. Aug–Sep, fr. Dec.

• Dense forests in valleys or on mountain slopes; ca. 800 m. Hainan (Baoting).

**8. *Dendropanax kwangsiensis*** H. L. Li, *Sargentia* 2: 45. 1942.

广西树参 guang xi shu shen

*Dendropanax crassifolius* Y. F. Deng & H. Peng; *D. parvifloroides* C. N. Ho.

Shrubs, to 3 m tall, hermaphroditic. Petiole 1–6 cm; leaf blade dimorphic; unlobed blades ovate-elliptic to ovate-lanceolate, 5–14 × (2.5–)3–5 cm, glandular punctate, 3-veined at

base, secondary veins 6–9 pairs, weakly visible on both surfaces; lobed blades (when present) obtriangular, deeply 2- or 3-cleft, lobes narrowly triangular; papery, base cuneate, margin entire, often with few narrowly triangular teeth to ca. 1 mm, minutely revolute, apex acuminate. Inflorescence terminal; umbels 1–3, 10–20-flowered; peduncle 0.5–1.5 cm; pedicels 0.5–1.5 cm in flower, 0.5–2 cm in fruit. Calyx minutely 5-toothed. Ovary 2- or 3-carpellate; styles 2 or 3, united for ca. 4/5 their length. Fruit globose, 5–6 mm in diam.; styles persistent, 0.7–1.5 mm, free arms divergent. Fl. Sep, fr. Sep, Nov.

Shaded places in forests. Guangdong, Guangxi, SE Yunnan [Vietnam].

**9. *Dendropanax stellatus*** H. L. Li, Sargentia 2: 42. 1942.

星柱树参 xing zhu shu shen

Shrubs, 1–3 m tall, ?hermaphroditic. Petiole 0.5–5 cm; leaf blade ovate-oblong, 7–18 × 2–5 cm, papery, glandular punctate, 3-veined at base, secondary veins 6–12 pairs, distinct on both surfaces, base broadly cuneate to obtuse or nearly rounded, margin entire, apex shortly acuminate. Inflorescence terminal; umbels solitary, ca. 15-flowered; peduncle ca. 1.5 cm in fruit; pedicels ca. 8 mm in fruit. Ovary 3-carpellate; styles 3, united at base. Fruit globose, ca. 3.5 mm in diam.; styles persistent, ca. 1.5 mm, united at base, free arms diverging. Fl. and fr. times unknown.

- Forests or scrub on mountain slopes. Guangxi.

**10. *Dendropanax bilocularis*** C. N. Ho, Acta Phytotax. Sin. 2: 76. 1952.

双室树参 shuang shi shu shen

Shrubs, to ca. 2 m tall, hermaphroditic. Petiole 0.4–3 cm; leaf blade ovate-oblong to elliptic or narrowly obovate, 5–13 × 1.5–4.5 cm, papery, glandular punctate, 3-veined at base, secondary veins 6–8 pairs, visible on both surfaces, base cuneate, margin entire, rarely with few minute teeth, apex acuminate. Inflorescence terminal; umbels solitary, 15–50-flowered; peduncle 6–8 mm; pedicels 3–10 mm in flower and fruit. Calyx nearly entire or with 5 blunt teeth. Ovary 2(or 3)-carpellate; styles ca. 1 mm, divided nearly to base. Fruit globose, ca. 5 mm in diam., without ribs; styles persistent, ca. 1.5 mm, free arms reflexed. Fl. Aug–Sep, fr. Nov.

- Evergreen broad-leaved forests or stream banks; 200–900 m. Guangdong, Guangxi, SE Yunnan.

**11. *Dendropanax caloneurus*** (Harms) Merrill, Brittonia 4: 132. 1941.

榕叶树参 rong ye shu shen

*Gilibertia caloneura* Harms, Notizbl. Bot. Gart. Berlin-Dahlem 13: 452. 1937; *Dendropanax ficifolius* C. J. Tseng & G. Hoo.

Shrubs or small trees, to 5 m tall. Petiole 1–3 cm, stout, 1.5–2 mm in diam.; leaf blade elliptic-oblong, 8–13 × 2.5–4 cm, leathery, not glandular punctate, 3-veined at base, secondary veins 8–12 pairs, prominently raised on both surfaces, tertiary veins distinct, base narrowly cuneate to attenuate, margin entire,

minutely revolute, apex acuminate. Inflorescence terminal, umbel solitary, ca. 10-flowered; peduncle ca. 2.5 cm; pedicels 4–6 mm in flower and fruit. Calyx entire, slightly undulate. Ovary 5-carpellate; styles 5, completely united into a column. Fruit globose, ca. 5 mm in diam., slightly ribbed when dry; stylar column persistent, ca. 1 mm; stigmas sessile. Fl. unknown, fr. Dec.

Forests or scrub on mountain slopes; 1000–1500 m. SE Yunnan (Maguan) [N Vietnam].

This species is used medicinally.

**12. *Dendropanax hainanensis*** (Merrill & Chun) Chun, Sunyatsenia 4: 247. 1940.

海南树参 hai nan shu shen

*Gilibertia hainanensis* Merrill & Chun, Sunyatsenia 2: 296. 1935; *Dendropanax petelotii* (Harms) Merrill; *G. petelotii* Harms; *Textoria hainanensis* (Merrill & Chun) Nakai.

Trees, to 18 m tall, apparently andromonoecious. Petiole 1–9(–12) cm, slender, to 1 mm in diam. Leaf blade elliptic, oblong-elliptic or less often ovate-elliptic, sometimes elliptic-lanceolate, (4–)6–11 × 2–5 cm, papery, not glandular punctate, secondary veins ca. 8 pairs, almost obscure, tertiary veins obscure, base cuneate (rarely nearly rounded), margin entire, apex long acuminate to caudate, curved downward, sometimes becoming falcate and folded in pressed material. Inflorescence terminal, a panicle of (2 or)3–5 umbels, mostly with bisexual flowers, usually some lateral umbels with male flowers; primary axis 1–4(–5.5) cm; peduncle 1.5–2 cm; pedicels (2–)3–6 mm in flower, 4–12 mm in fruit. Calyx nearly entire. Ovary 5-carpellate; styles completely united into a column. Fruit globose, 7–9 mm in diam., ribbed when dry; stylar column persistent, 1–1.5 mm; stigmas sessile. Fl. Jun–Jul, fr. Oct.

Forests in valleys or on mountain slopes; 700–1500 m. Guizhou, Guangdong, Guangxi, Hainan, S Hunan, SE Yunnan [N Vietnam].

**13. *Dendropanax trifidum*** (Thunberg) Makino ex H. Hara, J. Jap. Bot. 16: 260. 1940.

三裂树参 san lie shu shen

*Acer trifidum* Thunberg in Murray, Syst. Veg., ed. 14, 912. 1784; *Dendropanax japonicus* (Junghun) Seemann; *Gilibertia japonica* (Junghun) Harms; *G. trifida* (Thunberg) Makino; *Hedera japonica* Junghun; *Textoria japonica* (Junghun) Miquel; *T. trifida* (Thunberg) Nakai ex Honda.

Trees, small, hermaphroditic or usually andromonoecious. Petiole (1.5–)3–13 cm; leaf blade often dimorphic, glandular punctate; unlobed blades ovate or elliptic to broadly ovate or subrhombic, (4.5–)7–12 × (2–)3.5–12(–17) cm, 3-veined at base, secondary veins raised on both surfaces; lobed blades (when present) shallowly 2- or 3-lobed on mature plants (more deeply 3–5-lobed on juveniles); leathery, base obtuse or broadly cuneate, margin entire, sometimes minutely revolute, apex acute to acuminate. Inflorescence terminal; umbels solitary or more often (2 or)3–5, usually 1 with bisexual flowers and others with later blooming male flowers; umbels 1.5–2 cm in diam., 10–20-

flowered; peduncle 3–6 cm; pedicels 0.6–1.5 cm in flower and fruit. Calyx with 5 small teeth. Ovary 5-carpellate; styles 5, completely united, 0.75–1 mm. Fruit broadly ellipsoid to subglobose or slightly obovoid, 4–8 × 3.5–7 mm, ribbed when dry; styler column persistent, 1–1.5 mm; stigmas sessile.

Forests and thickets. Taiwan (Lan Yu) [Japan].

**14. *Dendropanax proteus*** (Champion ex Benth) Benth, Fl. Hongk. 136. 1861 [*“protea”*].

变叶树参 bian ye shu shen

*Hedera protea* Champion ex Benth, Hooker's J. Bot. Kew Gard. Misc. 4: 122. 1852; *Dendropanax acuminatissimum* Merrill; *D. angustilobus* (H. H. Hu) Merrill; *D. brevistylus* Y. Ling; *D. gracilis* C. J. Tseng & G. Hoo; *D. parvifloroides* var. *chartaceus* K. M. Feng & Y. R. Li; *D. parviflorus* (Champion ex Benth) Benth; *Gilibertia acuminatissima* (Merrill) H. H. Hu; *G. angustiloba* H. H. Hu; *G. parviflora* (Champion ex Benth) Harms; *G. protea* (Champion ex Benth) Harms; *H. parviflora* Champion ex Benth; *Textoria parviflora* (Cham-

pion ex Benth) Nakai; *T. protea* (Champion ex Benth) Nakai.

Shrubs, to 3 m tall, hermaphroditic. Petiole 0.5–7 cm; leaf blade papery to leathery, usually not glandular punctate, 3-veined, secondary veins 5–12 pairs; unlobed blades elliptic, oblong, ovate-elliptic, elliptic-lanceolate, or ovate-lanceolate, to narrowly lanceolate, 2.5–18(–24) × 1–7 cm, base cuneate to nearly rounded, apex acuminate or long acuminate, rarely abruptly acute; lobed blades obtriangular, deeply 2- or 3-cleft, lobes lanceolate to elliptic; margin entire, often with irregularly spaced, narrowly triangular teeth to ca. 1 mm. Inflorescence terminal; umbels solitary or 2 or 3(–5), (15–)20–40-flowered; peduncle 0.5–2 cm, stout; pedicels 0.5–2 cm in flower and fruit. Calyx entire or minutely 4- or 5-toothed. Ovary 4- or 5-carpellate; styles 4 or 5, completely united, ca. 1 mm. Fruit ovoid to globose, 4–8 mm, without ribs when dry; styler column 1–1.5 mm, stigmas sessile. Fl. Jul–Sep, fr. Sep–Dec.

• Forests in valleys, along streams and on mountain slopes. Fujian, Guangdong, Guangxi, S Hainan, Hunan, S Jiangxi, SE Yunnan.

## 11. MERRILLIOPANAX H. L. Li, Sargentia 2: 62. 1942.

常春木属 chang chun mu shu

Shrubs or trees, evergreen, probably hermaphroditic, unarmed. Leaves simple, margin entire to serrate or dentate; stipule united with petiole, obsolete. Inflorescence a panicle of umbels, terminal and axillary; pedicels not jointed below ovary. Calyx rim minutely 5-toothed. Petals 5, valvate. Stamens 5. Ovary 2-carpellate; styles 2, free or united at base. Fruit a drupe, ellipsoid. Seeds 2; endosperm uniform.

Three species: Bhutan, W China, NE India, Myanmar, Nepal; three species in China.

- 1a. Leaf blade oblong-elliptic or lanceolate-elliptic, not lobed, margin evenly serrulate, with a small, narrowly triangular tooth terminating each lateral vein; inflorescence usually glabrous ..... 1. *M. membranifolius*  
 1b. Leaf blade broadly elliptic, ovate, or suborbicular, entire or 2- or 3-lobed, lobes entire to irregularly dentate; inflorescence pubescent.  
 2a. Leaf blade broadly elliptic or ovate, base broadly cuneate or rounded, margin entire or sparsely dentate ..... 2. *M. listeri*  
 2b. Leaf blade broadly ovate or suborbicular, base cordate, rarely rounded, margin irregularly serrate, teeth often reaching 1.5–2.5 mm ..... 3. *M. alpinus*

**1. *Merrillioanax membranifolius*** (W. W. Smith) C. B. Shang, Bull. Mus. Natl. Hist. Nat., B, Adansonia 5: 291. 1983.

长梗常春木 chang geng chang chun mu

*Nothopanax membranifolius* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 53. 1917; *Gilibertia membranifolia* (W. W. Smith) Handel-Mazzetti; *G. myriantha* Handel-Mazzetti.

Trees, to 10 m tall. Branches slender, glabrous or sparsely brown stellate pubescent. Petiole 3–15 cm, slender; leaf blade oblong-elliptic or lanceolate-elliptic, 8–20(–30) × 3–8(–10) cm, membranous or leathery, glabrous, 4-veined from base, secondary veins 3–6 pairs, base acute to broadly cuneate or rounded, margin serrulate-dentate, apex caudate-acuminate. Inflorescence terminal and sometimes lateral, sparsely stellate pubescent when young, later glabrescent; primary axis 5–15 cm; pedicels 0.6–1.3 cm. Fruit ellipsoid-globose, 4–5 mm in diam. Fl. Jun–Jul, fr. Aug–Oct.

Mixed forests on mountain slopes; 1600–3300 m. NW and W Yunnan [NE India, N Myanmar].

**2. *Merrillioanax listeri*** (King) H. L. Li, Sargentia 2: 63. 1942.

常春木 chang chun mu

*Dendropanax listeri* King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 67: 294. 1898; *Gilibertia listeri* (King) Handel-Mazzetti; *Merrillioanax chinensis* H. L. Li.

Trees, small, ca. 10 m tall. Branches pubescent or glabrous. Petiole 5–15 cm; leaf blade broadly elliptic or ovate, 6–18 × 4–10 cm, papery, entire or 2- or 3-lobed, lobes ovate-deltoid, central lobe larger, abaxially sparsely stellate pubescent or glabrous, 3-veined from base, secondary veins 4 or 5 pairs, base broadly cuneate to nearly rounded, margin entire or sparsely serrate, apex acuminate. Inflorescence terminal, sparsely stellate pubescent; primary axis 10–15 cm; pedicels 3–8 mm. Fruit ellipsoid-globose, ca. 5 mm in diam. Fl. Apr–May.  $2n = 48$ .

Mixed forests; 1200–1700 m. NW Yunnan [NE India, N Myanmar].

This species is used medicinally and as an ornamental.

**3. Merrillioanax alpinus** (C. B. Clarke) C. B. Shang, Bull. Mus. Natl. Hist. Nat., B, Adansonia 5: 293. 1983.

西藏常春木 xi zang chang chun mu

*Brassaiopsis alpina* C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 736. 1879; *Merrillioanax tibetanus* C. Y. Wu & S. K. Wu; *Pseudobrassaiopsis alpina* (C. B. Clarke) R. N. Banerjee; *Tetrapanax tibetanus* G. Hoo.

Trees, small. Branches, leaves, and inflorescences densely yellowish or ferruginous stellate, later glabrescent. Petiole 4–20

cm; leaf blade broadly ovate, suborbicular, or cordiform, 10–22 × 8–23 cm, membranous to papery, entire or 3-lobed, with 5–7 distinct, palmate veins, base cordate, margin irregularly serrate, spinulate apically, apex acuminate, rarely caudate. Inflorescence terminal, densely yellowish or ferruginous stellate, later glabrescent; pedicels 3–7 mm. Fruit globose, 3–4 mm in diam. Fl. Jul–Aug.

Mixed forests; 1500–3100 m. S Xizang [Bhutan, NE India, Nepal].

This species is used medicinally and as an ornamental.

## 12. BRASSAIOPSIS Decaisne & Planchon, Rev. Hort. (Paris), sér. 4, 3: 106. 1854.

罗伞属 lu san shu

*Pseudobrassaiopsis* R. N. Banerjee.

Trees or shrubs, hermaphroditic or andromonoecious, armed or occasionally unarmed. Leaves simple and unlobed, palmately lobed, or palmately compound, margins entire or more often serrate; stipules united with petiole at base. Inflorescence a terminal panicle or raceme of umbels; bracts small or absent, often caducous. Pedicels not articulate below ovary. Calyx rim 5-toothed. Petals 5, valvate. Ovary 2(–5)-carpellate; styles as many as carpels, united into a persistent column. Fruit a drupe, globose to ellipsoid or obloid, sometimes slightly compressed laterally. Seeds 1 (by abortion) or 2(–5), endosperm ruminant or uniform.

About 45 species: S and SE Asia; 24 species (ten endemic) in S and SW China.

*Euaraliopsis* (Hutchinson, Gen. Fl. Pl. 2: 80. 1967) belongs here but was not validly published because the apparent replaced synonym, *Araliopsis* (Kurz, Rep. Veg. Andaman Isl. 39. 1870, not *Araliopsis* Engler, 1896), was itself not validly published because Kurz merely cited *Araliopsis andamanica* Kurz" in the synonymy of *Brassaiopsis palmata* (Roxburgh) Kurz. Consequently the following species names, which belong with the corresponding *Brassaiopsis* names below, are not validly published either: *E. ciliata*," *E. dumicola*," *E. fatsioides*" (together with *E. palmipes*"), *E. ferruginea*" (together with *E. emeiensis*"), *E. ficifolia*," *E. hainla*," *E. hispida*," and *E. moumingensis*."

1a. Leaves palmately compound.

2a. Inflorescence with 2–5 umbels, primary axis less than 15 cm.

3a. Leaflets abaxially glaucous; ovary 3- or 4-carpellate ..... 21. *B. kwangsiensis*

3b. Leaflets abaxially not glaucous; ovary 2-carpellate.

4a. Leaflets 3(or 4); inflorescence terminal ..... 22. *B. tripteris*

4b. Leaflets (3–)5–9; inflorescence axillary.

5a. Leaflets narrowly lanceolate, 13–24 × 1.5–2.5 cm, sessile or subsessile (petiolules to 0.5 cm), adaxially glabrous, secondary veins 12–21 pairs ..... 23. *B. angustifolia*

5b. Leaflets ovate or elliptic-lanceolate, 8–20 × 3–8 cm, petiolules 0.5–3.5 cm, adaxially sparsely shortly setose, secondary veins 6–8 pairs ..... 24. *B. gracilis*

2b. Inflorescence with more than 10 umbels, primary axis at least 30 cm.

6a. Petiolules stout, 2.5–5 mm in diam., leaflets densely brown to ferruginous stellate pubescent;

inflorescence with short bristles ..... 16. *B. chengkangensis*

6b. Petiolules slender, 1–1.5 mm in diam.; leaflets and inflorescence ferruginous tomentose or glabrescent.

7a. Ovary (3 or)4- or 5-carpellate; inflorescence with persistent spiny bracts ..... 17. *B. producta*

7b. Ovary 2-carpellate; inflorescence lacking spiny bracts.

8a. Petiolules very short, to 1 cm; leaflets narrowly elliptic to linear ..... 18. *B. shweliensis*

8b. Petiolules (1.5–)2–10 cm; leaflets oblong to ovate-elliptic or broadly linear.

9a. Leaflets 15–35 × 6–15 cm, margin entire or sparsely serrulate; fruit didymo-globose or globose ..... 19. *B. glomerulata*

9b. Leaflets 10–15 × 3.5–4.5 cm, margin sharply serrate; fruit ellipsoid-globose ..... 20. *B. quercifolia*

1b. Leaves simple, palmately lobed or divided, lobes (if present) joined at base by continuous tissue.

10a. Umbels generally 2–5(or 6) per inflorescence; branches generally without prickles; shrubs.

11a. Inflorescence axillary; leaves deeply 3- or 4-lobed, lobes elliptic ..... 15. *B. moumingensis*

11b. Inflorescence terminal (rarely also lateral); leaves entire or 2- or 3(–5)-lobed.

12a. Leaves entire or 2- or 3(–5)-lobed, blade and lobes ovate-lanceolate to narrowly

lanceolate; inflorescence ferruginous pubescent (eventually glabrescent) ..... 14. *B. ferruginea*

12b. Leaves 3(–5)-lobed, inflorescence glabrous or bristly, lacking ferruginous pubescence.

13a. Leaf base deeply cordate, margin weakly serrate, teeth triangular, 4–11 mm apart; inflorescence glabrous ..... 12. *B. ficifolia*

- 13b. Leaf base truncate to very shallowly cordate, margin ciliate-serrulate, teeth linear, curved, spine-tipped, 2–4 mm apart; inflorescence bristly ..... 13. *B. triloba*
- 10b. Umbels (5 or)6 to many per inflorescence; branches prickly; trees or shrubs.
- 14a. Inflorescence unarmed.
- 15a. Leaves not divided or lobed, oblong-elliptic or elliptic ..... 7. *B. simplicifolia*
- 15b. Leaves divided, 3–11-lobed.
- 16a. Leaves 3–7-lobed, bases of lobes only slightly narrowed if at all.
- 17a. Ovary 5-carpellate, leaves (5–)7-lobed; mature fruit 10.5–14 mm high ..... 10. *B. grushvitzkyi*
- 17b. Ovary 2-carpellate, leaves 3–5-lobed; mature fruit 7–9 mm high ..... 11. *B. stellata*
- 16b. Leaves 7–11-lobed, bases of lobes distinctly narrowed (sometimes forming a pseudo-petiolule).
- 18a. Pedicels slender, (8–)10–30 mm, bracts subtending flowers 1–2 mm, caducous; inflorescence terminal or pseudo-lateral ..... 8. *B. fatsioides*
- 18b. Pedicels stout, 5–8(–12) mm, bracts subtending flowers 4–10 mm, stiff, persistent; inflorescence pseudo-lateral, borne on woody stems below leaves ..... 9. *B. dumicola*
- 14b. Inflorescence prickly (sometimes sparsely so).
- 19a. Lobes of leaves divided less than 1/2 way to base, broadly ovate-triangular to nearly rounded, at most 1.5 × as long as distance between sinuses ..... 1. *B. hainla*
- 19b. Lobes divided at least 1/2 way to base, elliptic to ovate or obovate (often narrowly so), 2–3 × as long as distance between sinuses.
- 20a. Inflorescence lateral, borne below leaves.
- 21a. Leaves 3–5-lobed, margins irregularly serrate, larger teeth 2–2.5 mm; primary axis of inflorescence not more than 35 cm ..... 5. *B. tibetana*
- 21b. Leaves (5–)7–9(–11)-lobed, margins ciliate-serrulate, teeth 1–1.5 mm; primary axis of inflorescence (20–)30–150 cm ..... 6. *B. ciliata*
- 20b. Inflorescence terminal, borne above leaves.
- 22a. Leaves 5–7-lobed ..... 2. *B. pseudoficifolia*
- 22b. Leaves (5–)7–11-lobed.
- 23a. Petiole sparsely prickly or unarmed; leaves papery to membranous, margins serrulate-ciliate, with 4–6 teeth per cm ..... 3. *B. bodinieri*
- 23b. Petiole densely prickly, leaves subleathery, margins spinose-serrulate, with 2–3 teeth per cm ..... 4. *B. hispida*

**1. *Brassaiopsis hainla*** (Buchanan-Hamilton) Seemann, J. Bot. 2: 291. 1864.

浅裂罗伞 qian lie luo san

*Hedera hainla* Buchanan-Hamilton in D. Don, Prodr. Fl. Nepal. 187. 1825; *Brassaiopsis polyacantha* (Wallich) R. N. Banerjee; *H. polyacantha* Wallich; *Pseudobrassaiopsis hainla* (Buchanan-Hamilton) R. N. Banerjee; *P. polyacantha* (Wallich) R. N. Banerjee.

Trees, to 15 m tall, hermaphroditic. Branches with conic prickles. Leaves simple, 5–7-lobed; petiole 15–25 cm, tomentose at first, glabrescent; stipules small or absent, ovate to ovate-deltoid; blade 17–35 cm wide, papery, lobes divided less than 1/2 way to base, broadly ovate-triangular to nearly rounded, abaxially stellate pubescent, glabrescent, adaxially tomentose, veins conspicuous on both surfaces, base broadly convex, margin sharply dentate, apex acuminate. Inflorescence terminal, apparently erect to ascending, densely tomentose, glabrescent after anthesis, with scattered prickles; primary axis to ca. 30 cm; secondary axes to 10(–13) cm; peduncles 1.5–2 cm; umbels 2.5–3.5 cm in diam.; pedicels 0.8–1 cm. Ovary 2-carpellate. Fruit subglobose, ca. 8 mm in diam.; styles persistent, ca. 2.5 mm. Fl. Dec–Mar, fr. Jun–Aug. 2*n* = 48.

Forests in valleys; 1300–2100 m. Yunnan [Bhutan, NE India, Myanmar, Nepal, Thailand].

**2. *Brassaiopsis pseudoficifolia*** Lowry & C. B. Shang, Acta Phytotax. Sin. 44: 641. 2006.

假榕叶罗伞 jia rong ye luo san

Trees, to 15(–25) m tall, apparently hermaphroditic. Branches prickly. Leaves simple, 5–7-lobed; petiole (11–)15–45 cm, unarmed (rarely with few small prickles just below blade); blade nearly orbicular, 14–26 × 18–37 cm, papery; lobes divided 2/3–3/4 way to base, elliptic to ovate, both surfaces glabrous, veins visible on both surfaces, slightly raised, base cordate, often deeply so, margin serrate, apex acute to acuminate. Inflorescence terminal, erect, ferruginous to light brown stellate pubescent, with few small prickles; primary axis ca. 15 cm, slender; peduncles 7–9, 3.5–6 cm; umbels 2.5–4 cm in diam.; pedicels 5–6 mm just before flowering, expanding in fruit to 1.1–1.5 cm. Ovary 2-carpellate. Fruit globose, 8–10 mm in diam.; styles persistent, 2–3 mm.

• Moist shaded forests; 1700–2500 m. SW Yunnan.

**3. *Brassaiopsis bodinieri*** (H. Léveillé) J. Wen & Lowry, Adansonia, sér. 3, 28: 182. 2006.

直序罗伞 zhi xu luo san

*Acanthopanax bodinieri* H. Léveillé, Bull. Acad. Int. Géogr. Bot. 24: 143. 1914.

Shrubs to small trees, to 5 m tall, andromonoecious or her-

maphroditic. Branches prickly. Leaves simple, (7–)9–11-lobed; petiole (18–)15–35 cm, with small scattered prickles; blade (18–)25–40 cm wide, papery to membranous; lobes elliptic to narrowly obovate, (7–)9–22 cm, adaxially glabrous or with sparse short setae, base truncate to cordate, margin serrulate, teeth narrowly triangular, apex acuminate. Inflorescence terminal, erect, with dense prickles to 6 mm and setose trichomes to 2.5 mm; primary axis 10–25 cm; secondary axes (5–)8–25 cm, with a terminal umbel of bisexual flowers and usually 1–3 (or 4) umbels of male flowers; peduncles of male umbels 1–2 cm; umbels 0.8–1 cm in diam.; pedicels (8–)10–18 mm (shorter in male flowers), finely brown to ferruginous stellate, glabrescent. Ovary 2-carpellate. Fruit ellipsoid, 9–12 × 5–8 mm; styles persistent, 1.5–2.5 mm. Fl. Oct–Dec, fr. Jan–Feb.

Moist shaded forests; 500–2200 m. SW Guizhou, SW Yunnan [N Vietnam].

**4. *Brassaiopsis hispida*** Seemann, J. Bot. 2: 292. 1864.

粗毛罗伞 cu mao luo san

*Pseudobrassaiopsis hispida* (Seemann) R. N. Banerjee.

Shrubs, to 5 m tall, andromonoecious. Branches with dense, compressed prickles 3–6 mm, ferruginous stellate. Leaves simple, 9–11-lobed; petiole 20–40 cm, densely prickly; blade broadly orbicular, 20–36 cm wide, leathery, lobes divided 3/4–4/5 way to base, oblong-lanceolate to narrowly ovate, both surfaces glabrous, or abaxially sparsely hispidulous, base deeply cordate, margin spinose-serrulate, teeth ca. 2 mm, with a stiff, sharp tip, apex acuminate. Inflorescence terminal, probably erect, with dense prickles and brown stellate indumentum; primary axis ca. 30 cm; secondary axes 15(–20) cm, with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; peduncles 5–7 cm; umbels 3–5 cm in diam.; pedicels 1–1.5 cm, densely ferruginous tomentose. Ovary 2-carpellate. Fruit globose to obloid, slightly compressed, 6–7 × 8–9 mm; styles persistent, ca. 2 mm; pedicels in fruit ca. 7 cm. Fl. Jun–Dec, fr. Jan–Feb.

Dense forests in valleys; 1400–2300 m. Xizang, Yunnan [Bhutan, India (Darjeeling, Sikkim), Myanmar, Vietnam].

**5. *Brassaiopsis tibetana*** C. B. Shang, Acta Phytotax. Sin. 18: 91. 1980 [*“tibetanus”*].

西藏罗伞 xi zang luo san

*Brassaiopsis zhangmuensis* Y. R. Li.

Trees, to ca. 10 m tall, hermaphroditic. Branches with conic prickles 2–3 mm, densely ferruginous tomentose when young. Leaves simple, deeply 3–5-lobed; petiole 35–45 cm, unarmed, tomentose at first, later glabrescent; blade broadly orbicular, 15–26 × 18–30 cm, papery; lobes divided to 4/5 way to base, basal lobes oblique-oblong, sometimes slightly shallow, median and terminal lobes obovate-oblong to obovate-lanceolate, both surfaces densely yellowish gray stellate pubescent when young, later glabrescent, abaxially sparsely stellate pubescent on veins, adaxially glabrous, base slightly narrowed, margin sparsely irregularly serrate, apex acuminate. Inflorescence lateral, apparently ascending (perhaps pendent in fruit), sparsely

stellate, with scattered prickles; primary axis to 35 cm; secondary axes to 8 cm; peduncles 1–2.5 cm; umbels 0.8–1.6 cm in diam.; pedicels 2–5 mm. Ovary 2-carpellate. Fruit globose, ca. 3 mm in diam.; styles persistent, ca. 2 mm; pedicels in fruit 4–6 mm, pubescent. Fr. Oct.

• Forests; ca. 2200 m. S Xizang (Nyalam).

**6. *Brassaiopsis ciliata*** Dunn, J. Linn. Soc., Bot. 35: 499. 1903.

纤齿罗伞 xian chi luo san

Shrubs, to ca. 4 m tall, hermaphroditic. Branches densely tomentose, with scattered compressed prickles. Leaves simple, (5–)7–9(–11)-lobed; petiole 20–35 cm, unarmed or rarely with few prickles distally; blade ca. 30 cm wide, papery to membranous; lobes divided to 4/5 way to base, lobes elliptic to oblong, 15–20 cm, both surfaces sparsely bristly on veins, base densely cordate, margin ciliate-serrulate, teeth not sharply tipped, apex acuminate. Inflorescence lateral, pendent, with sparse to dense, short prickles; primary axis (20–)30–150 cm; secondary axes to ca. 18 cm; peduncles 2–5 cm; umbels 3–5 cm in diam.; pedicels 1–1.5 cm, densely ferruginous stellate. Ovary 2-carpellate. Fruit black, ovoid-globose, sometimes slightly compressed, 7–8 mm in diam.; styles persistent, ca. 1.5 mm; pedicels in fruit to 3 cm. Fl. Aug–Nov, fr. Feb–Mar.

Forests in valleys, sunny mountain slopes; 300–2200 m. SW Guizhou, Sichuan, SE Yunnan [N Vietnam].

**7. *Brassaiopsis simplicifolia*** C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 735. 1879.

单叶罗伞 dan ye luo san

Trees, to ca. 10 m tall, andromonoecious. Branches with conic prickles and densely ferruginous tomentose at first, later glabrescent. Leaves simple, unlobed; petiole 2.5–8 cm; stipules united at base of petiole, apically free, slightly prominent; blade oblong-elliptic to elliptic or narrowly ovate, 9–30 × 4.5–10 cm, papery, abaxially sparsely pubescent on veins, adaxially at first densely ferruginous tomentose, later glabrous, veins slightly raised on both surfaces, base broadly cuneate to nearly rounded, margin sharply serrate, apex acute to acuminate. Inflorescence terminal, erect, prickly, at first densely ferruginous tomentose, then subglabrous; primary axis 15–30 cm; secondary axes to 13 cm, with a terminal umbel of bisexual flowers and 1 or 2 (or 3) lateral umbels of male flowers; peduncles 2–7 cm; umbels ca. 4 cm in diam.; pedicels 1.2–2 cm. Ovary 2-carpellate. Fruit (immature) subglobose, ca. 4 mm in diam.

Evergreen broad-leaved forests or coniferous broad-leaved mixed forests; 800–3000 m. S Xizang [India].

**8. *Brassaiopsis fatsioides*** Harms in Sargent, Pl. Wilson. 2: 556. 1916.

盘叶罗伞 pan ye luo san

*Brassaiopsis palmipes* Forrest ex W. W. Smith; *B. trevesioides* W. W. Smith.

Trees, to ca. 10 m tall, andromonoecious. Branches prickly. Leaves simple, 7–11-lobed; petiole 10–40 cm, subglabrous or sparsely puberulous near apex, unarmed; blade orbicular, to

ca. 30 cm wide, membranous or papery; lobes oblanceolate, oblong-lanceolate, or ovate-oblong, divided 2/3–3/4 way to base, distinctly narrowed basally, sometimes forming winged pseudo-petiolules, abaxially slightly ferruginous tomentose or glabrous, adaxially sparsely bristly or subglabrous, base cordate, often deeply so, margin serrulate, apex shortly acuminate. Inflorescence probably terminal, erect, unarmed, stellate pubescent, glabrescent; primary axis to 30 cm; secondary axes to 15 cm, with a terminal umbel of bisexual flowers and usually 1–3 umbels of male flowers; peduncles 2–3 cm; umbels ca. 4 cm in diam.; pedicels (8–)10–30 mm (shorter in male flowers), slender, glabrous or slightly puberulous, subtended by caducous bracteoles 1–2 mm. Ovary 2-carpellate. Fruit blue-black, globose, 5–6 mm in diam.; styles persistent, ca. 2 mm; pedicels in fruit ca. 1.5 cm. Fl. Apr–Jul, fr. Jan–Feb, Jun–Sep.  $2n = 48^*$ .

• Forests in valleys or on mountain slopes; 500–2700 m. Guizhou, Sichuan, Xizang, Yunnan.

**9. *Brassaiopsis dumicola*** W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 11. 1917.

翅叶罗伞 *chi ye luo san*

*Brassaiopsis gausseii* N. S. Bui.

Shrubs or trees, to 9 m tall, hermaphroditic. Leaves simple, deeply ca. 9-lobed; petiole 15–26 cm, ferruginous tomentose; stipules united within petiole, apices free, elongate, ca. 1 cm; blade orbicular, ca. 30 cm wide, papery; lobes narrowly oblong, distinctly narrowed basally, sometimes forming winged pseudo-petiolules, 15–26 cm, divided 3/4–4/5 way to base, at first white or ferruginous stellate pubescent, later glabrescent, veins prominent adaxially, base deeply cordate, margin spinose-serrulate, apex long acuminate. Inflorescence lateral, pendent, unarmed, tomentose or subglabrous; primary axis 35(–40) cm; secondary axes to ca. 8 cm, stout; umbels ca. 3 cm in diam.; pedicels 5–8(–10) mm, stout, subtended by stiff persistent bracteoles 4–10 mm. Ovary 2- or 3-carpellate. Fruit not seen. Fl. Dec–Feb.

Forests in valleys. SW Yunnan [Vietnam].

**10. *Brassaiopsis grushvitzkyi*** J. Wen et al., Bot. J. Linn. Soc. 142: 461. 2003.

南星毛罗伞 *nan xing mao luo san*

*Grushvitzkyia stellata* Skvortsova & Averyanov, Bot. Zhurn. (Moscow & Leningrad) 79: 108. 1994.

Trees, small, 5–10 m tall, probably hermaphroditic. Leaves simple, (5–)7-lobed; petiole 25–50 cm, densely stellate pubescent; stipules united with petiole, apices free, ca. 1 cm; blade orbicular, 30–40 cm wide, thickly papery to subleathery; lobes ovate, 10–20 × 5–9.5 cm, divided ca. 3/4 way to base, both surfaces densely stellate-pubescent, veins prominent on both surfaces, base strongly cordate, margin entire, apex acuminate. Inflorescence terminal, descending to pendent, unarmed, densely stellate pubescent; primary axis 25–35 cm; secondary axes 8–10 cm; umbels 4–6 cm in diam.; pedicels 1.5–2.5 cm, subtended by bracteoles 1.2–1.4 cm. Ovary 5-carpellate. Fruit ovoid to nearly globose, 10.5–14 × 7.5–8.5(–9) mm; styles persistent, ca. 2 mm. Fr. Oct–Dec.

Forests on limestone. SW Yunnan [N Vietnam].

**11. *Brassaiopsis stellata*** K. M. Feng, Fl. Yunnan. 2: 463. 1979.

星毛罗伞 *xing mao luo san*

Trees, to 7 m tall. Branches scattered shortly prickly, densely yellowish gray stellate tomentose. Leaves simple, deeply 3–5-lobed; petiole 10–40 cm, densely stellate tomentose; blade 19–25 × 16–26 cm, papery; lobes ovate, abaxially densely yellowish gray stellate tomentose, adaxially sparsely stellate pubescent, base cordate, margin entire or slightly undulate, apex acuminate. Inflorescence terminal, erect, 27–40 cm, densely yellowish gray stellate tomentose; peduncles ca. 4 cm; umbels 3–3.5 cm in diam. Ovary 2-carpellate. Fruit globose, 7–9 mm in diam., stellate pubescent when young, then glabrescent; styles persistent, 1–2 mm; pedicels in fruit 1–2 cm, densely stellate pubescent. Fl. Sep–Oct, fr. Nov.

Mixed forests and roadsides; 600–1500 m. S Guangxi, Yunnan [N Vietnam].

**12. *Brassaiopsis ficifolia*** Dunn, J. Linn. Soc., Bot. 35: 500. 1903.

榕叶罗伞 *rong ye luo san*

Trees or climbers, to 10 m tall, hermaphroditic. Branches with scattered prickles. Leaves simple, (2 or)3-lobed; petiole 10–17 cm, unarmed or with few prickles; blade 14–35(–40) × 17–25 cm, papery; lobes ovate, usually narrowed basally, divided 1/2–3/4 to base, abaxially sparsely stellate pubescent or glabrous, adaxially glabrous, base deeply cordate, margin serrate, teeth blunt, triangular, 4–11 mm apart, apex acuminate. Inflorescence terminal, erect, sparsely stellate, unarmed; primary axis to 8 cm; peduncles 2–4.5 cm; umbels (1 or)2–4(or 5), 2.5–3.5 cm in diam.; pedicels 5–12 mm. Ovary 2-carpellate. Fruit globose, slightly compressed, 4–8 mm in diam.; styles persistent, ca. 2 mm. Fl. Aug–Oct, fr. Oct–Jan, Apr.

Forests or scrub on mountain slopes; 600–2500 m. Yunnan [Vietnam].

**13. *Brassaiopsis triloba*** K. M. Feng, Fl. Yunnan. 2: 463. 1979.

三裂罗伞 *san lie luo san*

Shrubs, to ca. 1.5 m tall, hermaphroditic. Branches unarmed. Leaves simple, 3(–5)-lobed; petiole 6–15 cm, glabrous or with few bristles apically; blade broadly ovate, 12–18 × 14–18 cm, papery; lobes obovate-oblong, narrowed basally, divided ca. 3/4 way to base, abaxially glabrous or with scattered bristles, adaxially glabrous, base truncate to very shallowly cordate, margin ciliate-serrulate, teeth linear, curved, spine-tipped, 2–4 mm apart, apex abruptly acuminate. Inflorescence terminal, erect, with small bristles; primary axis ca. 6 cm; peduncles to ca. 4 cm; umbels 2–4, 3–4 cm in diam.; pedicels 9–12 mm, to ca. 1.5 cm in fruit, slender. Ovary 2-carpellate. Flowers yellowish white. Fruit ovoid-globose, ca. 7 mm in diam.; styles persistent, ca. 3 mm. Fr. Dec.

Forest margins or roadsides; ca. 600 m. Guangxi (Baise, Lingluo), SE Yunnan (Funing) [N Vietnam].



**14. *Brassaiopsis ferruginea*** (H. L. Li) G. Hoo, *Acta Phytotax. Sin.*, Addit. 1: 149. 1965.

锈毛罗伞 xiu mao luo san

*Dendropanax ferrugineus* H. L. Li, *Sargentia* 2: 47. 1942.

Shrubs, to ca. 2 m tall, hermaphroditic. Branches slender, unarmed, ferruginous stellate tomentose when young, glabrescent. Leaves simple, entire or 2- or 3-lobed; petiole 4–13 cm, slender; blade papery, those of unlobed leaves lanceolate to oblong-lanceolate or ovate-lanceolate, 7–20 × 1.5–5 cm; lobed leaves rhombic to obdeltate, 15–27 × 10–15 cm, lobes narrowly lanceolate to narrowly elliptic, only slightly narrowed basally, divided nearly to base, both surfaces densely ferruginous stellate pubescent when young, later abaxially scattered stellate pubescent, and adaxially later glabrous, base broadly cuneate to nearly rounded, margin serrulate, apex long acuminate to caudate. Inflorescence terminal, erect (pendent in fruit), unarmed, ferruginous stellate pubescent when young, later glabrescent; primary axis 3–5(–8) cm; peduncles 2–7 cm; umbels 2–4, ca. 2 cm in diam. at anthesis, to 4 cm in fruit. Ovary 2(or 3)-carpellate. Fruit black, globose, 6–8 mm in diam. Fl. Mar–Aug, Nov, fr. May–Aug.

• Forests on mountain slopes; 1200–1700 m. Fujian, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan.

**15. *Brassaiopsis moumingensis*** C. B. Shang, *J. Nanjing Inst. Forest.* 1985(2): 16. 1985.

茂名罗伞 mao ming luo san

Shrubs, to ca. 1 m tall, ?hermaphroditic. Branches unarmed or with few prickles. Leaves simple, 3- or 4-lobed; petiole 6–10 cm, ferruginous stellate when young; blade 10–16 × 10–20 cm, papery; lobes elliptic or oblong-elliptic, 8–13 cm, deeply divided, abaxially ferruginous stellate pubescent, base broadly cuneate or slightly cordate, margin serrate, apex acuminate. Inflorescence axillary, erect, unarmed; primary axis ca. 10 cm; peduncles 2–3 cm; umbels 2–5, ca. 1 cm in diam.; pedicels 1–2 mm, densely ferruginous stellate pubescent. Ovary 2-carpellate. Fruit unknown. Fl. Aug–Sep.

• Dense forests in valleys. Guangdong (Maoming).

The name *Brassaiopsis moumingensis* was intended as a new combination but is in fact the name of a new species. The protologue indicates the type and includes a direct reference to “*Euaraliopsis moumingensis*” (Y. R. Ling, *Acta Phytotax. Sin.* 15(2): 84. 1977), where a Latin description is provided. However, because the genus name “*Euaraliopsis*” was not validly published (see comment following genus description above), “*E. moumingensis*” was not validly published either.

**16. *Brassaiopsis chengkangensis*** H. H. Hu, *Bull. Fan Mem. Inst. Biol., Bot.* 10: 162. 1940.

镇康罗伞 zhen kang luo san

Trees, to ca. 15 m tall, hermaphroditic. Branches prickly. Leaves palmately compound; petiole 30–60 cm, stout; petiolules 1.5–4.5(–15) cm, 2.5–5 mm in diam., both surfaces densely ferruginous hispid when young; leaflets 5–7, ovate-oblong or oblong-lanceolate, 15–30(–50) × 6–17(–28) cm, leathery, both surfaces densely ferruginous stellate tomentose or bristly when

young, later abaxially sparsely stellate pubescent, densely so on veins, later adaxially subglabrous, secondary veins 10–18 pairs, distinct on both surfaces, base broadly cuneate to truncate or rounded, margin entire or sparsely aristate-serrulate, apex acuminate or long acuminate. Inflorescence terminal, pendent, densely ferruginous bristly; primary axis to 70 cm, very stout; peduncles numerous, 1–6 cm at anthesis, to 9 cm in fruit; umbels 3.5–5 cm in diam. in fruit; pedicels 1–2.5 cm. Ovary 2(–4)-carpellate. Fruit not seen. Fl. Sep–Oct, Mar, fr. (immature) May.

• Forests on mountain slopes; 1700–2400 m. SW Yunnan.

**17. *Brassaiopsis producta*** (Dunn) C. B. Shang, *Candollea* 39: 485. 1984.

尖苞罗伞 jian bao luo san

*Heptapleurum productum* Dunn, *J. Linn. Soc., Bot.* 35: 499. 1903; *Brassaiopsis acuminata* H. L. Li var. *multiflora* G. Hoo; *B. lepidota* K. M. Feng & Y. R. Li; *B. pentalocula* G. Hoo; *B. spinibracteata* G. Hoo; *Schefflera producta* (Dunn) R. Viguier.

Trees, to ca. 8 m tall, hermaphroditic. Branches with short, conic prickles. Leaves palmately compound, with (3 or)4–7( or 8) leaflets; petiole 10–35 cm; petiolules 1–3 cm, slender, 1–1.5 mm in diam.; leaflets oblong, rarely ovate-lanceolate, 10–16 × 3.5–8 cm, leathery, both surfaces glabrous, abaxially densely yellowish scaly when young, then with scattered scales, base cuneate or rounded, margin sharply serrate in apical 1/3–1/2, rarely entire, minutely revolute, apex acuminate or long acuminate. Inflorescence terminal, pendent, unarmed, densely ferruginous or yellowish tomentose when young, soon glabrescent; primary axis (17–)20–33 cm; bracts persistent, deltoid-ovate, 5–7 mm, spinescent; peduncles numerous, 1–4.5 cm; umbels ca. 2 cm in diam.; pedicels 3–7 mm, expanding to 1 cm in fruit, ferruginous or yellowish tomentose. Ovary 3–5-carpellate. Fruit globose, 7–8 mm in diam., slightly ribbed in dry specimens; styles persistent, ca. 2 mm. Fl. Aug–Nov, Feb, fr. Feb–Mar.

Scrub or dense forests on limestone mountains; below 1600 m. Guangxi, Guizhou, Yunnan [N Vietnam].

**18. *Brassaiopsis shweliensis*** W. W. Smith, *Notes Roy. Bot. Gard. Edinburgh* 10: 13. 1917.

瑞丽罗伞 rui li luo san

*Brassaiopsis karmalaica* Philipson; *B. suberipetala* K. M. Feng & Y. R. Li.

Trees, to ca. 8 m tall, hermaphroditic. Branches stout, prickly. Leaves palmately compound, with 6 or 7 leaflets; petiole (6–)10–20 cm; petiolules very short, less than 1 cm, slender, 1–1.5 mm in diam., both surfaces ferruginous tomentose, soon glabrescent; leaflets oblong to slightly obovate, 10–24 × 2–8 cm, leathery, ferruginous tomentose when young, soon glabrescent, secondary veins 12–15 pairs, distinct abaxially, base narrowly cuneate to attenuate, margin apically serrulate, apex long acuminate. Inflorescence lateral, probably ascending, unarmed, ferruginous tomentose or glabrous; primary axis to 10–30 cm, stout; peduncles 2.5–6 cm; umbels 2.5–4.5 cm in diam.; pedicels 1–2 cm; bracts cymbiform, ca. 1.5 cm, persistent. Ovary 2-carpellate. Fruit globose, ca. 7 mm in diam.; styles persistent, ca. 2 mm. Fl. Jun–Jul, Dec, fr. Dec.  $2n = 48^*$ .

• Evergreen broad-leaved forests on mountain slopes; 1800–2700 m. W Yunnan.

**19. *Brassaiopsis glomerulata*** (Blume) Regel, Gartenflora 1863: 275. 1863.

罗伞 luo san

*Aralia glomerulata* Blume, Bijdr. 873. 1826; *Acanthopanax esquirolii* H. Léveillé; *Brassaiopsis acuminata* H. L. Li; *B. coriacea* W. W. Smith; *B. glomerulata* var. *angustifolia* Y. R. Li; *B. glomerulata* var. *brevipedicellata* H. L. Li; *B. glomerulata* var. *coriacea* (W. W. Smith) H. L. Li; *B. glomerulata* var. *longipedicellata* H. L. Li; *B. liana* Y. F. Deng; *B. speciosa* Decaisne & Planchon; *Hedera floribunda* Wallich ex G. Don; *Macropanax glomerulatus* (Blume) Miquel.

Trees, to ca. 20 m tall, hermaphroditic. Branches prickly, ferruginous red tomentose when young. Leaves palmately compound, with 5–9 leaflets; petiole 30–50 cm, slender; petiolules 2–9 cm, slender, 1–1.5 mm in diam.; leaflets oblong, ovate-elliptic, or broadly lanceolate, 15–35 × 6–15 cm, papery or subleathery, ferruginous stellate tomentose when young, soon glabrescent, secondary veins 7–10(–12) pairs, base cuneate or broadly cuneate to rounded, margin entire or sparsely serrulate, apex acuminate. Inflorescence terminal, pendent, unarmed, ferruginous-red tomentose when young; primary axis more than 30 cm; peduncles 2–5 cm; umbels 2–3 cm in diam.; pedicels 0.8–1.5 cm at anthesis, 1–3.5 cm in fruit. Ovary 2-carpellate. Fruit globose or compressed-globose to didymo-globose, 7–10 mm in diam.; styles persistent, 1–2 mm. Fl. Jun–Aug, fr. Jan–Feb.

Dense forests on mountain slopes or in valleys; 400–2400 m. Guangdong, Guangxi, Guizhou, Sichuan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Myanmar, Nepal, Thailand, Vietnam].

This species is used medicinally and as an ornamental.

**20. *Brassaiopsis quercifolia*** G. Hoo, Acta Phytotax. Sin., Addit. 1: 152. 1965.

栎叶罗伞 li ye luo san

Trees, to ca. 4 m tall. Branches prickly. Leaves palmately compound, with 5–7 leaflets; petiole 9–20 cm; petiolules 1.5–3 cm; leaflets oblong, 10–15 × 3.5–4.5 cm, subleathery, both surfaces glabrous, secondary veins 8–12 pairs, base rounded, margin sharply serrate, apex long acuminate. Inflorescence terminal, paniculate, unarmed, ferruginous tomentose, glabrescent; primary axis ca. 35 cm; peduncles ca. 15, 2–6 cm; pedicels to 6–8 mm in fruit. Ovary 2-carpellate. Fruit ellipsoid-globose, ca. 9 × 4 mm (immature); styles persistent, ca. 2 mm.

• Forests on limestone mountain slopes; below 800 m. Guangxi (Yangshuo).

**21. *Brassaiopsis kwangsiensis*** G. Hoo, Acta Phytotax. Sin., Addit. 1: 150. 1965.

广西罗伞 guang xi luo san

Shrubs, to ca. 3 m tall. Branches prickly, glabrous. Leaves palmately compound, with 6–8 leaflets; petiole 8–32 cm; petiolules 1.5–6.5 cm; leaflets oblong-lanceolate, 12–20 × 3–6 cm, lateral ones smaller, asymmetric, papery, both surfaces gla-

brous, abaxially glaucous, secondary veins 10–15 pairs, base rounded to broadly cuneate, margin entire to sparsely serrate apically, apex long acuminate. Inflorescence terminal, axes white stellate tomentose; primary axis ca. 7 cm, of 4 or 5 umbels; peduncles 1–2 cm; umbels 1.5–2.5 cm in diam.; pedicels 3–4 mm. Ovary 3- or 4-carpellate. Fruit oblong-globose (immature), ca. 3.5 mm in diam.; styles persistent, ca. 2 mm. Fl. Dec, fr. Jun.

• Forests or dry valleys; 400–1300 m. Guangxi, Guizhou, Yunnan.

**22. *Brassaiopsis tripteris*** (H. Léveillé) Rehder, J. Arnold Arbor. 10: 115. 1934.

显脉罗伞 xian mai luo san

*Heptapleurum tripteris* H. Léveillé, Bull. Acad. Int. Géogr. Bot. 24: 145. 1914; *Acanthopanax phanerophlebius* Merrill & Chun; *Brassaiopsis phanerophlebia* (Merrill & Chun) P. N. Hô; *Eleutherococcus phanerophlebius* (Merrill & Chun) S. Y. Hu.

Shrubs, to 2 m tall, hermaphroditic. Branches with short conic prickles. Leaves palmately compound, with 3(–5) leaflets; petiole 8–13 cm; petiolules very short or leaflets subsessile; leaflets obovate-oblong, 10–18 × 4–8 cm, lateral ones asymmetric, papery, both surfaces glabrous, base attenuate to cuneate, margin setose-serrulate, apex acute or acuminate. Inflorescence terminal, erect, unarmed, bristly and ferruginous tomentose or nearly glabrous; primary axis 2–4 cm, with 2 or 3 umbels; peduncles 1–4 cm; umbels 1.5–2.5 cm in diam. at anthesis; pedicels 1–1.5 cm, slender. Ovary 2-carpellate; styles columnar, ca. 2 mm. Fruit not seen. Fl. Oct.

• Forest margins on mountain slopes; below 1000 m. Guangdong, Guangxi, Guizhou, Yunnan.

**23. *Brassaiopsis angustifolia*** K. M. Feng, Fl. Yunnan. 2: 471. 1979.

狭叶罗伞 xia ye luo san

Shrubs, to ca. 2 m tall. Branches prickly, densely ferruginous tomentose when young, glabrescent. Leaves palmately compound, with (4 or) 5 leaflets; petiole 9–25 cm, slender, ferruginous tomentose when young; leaflets sessile or petiolules less than 1 cm; leaflets narrowly lanceolate, 13–24 × 1.5–2.5 cm, lateral ones usually slightly asymmetric, papery, abaxially sparsely ferruginous stellate tomentose, adaxially glabrous, secondary veins 12–21 pairs, base cuneate, margin serrulate, apex long acuminate. Inflorescence pseudo-lateral, a raceme of 3 or 4 umbels, ferruginous tomentose and sparsely prickly; primary axis ca. 8 cm; peduncles 1.5–2 cm; umbels ca. 2 cm in diam.; pedicels ca. 7 mm, ferruginous tomentose when young. Ovary 2-carpellate. Fruit unknown. Fl. Nov.

Forests in valleys or on hillsides; ca. 2100 m. S Yunnan [N Vietnam].

**24. *Brassaiopsis gracilis*** Handel-Mazzetti, Sinensia 3: 197. 1933.

细梗罗伞 xi geng luo san

Shrubs, to 4 m tall, hermaphroditic. Branches prickly, glabrous. Leaves palmately compound, with 5–9 leaflets; petiole

6–16 cm, slender; petiolules 0–1.5 cm, sparsely pubescent; leaflets ovate to elliptic-lanceolate, 8–20 × 3–8 cm, membranous, abaxially glabrous or sparsely pubescent, adaxially with scattered short bristles, secondary veins 6–8 pairs, base narrowly cuneate to nearly acuminate, margin serrulate, apex long acuminate, rarely acute. Inflorescence axillary, unarmed, densely ferruginous tomentose; primary axis to ca. 10 cm, with 4 or

5(–10) umbels; peduncles 2–4(–5) cm; umbels 1.5–2.5 cm in diam.; pedicels filiform, 5–9 mm, expanding in fruit to 1.5 cm. Ovary 2-carpellate. Fruit subglobose, ca. 5 mm in diam.; styles persistent, ca. 2.5 mm. Fl. Aug–Oct, fr. Oct–Dec.

Evergreen forests or scrub; 1000–1600 m. Guangxi, Guizhou, Yunnan [N Vietnam].

### 13. *GAMBLEA* C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 739. 1879.

萸叶五加属 *yu ye wu jia shu*

*Acanthopanax* sect. *Evodiopanax* Harms; *Evodiopanax* (Harms) Nakai.

Trees or shrubs, evergreen, hermaphroditic or andromonoecious, unarmed. Leaves palmately compound, borne on long and short shoots; leaflets (1–)3–5, sessile or subsessile, margin entire to serrulate, usually with ciliate-hispid teeth, abaxially with domatia in axils of secondary veins; stipules obsolete. Inflorescence terminal on short shoots, a simple or compound umbel, or a panicle of umbels, solitary or several together. Pedicels not articulate below ovary. Calyx rim entire or 4- or 5-toothed. Petals 4(or 5), valvate. Stamens 4(or 5). Ovary 2–4(or 5)-carpellate; styles 2–4(or 5), free or united for most of length. Fruit a drupe, ellipsoid to globose or slightly obloid, sometimes compressed laterally. Seeds 2–4(or 5); endosperm smooth.

Four species: Bhutan, S China, India, Indonesia (Sumatra), Japan, Laos, Malaysia, N Myanmar, Nepal, N Vietnam; two species in China.

- 1a. Fruit 4–5.5(–6) × 4.5–6(–6.5) mm, calyx teeth caducous (occasionally minute and persistent); leaflets broadly elliptic to ovate, (1.8–)2–3 × as long as wide (occasionally narrowly elliptic), margins entire to minutely serrulate, often with distinct ciliate-hispid teeth ..... 1. *G. ciliata*  
 1b. Fruit 7–9 × 7–11 mm; calyx teeth 4 or 5, triangular, usually persistent; leaflets narrowly elliptic to slightly ovate, 3–4.5 × as long as wide, margins distinctly serrulate, with a small ciliate-hispid appendage 0.2–0.5 mm ..... 2. *G. pseudoevodiifolia*

**1. *Gamblea ciliata*** C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 740. 1879.

萸叶五加 *yu ye wu jia*

Shrubs or trees, to 12 m tall. Petiole 5–10 cm; leaflets (1–)3–5, elliptic to ovate, occasionally narrowly elliptic, 6–18(–21) × (2.5–)3–7(–8) cm, (1.8–)2–3 × as long as wide, papery to subleathery, secondary veins 5–14 pairs, distinctly raised abaxially, domatia obscure abaxially, base cuneate, margin subentire or minutely serrulate, often with distinct ciliate-hispid teeth to 1.5(–2) mm, apex shortly acuminate to acuminate. Inflorescence a compound umbel or panicle of umbels; primary axis (4–)5–18 cm; pedicels 0.8–1.5 cm. Calyx a narrow rim, sometimes with 4 or 5 minute teeth. Ovary 2–5-carpellate; styles 2–5, united 1/4–3/4 of length, recurved apically. Fruit globose or oblong-globose, occasionally slightly compressed laterally, 4–5.5(–6) cm × 4.5–6(–6.5) mm, often somewhat ribbed when dry; styles persistent, ca. 2 mm. Fl. May–Sep, fr. Jun–Aug.

Forests in humid valleys or on slopes; (800–)1400–3700 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang [Bhutan, India, Myanmar, Nepal, N Vietnam].

This species is used medicinally and for timber.

- 1a. Flowers and fruit with (2 or)3 or 4(or 5) style branches; largest leaflets (8–)10–20 cm, with (6–)8–14 pairs of secondary veins; fruit with a disk (1–)1.5–3 mm in diam. .... 1a. var. *ciliata*  
 1b. Flowers and fruit with 2(or 3) style branches; largest leaflets 5–9(–14) cm, with 5–8 pairs of secondary veins; fruit

with a disk (0.8–)1.5–1.7 mm in diam.

..... 1b. var. *evodiifolia*

#### 1a. *Gamblea ciliata* var. *ciliata*

萸叶五加(原变种) *yu ye wu jia (yuan bian zhong)*

*Acanthopanax evodiifolius* Franchet var. *ferrugineus* W. W. Smith; *A. evodiifolius* var. *glaucus* K. M. Feng; *A. evodiifolius* var. *gracilis* W. W. Smith; *Evodiopanax evodiifolius* (Franchet) Nakai var. *ferrugineus* (W. W. Smith) Nakai; *E. evodiifolius* var. *glaucus* (K. M. Feng) H. Ohashi; *E. evodiifolius* var. *gracilis* (W. W. Smith) S. Y. Hu; *E. ferrugineus* (W. W. Smith) Grushvitzky & Skvortsova; *E. gracilis* (W. W. Smith) Grushvitzky & Skvortsova.

Largest leaflets (8–)10–20 cm, with (6–)8–14 pairs of secondary veins. Flowers and fruit with (2 or)3 or 4(or 5) style branches. Fruit with a disk (1–)1.5–3 mm in diam.  $2n = 48$ .

Forests in humid valleys or on slopes; 1400–3500 m. Sichuan, Xizang, Yunnan [Bhutan, India, Myanmar, Nepal].

**1b. *Gamblea ciliata* var. *evodiifolia*** (Franchet) C. B. Shang et al., *Adansonia*, sér. 3, 22: 51. 2000 [*“evodiaefolia”*].

吴茱萸五加 *wu zhu yu wu jia*

*Acanthopanax evodiifolius* Franchet, J. Bot. (Morot) 10: 306. 1896; *A. ehongensis* Z. T. Zhu; *Evodiopanax evodiifolius* (Franchet) Nakai.

Largest leaflets 5–9(–14) cm, with 5–8 pairs of secondary veins. Flowers and fruit with 2(or 3) style branches. Fruit with a disk (0.8–)1.5–1.7 mm in diam.

Forests; (800–)1800–3700 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang [N Vietnam].

**2. *Gamblea pseudoevodiifolia*** (K. M. Feng) C. B. Shang et al., *Adansonia*, sér. 3, 22: 55. 2000 [*"pseudoevodiaefolia"*].

大果莢叶五加 da guo yu ye wu jia

*Acanthopanax evodiifolius* Franchet var. *pseudoevodiifolius* K. M. Feng, Fl. Yunnan. 2: 485. 1979; *Evodiopanax evodiifolius* (Franchet) Nakai var. *pseudoevodiifolius* (K. M. Feng) H. Ohashi; *E. pseudoevodiifolius* (K. M. Feng) F. N. Wei.

Shrubs or trees, to 15 m tall. Petiole 5–10 cm; leaflets (3 or)4 or 5, narrowly elliptic to slightly so, 11–17.5 × 3–5 cm,

3–5 × as long as wide, papery to subleathery, secondary veins 7–10 pairs, distinctly raised abaxially, domatia obscure abaxially, base acute to obtuse (rarely nearly rounded), margin distinctly serrulate, with a small ciliate-hispid appendage 0.2–0.5 mm, apex acute to acuminate. Inflorescence a compound umbel; primary axis very short or absent; secondary axes 4–11 cm, borne directly from ends of short shoots; pedicels 7–20 mm (in fruit). Calyx of 4 or 5 persistent, triangular teeth. Ovary 2-carpellate; styles 2, free nearly to base or united to 1/4 of length, recurved apically. Fruit broadly ellipsoid to globose or slightly obloid, occasionally slightly compressed laterally, 7–9 cm × 7–10 mm; styles persistent, ca. 1 mm. Fr. Jul–Oct.

Mixed forests on mountain slopes; 1400–1800 m. SW Guangxi, SE Yunnan [Laos, N Vietnam].

## 14. *CHENGIOPANAX* C. B. Shang & J. Y. Huang, Bull. Bot. Res., Harbin 13: 47. 1993.

人參木属 ren shen mu shu

*Acanthopanax* sect. *Sciadophylloides* Harms, Mitt. Deutsch. Dendrol. Ges., ed. 2, 27: 30. 1918.

Trees, deciduous, hermaphroditic, unarmed. Leaves palmately compound, borne on both long and short shoots (latter not always preserved on specimens); leaflets 3–7(–9), margin minutely serrulate, abaxially with small, pubescent secretory structures in axils of secondary veins; stipules small, united within petiole. Inflorescence a terminal corymbose panicle of umbels; primary axis short; bracts caducous. Pedicels not articulate below ovary. Calyx rim 5-toothed. Petals 5, valvate. Stamens 5. Ovary 2-carpellate; styles 2, united throughout into a persistent column. Fruit a drupe, laterally compressed, globose. Seeds 2; endosperm uniform.

Two species: China, Japan; one species (endemic) in China.

**1. *Chengiopanax fargesii*** (Franchet) C. B. Shang & J. Y. Huang, Bull. Bot. Res., Harbin 13: 48. 1993.

人參木 ren shen mu

*Heptapleurum fargesii* Franchet, J. Bot. (Morot) 10: 306. 1896; *Acanthopanax fargesii* (Franchet) C. B. Shang; *A. sinensis* G. Hoo; *Eleutherococcus fargesii* (Franchet) H. Ohashi.

Trees deciduous, to ca. 25 m tall. Trunk to 60 cm d.b.h.; branches, leaves, and inflorescences densely shortly ferruginous stellate tomentose when young, glabrescent. Petiole 13–50 cm; leaves palmately compound; petiolules to 1.5 cm; leaflets 5–7(–9), elliptic to oblong or lanceolate, 4.5–13 × 1.6–6 cm, papery or subleathery, both surfaces glabrous, except shortly

pubescent below axils of secondary veins (secretory structures), base broadly cuneate, margin minutely serrulate, apex acute to acuminate. Inflorescence terminal, a corymbose panicle, 20–30 cm wide, main axis to ca. 4 cm (sometimes very short), secondary axes 10–20 cm; bracts caducous; peduncles 1–2 cm; umbels 8–20-flowered, 7–10 mm in diam.; pedicels 3–6 mm. Calyx rim 5-toothed. Ovary 2-loculed; styles united into a column. Fruit 4–6 mm in diam.; persistent styles 1.5–2 mm. Fl. Sep, fr. Nov–Dec.

• Mixed forests on mountain slopes; 1000–2000 m. Chongqing (Wanxian), SW Hunan (Xinning).

This species is used for timber.

## 15. *SCHEFFLERA* J. R. Forster & G. Forster, Char. Gen. Pl. 23. 1775, nom. cons.

鹅掌柴属 e zhang chai shu

*Agalma* Miquel; *Heptapleurum* Gaertner; *Sciodaphyllum* P. Browne.

Shrubs or trees, sometimes climbers or epiphytes, evergreen, hermaphroditic or andromonoecious, unarmed. Leaves palmately compound, rarely unifoliate (not in China), margins entire to serrate; stipules united within petiole. Inflorescence a terminal or pseudo-lateral panicle or compound raceme; flowers arranged in umbels, heads, or racemes; bracts pubescent, deciduous or persistent. Pedicels not articulate below ovary. Calyx rim entire or 5-toothed. Petals 5–11, valvate. Stamens 5–11. Ovary (4 or)5–11-carpellate; styles partly or completely united into a column or stigmas sessile. Fruit a drupe, globose or ovoid. Seeds (4 or)5–11, laterally compressed; endosperm uniform or slightly ruminant.

Nearly 1100 species: widely distributed in tropics and subtropics of both hemispheres; 35 species (14 endemic) in SW and SE China.

Several recent phylogenetic studies have shown that *Schefflera* is clearly polyphyletic (Lowry et al., S. Afr. J. Bot. 70: 382–392. 2004; Plunkett et al., Pl. Syst. Evol. 245: 1–39. 2004; Plunkett et al., Ann. Missouri Bot. Gard. 92: 202–224. 2005) and that the Asian species belong to a single, well-supported, morphologically coherent clade. The name *Schefflera* will ultimately have to be restricted to a small group of species from the SW Pacific while the Asian species will have to be transferred to one or more other genera.

We were unable to treat *Schefflera cavaleriei* (H. Léveillé) Frodin (World Checklist Bibliogr. Araliaceae, 330. 2004 ["2003"]; *Heptapleurum cavaleriei* H. Léveillé, Repert. Spec. Nov. Regni Veg. 9: 326. 1911) because the original description is not sufficiently detailed to associate the name with any of the species recognized here, and we were unable to locate the type material, which was collected in Guizhou according to the protologue.

- 1a. Inflorescence a panicle of racemes or spikes; styles united into a column.
- 2a. Flowers borne in spikes, sessile; leaflets abaxially densely stellate tomentose, tertiary veins indistinct ..... 1. *S. delavayi*
- 2b. Flowers borne in racemes, with a distinct pedicel, abaxially glabrous or sparsely stellate pubescent, tertiary veins distinct.
- 3a. Leaflets 12–16, rarely 7–9.
- 4a. Leaflets abaxially stellate pubescent (sometimes very sparsely so on veins), some smaller than others, but never bractlike; lateral veins 8–15 pairs ..... 2. *S. chapana*
- 4b. Leaflets abaxially glabrous, some highly reduced and bractlike, lateral veins 5–8 pairs.
- 5a. Leaves adaxially with tertiary veins impressed in dry material ..... 3. *S. metcalfiana*
- 5b. Leaves adaxially with tertiary veins raised in dry material ..... 4. *S. hainanensis*
- 3b. Leaflets 3–9.
- 6a. Leaflets abaxially moderately to densely stellate pubescent, margin sparsely serrate, tertiary venation adaxially impressed in dry material, abaxially raised ..... 5. *S. wardii*
- 6b. Leaflets abaxially glabrous, margin entire, tertiary venation adaxially not impressed in dry material.
- 7a. Petiolules to 1(–1.3) cm ..... 6. *S. shweliensis*
- 7b. Petiolules longer than 1.5 cm.
- 8a. Leaflets adaxially shiny, lateral veins 16–22 pairs, diverging from midvein at more than 45° angle ..... 7. *S. multinervia*
- 8b. Leaflets adaxially not shiny, lateral veins 8–12(–16) pairs, diverging from midvein at less than 45° angle.
- 9a. Petals and stamens 5; ovary 5-carpellate ..... 8. *S. hoi*
- 9b. Petals and stamens 6; ovary 6-carpellate ..... 9. *S. taiwaniana*
- 1b. Inflorescence a panicle of umbels or heads; styles distinct or none.
- 10a. Styles none, stigmas sessile.
- 11a. Inflorescence with stalked, branched trichomes; largest leaflet more than 11.5 cm wide (rarely only ca. 8 cm wide) ..... 10. *S. petelotii*
- 11b. Inflorescence with stellate trichomes but lacking stalked, branched trichomes; largest leaflet no more than 9 cm wide (rarely to 16 cm in *S. elliptica*).
- 12a. Flowers and fruit in heads, sessile or subsessile ..... 11. *S. pauciflora*
- 12b. Flowers and fruit distinctly pedicellate.
- 13a. Fruit red-brown glandular punctate; disk rounded to flat.
- 14a. Ovary 5-carpellate, stigmas 5; calyx obscure, reduced to a line; disk rounded to nearly flat; leaflets subleathery ..... 12. *S. leucantha*
- 14b. Ovary (7 or)8- or 9-carpellate, stigmas 7–9; calyx evident, forming a distinct rim; disk flat to slightly depressed; leaflets membranous to papery ..... 13. *S. zhuana*
- 13b. Fruit not glandular punctate; disk usually broadly conic to pyramidal.
- 15a. Ovary 5-loculed ..... 14. *S. elliptica*
- 15b. Ovary 6–9(or 10)-loculed.
- 16a. Leaflets 7–9, blade of largest less than 12 cm, secondary veins 4–6 pairs; ovary 6-loculed ..... 15. *S. arboricola*
- 16b. Leaflets 5–7, blade of largest 17–35 cm, secondary veins 12–16 pairs; ovary 6–9(or 10)-loculed; inflorescence pseudo-lateral, borne below leaves ..... 16. *S. khasiana*
- 10b. Styles distinct, or united into a column.
- 17a. Styles free at least apically, free arms radiating to recurved (appressed at anthesis, but not fused).
- 18a. Flowers long pedicellate, arranged in umbels ..... 17. *S. hypoleucoides*
- 18b. Flowers sessile or subsessile (pedicel to 3 mm, but usually obscure), arranged in compact heads.
- 19a. Leaflets elliptic to slightly ovate, 8–23 × 4–12 cm, base broadly cuneate or rounded; calyx margin entire or subentire ..... 18. *S. chinensis*
- 19b. Leaflets lanceolate to elliptic-lanceolate, 12–26 × 3–6 cm, base cuneate; calyx margin with 5 sharp teeth ..... 19. *S. guizhouensis*
- 17b. Styles completely united into a column.
- 20a. Inflorescence pseudo-lateral, borne below leaves (at least in fruit).
- 21a. Leaflets 7–9(–12), leathery, petiole 7–10 mm in diam. at base, with a prominent ligule 15–20 mm; ovary 6-carpellate ..... 34. *S. lociana*
- 21b. Leaflets 5–7, membranous, petiole 2–4 mm in diam. at base, with a small ligule 2–5 mm; ovary 6–10-carpellate ..... 35. *S. brevipedicellata*
- 20b. Inflorescence terminal.
- 22a. Leaflets abaxially stellate pubescent, at least when young (sometimes minute and scattered).

- 23a. Petals stellate pubescent; terminal leaflet often more than 8 cm wide (sometimes narrower in *S. hypoleuca*).
- 24a. Leaf apically acute; inflorescence stellate pubescent or glabrous, inflorescence with primary axis 15–30(–40) cm ..... 20. *S. hypoleuca*
- 24b. Leaf apically acuminate; inflorescence densely ferruginous-brown stellate pubescent (glabrescent), primary axis to ca. 75 cm ..... 21. *S. macrophylla*
- 23b. Petals glabrous; terminal leaflets less than 8 cm wide.
- 25a. Secondary and tertiary veins adaxially impressed in dry material.
- 26a. Leaflets oblong or elliptic to slightly obovate, abaxially densely yellow-brown stellate pubescent; inflorescence rounded, primary axis to 15(–25) cm ..... 22. *S. fengii*
- 26b. Leaflets narrowly obovate to oblanceolate, abaxially gray stellate pubescent or sparsely pubescent; inflorescence tall, primary axis 25–40 cm ..... 23. *S. rhododendrifolia*
- 25b. Secondary and tertiary veins adaxially not impressed in dry material.
- 27a. Styles stout, shorter than 1.5 mm in fruit; ovary 5–9(or 10)-carpellate; inflorescence axes light to rusty brown pubescent ..... 24. *S. heptaphylla*
- 27b. Styles slender, longer than 1.5 mm in fruit; ovary 5(or 6)-carpellate; inflorescence axes not light to rusty brown pubescent.
- 28a. Inflorescence compact, primary axis 5–15(–17) cm, gray or brown tomentose; margins of leaflets often sparsely to moderately serrulate ..... 25. *S. bodinieri*
- 28b. Inflorescence elongate, primary axis at least 25 cm, densely yellow-brown or ferruginous pubescent; margins of leaflets usually entire, sometimes sparsely serrulate.
- 29a. Leaflets 7, elliptic, abaxially ferruginous stellate pubescent ..... 26. *S. marlipoensis*
- 29b. Leaflets (5–)9–13, ovate to ovate-lanceolate or oblong-lanceolate, abaxially minutely stellate pubescent ..... 27. *S. minutistellata*
- 22b. Leaflets abaxially completely glabrous.
- 30a. Leaflets less than 2 cm wide, linear-oblong, abaxially ferruginous pubescent ..... 28. *S. parvifoliolata*
- 30b. Leaflets more than 2.5 cm wide.
- 31a. Leaflets obovate-oblong, broadest in distal half.
- 32a. Leaves with secondary and tertiary veins adaxially impressed in dry material ..... 29. *S. glabrescens*
- 32b. Leaves with secondary and tertiary veins adaxially not impressed in dry material ..... 30. *S. napuoensis*
- 31b. Leaflets ovate-lanceolate or elliptic, broadest at middle or in basal half.
- 33a. Leaflets leathery, elliptic, secondary and tertiary veins adaxially impressed in dry material; inflorescence a corymbose panicle, glabrous ..... 31. *S. pes-avis*
- 33b. Leaflets papery to subleathery, secondary and tertiary veins adaxially not impressed in dry material; inflorescence paniculate, ± pubescent.
- 34a. Ovary 5–9(or 10)-carpellate, styles shorter than 1.5 mm ..... 24. *S. heptaphylla*
- 34b. Ovary 5-carpellate, styles (1–)1.5–3.5 mm.
- 35a. Inflorescence compact, primary axis 5–15(–17) cm, gray or brown tomentose ..... 25. *S. bodinieri*
- 35b. Inflorescence elongate, primary axis at least (20–)30 cm.
- 36a. Petals stellate pubescent ..... 20. *S. hypoleuca*
- 36b. Petals glabrous.
- 37a. Leaflets oblong-lanceolate, 20–25 × 5.5–6.5 cm, apex acuminate ..... 32. *S. elata*
- 37b. Leaflets oblong-elliptic or elliptic, 11–15 × 5–9 cm, apex abruptly acute ..... 33. *S. insignis*

**1. Schefflera delavayi** (Franchet) Harms, Bot. Jahrb. Syst. 29: 486. 1900.

穗序鹅掌柴 sui xu e zhang chai

*Heptapleurum delavayi* Franchet, J. Bot. (Morot) 10: 307. 1896; *Agalma delavayi* (Franchet) Hutchinson; *A. discolor* (Merrill) Hutchinson; *H. dunnianum* H. Léveillé; *Schefflera delavayi* var. *ochrascens* Handel-Mazzetti; *S. discolor* Merrill; *S. megalobotrya* Harms.

Trees, to 8 m tall, hermaphroditic. Petiole (10–)15–60 cm; petiolules 1–15 cm; leaflets (4 or)5, elliptic to ovate-oblong or ovate-lanceolate, 8–30(–35) × 3–12 cm, papery to leathery, abaxially densely gray-white or yellow-brown stellate tomentose, adaxially glabrous, secondary veins 7–13 pairs, tertiary

veins indistinct, base acute to obtuse or rounded, margin entire to sparsely and irregularly dentate (incised or usually pinnately lobed in young plants), apex abruptly acute to acuminate. Inflorescence terminal, a panicle of spikes, gray-white tomentose; primary axis 25–80 cm; secondary axes to ca. 30 cm. Flowers sessile. Calyx tomentose, distinctly 5-toothed. Ovary 5-carpellate; styles united into a column. Fruit globose, 3.5–4 mm in diam., 5-ribbed when dry; styles ca. 2 mm; pedicels to ca. 1 mm. Fl. Oct–Nov, fr. Jan.  $2n = 48$ .

Evergreen broad-leaved forests, wet forest margins, and as scattered trees in valleys or on stream banks; 600–3000 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan [Vietnam].

This species is used medicinally.

**2. Schefflera chapana** Harms, Notizbl. Bot. Gart. Berlin-Dahlem 13: 449. 1937.

异叶鹅掌柴 yi ye e zhang chai

*Agalma diversifoliolatum* (H. L. Li) Hutchinson; *Schefflera diversifoliolata* H. L. Li; *S. pingpienensis* C. J. Tseng & G. Hoo.

Trees, to 10 m tall, hermaphroditic. Petiole 20–50 cm; petiolules 0.5–7(–11) cm; leaflets (7–)12–14, elliptic to ovate-lanceolate, 8–18(–21) × 1.8–8.5 cm (lateral leaflets sometimes smaller), papery, abaxially glabrous or sparsely stellate pubescent, adaxially glabrous, secondary veins 8–15 pairs, raised abaxially, tertiary veins distinct, base acute to rounded, margin entire, apex acuminate. Inflorescence a terminal panicle of racemes, sparsely stellate pubescent or subglabrous; primary axis to ca. 40 cm; secondary axes to ca. 30 cm, racemes borne in apical half or nearly to base; pedicels 1.5–3 mm. Calyx sparsely stellate pubescent, 5-toothed. Ovary 5-carpellate; styles united into a column. Fruit globose, ca. 4 mm in diam., 5-ribbed when dry; styles to ca. 1.5 mm. Fl. Sep–Dec, fr. Nov–Dec, May.

Forests in valleys; 1600–2200 m. SE Yunnan [Vietnam].

**3. Schefflera metcalfiana** Merrill ex H. L. Li, Sargentia 2: 25. 1942.

多叶鹅掌柴 duo ye e zhang chai

Shrubs or trees, to 6 m tall, probably hermaphroditic. Petiole 13–22 cm; petiolules 1–4.5 cm; leaflets 12–16, ovate to ovate-elliptic or oblong-elliptic, 3–9 × 1.5–4.5 cm, papery or subleathery, both surfaces glabrous, secondary veins 5–8 pairs, more conspicuous abaxially, tertiary veins impressed adaxially in dry material, base cuneate to broadly cuneate, margin entire or with 2–4 sparse serrations, apex acuminate. Inflorescence a terminal panicle of racemes, yellowish gray stellate pubescent; primary axis to ca. 50 cm; secondary axes to ca. 60 cm; pedicels 4–6 mm. Calyx pubescent, 5-toothed. Ovary 5-carpellate; styles united into a column. Fl. Oct–Nov, fr. Dec.

Scattered in forests, mountain slopes; ca. 1400 m. SW Guangxi [Vietnam].

**4. Schefflera hainanensis** Merrill & Chun, Sunyatsenia 2: 295. 1935.

海南鹅掌柴 hai nan e zhang chai

*Agalma hainanense* (Merrill & Chun) Hutchinson.

Trees, to 10 m tall, hermaphroditic. Petiole 10–20(–30) cm; petiolules 1.5–7 cm; leaflets 12–16, ovate to elliptic-ovate, 5–12 × 2–6 cm, some much smaller and resembling bracts, papery, glabrous, slightly glaucous abaxially, secondary veins 7–10 pairs, distinct on both surfaces, tertiary veins more distinct abaxially, slightly distinct adaxially, not impressed in dry material, base broadly cuneate, margin entire, slightly revolute, apex acuminate. Inflorescence a terminal panicle of racemes, densely stellate tomentose, glabrescent; primary axis to 40 cm; secondary axes to ca. 15 cm; pedicels 2–2.5 mm. Calyx glabrous or stellate pubescent, 5-toothed. Ovary 5-carpellate; styles united into a column. Fruit globose, 2.5–4 mm in diam., slightly 5-ribbed when dry; styles 1–2 mm; pedicels ca. 3 mm. Fl. Sep–Oct, fr. Oct–Nov.

Evergreen broad-leaved forests; 1300–1600 m. Hainan [Vietnam].

**5. Schefflera wardii** Marquand & Airy Shaw, J. Linn. Soc., Bot. 48: 186. 1929.

西藏鹅掌柴 xi zang e zhang chai

*Agalma wardii* (Marquand & Airy Shaw) Hutchinson.

Shrubs or small trees, to 8 m tall, hermaphroditic. Petiole (10–)20–50 cm; petiolules 3–17 cm; leaflets 3–5, broadly ovate to nearly oblong, (12–)20–35 × 10–18 cm, leathery, abaxially densely yellowish or light brown stellate pubescent, adaxially glabrous, secondary veins 9–14 pairs, tertiary veins raised abaxially, distinctly impressed adaxially in dry material, base rounded, margin remotely to moderately serrate, especially toward apex, apex acute. Inflorescence a terminal panicle of racemes, yellow-white tomentose, sometimes glabrescent; primary axis 15–65 cm; secondary axes to ca. 25 cm; pedicels ca. 3 mm, to ca. 5 mm in fruit, densely stellate pubescent. Calyx densely stellate pubescent, 5-toothed. Ovary 5-carpellate; styles united into a column. Fruit globose, 3.5–4 mm in diam.; pedicels to ca. 5 mm. Fl. Dec.

• Dense forests; 2000–2500 m. SE Xizang, NW Yunnan.

**6. Schefflera shweliensis** W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 65. 1917.

瑞丽鹅掌柴 rui li e zhang chai

*Agalma shweliense* (W. W. Smith) Hutchinson.

Trees, to 20 m tall, probably andromonoecious. Petiole (8–)12–24 cm; petiolules to (1–)1.5 cm; leaflets 5–9(–11), narrowly obovate to oblanceolate, 6–15 × 1.5–3.5(–4) cm, leathery, both surfaces glabrous, secondary veins 7–9 pairs, nearly obscure to conspicuous on both surfaces, tertiary veins indistinct, base narrowly acute, margin entire, apex long acuminate. Inflorescence a terminal panicle of racemes, gray-white stellate pubescent, glabrescent; primary axis 15–40 cm; secondary axes often present only in basal portion of primary axis, to 13 cm; pedicels 2–4 mm. Calyx glabrous to sparsely stellate pubescent, 5-toothed. Ovary 5(or 6)-carpellate; styles united into a column. Fruit blue-black when mature, globose, 4–5 mm in diam., 5-ribbed when dry; style 1.5–2.5 mm. Fl. Aug–Nov, fr. Oct–Jan.  $2n = 48^*$ .

• Evergreen broad-leaved forests, forest margins, dry mountain slopes; 1900–2800 m. W Yunnan.

This species is used for timber.

**7. Schefflera multinervia** H. L. Li, Sargentia 2: 29. 1942.

多脉鹅掌柴 duo mai e zhang chai

*Agalma multinervium* (H. L. Li) Hutchinson.

Trees, to 8 m tall, probably andromonoecious. Petiole 8–22 cm; petiolules 2–5 cm; leaflets 5, narrowly obovate to narrowly elliptic, 15–30 × 2–5 cm, papery to subleathery, both surfaces glabrous, secondary veins 16–30 pairs, conspicuous on both surfaces, base cuneate to acute, margin entire, apex acuminate. Inflorescence a terminal panicle of racemes, ferruginous or sparsely stellate pubescent, sometimes glabrescent; primary axis to 25 cm or more; secondary axes ca. 20 cm, ferruginous.

Calyx sparsely stellate to glabrous, inconspicuously 5-toothed. Ovary 5-carpellate; styles united into a column. Fruit unknown. Fl. Sep.

- Forests; ca. 3200 m. Yunnan.

This species closely resembles *Schefflera hoi* and may prove to be the same taxon.

**8. *Schefflera hoi*** (Dunn) R. Viguier, Ann. Sci. Nat., Bot., sér. 9, 9: 333. 1909.

红河鹅掌柴 hong he e zhang chai

*Heptapleurum hoi* Dunn, J. Linn. Soc., Bot. 35: 498. 1903; *Agalma dumicola* (W. W. Smith) Hutchinson; *A. hoi* (Dunn) Hutchinson; *Schefflera dumicola* W. W. Smith; *S. dumicola* f. *acuta* (C. J. Tseng & G. Hoo) Frodin; *S. hoi* f. *acuta* C. J. Tseng & G. Hoo; *S. hoi* var. *macrophylla* H. L. Li; *S. salweenensis* W. W. Smith; *S. salweenensis* var. *macrophylla* (H. L. Li) Frodin; *S. stenomera* Handel-Mazzetti.

Trees, to 12 m tall, andromonoecious. Petiole (6–)10–50(–60) cm; petiolules 1–5 cm; leaflets (3–)5–9, narrowly obovate to oblong, 5–22(–30) × 1.5–5(–10) cm, papery to subleathery, both surfaces glabrous, secondary veins 8–22 pairs, conspicuous on both surfaces, base rounded to acute, margin entire, apex acuminate, rarely acute. Inflorescence a terminal panicle of racemes, ferruginous or sparsely stellate pubescent, sometimes glabrescent; primary axis 15–50 cm; secondary axes 15(–25) cm, ferruginous; pedicels 2–4(–6) mm. Calyx rim 1.5–2.5 mm, sometimes scarious, sparsely stellate to glabrous, inconspicuously 5-toothed. Ovary 5-carpellate; styles united into a column. Fruit globose, 4–5 mm in diam., slightly 5-ribbed when dry; styles persistent, ca. 1.5 mm. Fl. Aug–Sep, fr. Aug–Nov.

Dense forests in valleys; 1400–3300 m. SW Sichuan, SE Xizang, Yunnan [Vietnam].

**9. *Schefflera taiwaniana*** (Nakai) Kanehira, Formos. Trees, rev. ed. 527. 1936.

台湾鹅掌柴 tai wan e zhang chai

*Agalma taiwanianum* Nakai, J. Arnold Arbor. 5: 19. 1924.

Trees, to 2–4 m tall, probably andromonoecious. Petiole 10–25 cm; petiolules 1–3 cm; leaflets 4–9, narrowly ovate to narrowly oblong, (5–)10–15 × (1.5–)2.5–5 cm, papery, both surfaces glabrous, secondary veins 5–7 pairs, nearly obscure, base narrowly acute, margin entire, apex acuminate. Inflorescence a terminal panicle of racemes, sparsely stellate pubescent, glabrescent; primary axis to 25(–30) cm; secondary axes often present only in basal portion of primary axis, to 10 cm; pedicels 5–6 mm. Calyx glabrous, inconspicuous 6-toothed. Ovary 6-carpellate; styles united into a column. Fruit globose, 5–7 mm in diam., style persistent, 1–2 mm. Fl. Aug–Oct, fr. Oct–Nov, Jan, Mar.

- Scattered in coniferous forests; 2000–2900 m. Taiwan (Ali Shan).

**10. *Schefflera petelotii*** Merrill, Univ. Calif. Publ. Bot. 10: 428. 1924.

金平鹅掌柴 jin ping e zhang chai

*Schefflera chinpingensis* C. J. Tseng & G. Hoo.

Shrubs, to 5 m tall, probably hermaphroditic. Petiole to 40 cm; petiolules 1.5–7 cm; leaflets 5 or 6, ovate or ovate-oblong, 11.5–35 × 8–15(–20) cm, leathery, abaxially sparsely stellate pubescent, adaxially glabrous, secondary veins 10–13 pairs, tertiary veins raised on both surfaces, base rounded, margin entire, minutely revolute, apex shortly caudate-acuminate, rarely obtuse. Inflorescence a terminal panicle of umbels, with dense, scattered, branched trichomes; primary axis 4–10 cm; secondary axes to 15 cm; pedicels 1.5–4 cm. Calyx glabrous to sparsely stellate pubescent, inconspicuously toothed. Ovary 5-carpellate; styles united into a very short column; disk slightly convex. Fruit unknown. Fl. Apr.

Forests or roadsides on mountain slopes; 300–500 m. SE Yunnan [Vietnam].

**11. *Schefflera pauciflora*** R. Viguier, Ann. Sci. Nat., Bot., sér. 9, 9: 357. 1909.

球序鹅掌柴 qiu xu e zhang chai

*Schefflera glomerulata* H. L. Li.

Trees to ca. 9 m tall, sometimes scandent shrubs to 15 m tall, hermaphroditic. Petiole 10–20 cm; petiolules 2–5 cm; leaflets (3–)5–7, ovate to elliptic or obovate, 8–20 × 3–9 cm, leathery, both surfaces glabrous, secondary veins ca. 8 pairs, tertiary veins prominent, raised on both surfaces, base cuneate, margin entire, apex shortly acuminate. Inflorescence a terminal panicle of heads, sparsely stellate tomentose, glabrescent; primary axis 5–35 cm; secondary axes to (15–)20 cm; flowers sessile or subsessile, 5–8 per head. Calyx ca. 1 mm, subentire. Ovary 5-carpellate; stigmas 5, sessile, inconspicuous. Fruit ovoid to subglobose or obovoid, 3–5 mm in diam., 5-ribbed when dry; disk conic-pentagonal. Fl. May, Jun, Sep, fr. Jun, Jul, Sep–Dec.

Evergreen broad-leaved forests in valleys or on mountain slopes; 200–1700 m. Guangdong, Guangxi, Guizhou, SE Yunnan [India, Laos, Vietnam].

This species is used medicinally.

**12. *Schefflera leucantha*** R. Viguier, Ann. Sci. Nat., Bot., sér. 9, 9: 358. 1909.

白花鹅掌柴 bai hua e zhang chai

*Schefflera kwangsiensis* Merrill ex H. L. Li; *S. tenuis* H. L. Li; *S. yunnanensis* H. L. Li.

Shrubs or climbers, sometimes epiphytes, hermaphroditic. Petiole 3–14(–17) cm; petiolules 0.5–3(–5) cm, slender; leaflets 5–7, obovate or elliptic, usually narrowly so, 5–12(–15) × 1.5–4(–6) cm, both surfaces glabrous, secondary veins 5–7 pairs, tertiary veins raised on both surfaces, prominent, base cuneate or broadly so, rarely nearly rounded, margin entire, minutely thickened, apex acuminate to caudate. Inflorescence a compact terminal panicle of umbels, sparsely pubescent; primary axis 1–4 cm; secondary axes 10(–15) cm; pedicels 2.5–7 mm. Calyx obscure. Ovary 5-carpellate; stigmas 5, sessile. Fruit globose to ovoid, rarely obovoid, 4–5 mm in diam., 5-ribbed when dry, generally conspicuously orange-red glandular punctate; disk slightly rounded to nearly flat. Fl. Jan–Feb, fr. Mar–Aug.



Evergreen broad-leaved forests in valleys; 1200–1700 m. SW Guangxi, NW Yunnan [Thailand, N Vietnam].

**13. *Schefflera zhuana*** Lowry & C. B. Shang, *Acta Phytotax. Sin.* 44: 644. 2006.

光华鹅掌柴 *guang hua e zhang chai*

Trees, to ca. 20 m tall, hermaphroditic. Petiole 3.5–18.5 cm; petiolules (0.5–)1.5–8 cm, slender; leaflets (4 or)5, elliptic to slightly ovate, 5.5–20.5 × 2.6–7.5 cm, both surfaces glabrous, secondary veins 6–8 pairs, tertiary veins raised on both surfaces, prominent, base rounded to broadly acute, margin entire, revolute, minutely thickened, apex acuminate. Inflorescence a terminal (rarely lateral) panicle of umbels, densely light gray stellate; primary axis 1–6 cm; secondary axes 5.5–8 cm; pedicels 1–2 mm. Calyx a narrow rim. Ovary (7 or)8 or 9-carpellate; stigmas (7 or)8 or 9, sessile. Fruit globose to slightly ovoid, 3.5–4 mm in diam., (7 or)8- or 9-ribbed when dry, conspicuously red-orange glandular punctate; disk weakly concave, slightly undulate. Fl. Dec–Jan, Apr, fr. Apr–May.

• Evergreen broad-leaved forests; 1400–2700 m. SE Xizang (Médog).

**14. *Schefflera elliptica*** (Blume) Harms in Engl. & Prantl, *Nat. Pflanzenfam.* 3(8): 39. 1894.

密脉鹅掌柴 *mi mai e zhang chai*

*Sciodaphyllum ellipticum* Blume, *Bijdr.* 878. 1826; *Hedera venosa* Wallich; *Paratropia pubigera* Brogniart & Planchon; *Schefflera fukienensis* Merrill; *S. pubicera* (Brogniart & Planchon) Frodin.

Shrubs or small trees, to 10 m tall, sometimes scandent or epiphytic. Petiole 4–14(–18) cm; petiolules 2–5 cm; leaflets 5–7, elliptic to oblong or obovate, 11–16(–26) × 4–6(–16) cm, leathery, both surfaces glabrous, secondary veins 5 or 6(–20) pairs, tertiary veins raised, prominent, base attenuate or obtuse to nearly rounded, margin entire, minutely thickened, sometimes revolute, apex acuminate to acute. Inflorescence a terminal panicle of umbels, sparsely to densely stellate when young, glabrescent; primary axis (2–)4–20(–30) cm; secondary axes to 18 cm; peduncles 0.5–1.5 cm; pedicels 2–3 mm. Calyx obscure. Ovary 5-carpellate; stigmas 5, sessile. Fruit ovoid to ellipsoid or subglobose, 3–4 mm, 5-ribbed when dry; disk broadly conic to pyramidal. Fl. Mar–Jul, fr. Feb–Jul, Oct.

Evergreen broad-leaved forests in valleys, or epiphytic on trees; 900–2100 m. Guangxi, Guizhou, W Hunan, Xizang, Yunnan [India, Thailand, Vietnam].

The name *Schefflera venulosa* (Wight & Arnott) Harms (*Paratropia venulosa* Wight & Arnott) has been misapplied to this species.

*Schefflera elliptica* is used medicinally.

**15. *Schefflera arboricola*** (Hayata) Merrill, *Lingnan Sci. J.* 5(1–2): 139. 1929.

鹅掌藤 *e zhang teng*

*Heptapleurum arboricola* Hayata, *Icon. Pl. Formosan.* 6: 23. 1916.

Shrubs, sometimes climbers, to 4 m tall, hermaphroditic.

Petiole (6–)10–20 cm; petiolules (0.6–)1–3 cm; leaflets (5–)7–9(or 10), obovate-oblong to oblong or elliptic, 6–10(–12) × (1–)1.5–3.5(–4.5) cm, subleathery, both surfaces glabrous, secondary veins 4–6 pairs, tertiary veins distinct, base cuneate to broadly so, margin entire, apex obtuse or abruptly acute, rarely attenuate. Inflorescence a terminal panicle of umbels, sparsely stellate tomentose, glabrescent; primary axis to 3–8 cm; secondary axes to 10 cm; pedicels less than 1.5–3 mm. Calyx subentire. Ovary 5- or 6-carpellate; stigmas sessile, 5 or 6. Fruit subglobose, ca. 5 mm, 5- or 6-ribbed when dry; pedicels 3–6 mm. Fl. Jul–Oct, fr. Aug–Dec.  $2n = 24^*$ .

• Along stream banks, wet forests, sometimes epiphytic; below 900 m. Hainan, Taiwan.

This species is used medicinally and as an ornamental.

**16. *Schefflera khasiana*** (C. B. Clarke) R. Viguier, *Ann. Sci. Nat., Bot., sér.* 9, 9: 351. 1909.

扁盘鹅掌柴 *bian pan e zhang chai*

*Heptapleurum khasianum* C. B. Clarke in J. D. Hook., *Fl. Brit. India* 2: 730. 1879; *Schefflera yui* C. J. Tseng & G. Hoo.

Trees, to ca. 10 m tall, hermaphroditic. Petiole 15–34 cm; petiolules 2.5–6 cm; leaflets 5–7(–9), oblong to elliptic, ovate or obovate, often narrowly so, 11–22 × 4–8 cm, leathery, both surfaces glabrous, secondary veins 12–16 pairs, inconspicuous abaxially, raised adaxially, base obtuse to rounded, margin entire, minutely thickened, revolute, apex shortly acuminate, often abruptly so. Inflorescence a pseudo-lateral panicle of umbels, gray white stellate pubescent, glabrescent; primary axis ca. 10 cm; secondary axes to ca. 30 cm; peduncles 0.5–1 cm; pedicels ca. 2.5 mm. Calyx subentire. Ovary 6–9(or 10)-carpellate; stigmas broadly conic, sessile. Fruit globose, ca. 4 mm in diam., slightly ribbed when dry. Fl. Apr–May, Nov, fr. May–Jul.

Evergreen forests; 800–1700 m. SE Xizang (Médog), SW Yunnan [India, N Vietnam].

**17. *Schefflera hypoleucoides*** Harms, *Repert. Spec. Nov. Regni Veg.* 16: 246. 1919.

离柱鹅掌柴 *li zhu e zhang chai*

*Schefflera hypoleucoides* var. *tomentosa* Grushvitzky & Skvortsova; *S. hypoleucoides* var. *truncata* C. B. Shang; *S. trevesioides* Harms; *S. trevesioides* var. *tomentosa* (Grushvitzky & Skvortsova) Frodin.

Trees, to 15 m tall, andromonoecious. Petiole 35–45 cm; petiolules 3–9 cm; leaflets oblong to elliptic or slightly ovate, (7–)11–26 × 5–13 cm, leathery, abaxially ferruginous or brownish stellate pubescent, later subglabrous, adaxially glabrous, secondary veins 10–16 pairs, raised abaxially, tertiary veins raised abaxially, base obtuse or subrounded, margin entire or with few sparse teeth apically, apex acuminate. Inflorescence a terminal panicle of umbels, densely ferruginous to light brown stellate, glabrescent; primary axis 15–35 cm; secondary axes to 20 cm, shorter apically, with a terminal umbel of bisexual flowers and several to many lateral umbels of male flowers; peduncles of male flowers to 2 cm; pedicels 7–15 mm (shorter in male flowers). Calyx subentire. Ovary 5-carpellate; styles 5, united only

at base, erect in flower. Fruit globose, ca. 7 mm in diam.; styles persistent, recurved. Fl. Dec–Jan, Mar, fr. Apr.

Dense forests; 1300–2400 m. NW Guangxi, SE Yunnan [Thailand, Vietnam].

**18. *Schefflera chinensis*** (Dunn) H. L. Li, *Sargentia* 2: 17. 1942.

中华鹅掌柴 zhong hua e zhang chai

*Oreopanax chinensis* Dunn, *J. Linn. Soc., Bot.* 35: 500. 1903; *Schefflera pentagyra* C. J. Tseng & G. Hoo; *S. wangii* H. L. Li.

Trees, to 10 m tall, probably andromonoecious. Petiole (10–)15–45 cm; petiolules 1–7 cm; leaflets 5–7, oblong-elliptic or elliptic to slightly ovate or obovate, (6–)10–24 × 3–12 cm, leathery, abaxially sparsely stellate pubescent or subglabrous, adaxially glabrous and sometimes shiny, secondary veins 8–12 pairs, raised, tertiary veins conspicuous abaxially, impressed adaxially in dry material, base broadly cuneate to nearly rounded, margin entire, sometimes serrate with 3–8 teeth apically, apex rounded to obtuse to acuminate. Inflorescence a terminal panicle of heads, densely woolly stellate pubescent, glabrescent; primary axis 20–35 cm; secondary axes to 15 cm, shorter apically, with a terminal head of bisexual flowers and 1 to few lateral heads of male flowers (caducous but leaving scars); flowers sessile or subsessile, heads globose. Calyx densely stellate pubescent, glabrescent. Ovary 5-carpellate; styles 5, ca. 1 mm, united at base, free apically. Fruit globose to obovoid or obloid, ca. 5 × 4.5–6 mm, 5-ribbed when dry; styles persistent, united for 1–1.5 mm, free arms recurved; pedicels to 1.5(–2) mm. Fl. Oct–Nov, fr. Feb–Mar.

• Evergreen broad-leaved forests, wet places in valleys, stream banks; 1500–2700 m. Jiangxi, SW Yunnan.

**19. *Schefflera guizhouensis*** C. B. Shang, *Candollea* 39: 484. 1984.

贵州鹅掌柴 gui zhou e zhang chai

Trees, probably andromonoecious. Petiole ca. 35 cm; petiolules 0.8–3 cm; leaflets 7 or 8, lanceolate or elliptic-lanceolate, 12–26 × 3–6 cm, papery, abaxially gray-yellow stellate pubescent, adaxially glabrous, secondary veins 12–14 pairs, raised abaxially, base acute, margin entire, minutely revolute, apex acuminate. Inflorescence a terminal panicle of heads, densely white woolly stellate pubescent; primary axis ca. 50 cm, glabrescent; secondary axis to ca. 15 cm, shorter apically, with a terminal head of bisexual flowers and 1 to few lateral heads of apparently male flowers, flowers sessile, heads globose. Calyx densely white stellate. Ovary 5-carpellate; styles 5, united at base, free apically. Fruit unknown. Fl. Oct.

• Dense forests. Guizhou.

**20. *Schefflera hypoleuca*** (Kurz) Harms in Engler & Prantl, *Nat. Pflanzenfam.* 3(8): 38. 1894.

白背鹅掌柴 bai bei e zhang chai

*Heptapleurum hypoleucum* Kurz, *Forest Fl. Burma* 1: 539. 1877.

Trees, to 10 m tall, andromonoecious. Petiole 30–50 cm;

petiolules (1–)2–10 cm; leaflets usually 7, often also with 1 much smaller leaflet, ovate to elliptic or oblong, 10–23 × 4–12 cm, papery to leathery, abaxially sparsely stellate tomentose (occasionally glabrous), adaxially glaucous and glabrous, secondary veins 8–12 pairs, conspicuous adaxially, base cuneate to rounded, margin entire, rarely serrate or lobed, apex acute. Inflorescence a terminal panicle of umbels, stellate pubescent or glabrous; primary axis 15–30(–40) cm; secondary axes to 23 cm, with a terminal umbel of bisexual flowers and usually 1–4 umbels of male flowers; pedicels 8–14 mm. Calyx sparsely stellate pubescent. Ovary 5-carpellate; styles united into a column; stigmas minutely capitate. Fruit subglobose to ovoid, 3–5 mm in diam.; styles persistent, ca. 3 mm. Fl. Jan–Feb, fr. Apr.

Dense forests; ca. 1300 m. Xizang (Mêdog), S Yunnan [India, Myanmar, Vietnam].

**21. *Schefflera macrophylla*** (Dunn) R. Viguier, *Ann. Sci. Nat., Bot.*, sér. 9, 9: 330. 1909.

大叶鹅掌柴 da ye e zhang chai

*Heptapleurum macrophyllum* Dunn, *J. Linn. Soc., Bot.* 35: 499. 1903.

Trees, to ca. 20 m tall, apparently hermaphroditic. Petiole 45–100 cm; petiolules 4–15 cm; leaflets 5–7, ovate-elliptic, 20–55 × 8–22 cm, leathery, abaxially densely white to light brown-orange tomentose, epidermis obscured, adaxially glabrous, secondary veins 8–12 pairs, raised adaxially, base rounded to subcordate, margin entire or inconspicuously serrate apically, minutely thickened, sometimes revolute, apex acuminate. Inflorescence a terminal panicle of umbels, densely ferruginous-brown stellate pubescent, glabrescent; primary axis to ca. 75 cm; secondary axes to ca. 40 cm; pedicels 3–10 mm. Calyx lobes ferruginous stellate pubescent, entire or inconspicuously 5-toothed. Ovary 5-carpellate; styles united into a column ca. 1.5 mm. Fruit globose, ca. 5 mm in diam., 5-angled when dry; persistent calyx lobes ferruginous; styles persistent, ca. 2 mm. Fl. Sep, fr. Nov–Dec.

Forests in valleys; 1900–2600 m. S Yunnan [N Vietnam].

**22. *Schefflera fengii*** C. J. Tseng & G. Hoo, *Acta Phytotax. Sin.*, *Addit.* 1: 137. 1965.

文山鹅掌柴 wen shan e zhang chai

Trees, to 15 m tall, probably andromonoecious. Petiole 6–30 cm; petiolules 1–6 cm; leaflets 5–7, oblong or elliptic to slightly obovate, 10–21(–27) × 3–9(–16) cm, leathery, abaxially densely yellow-brown stellate tomentose, epidermis obscured, adaxially sparsely stellate pubescent on veins or glabrous, secondary veins 8–12 pairs, tertiary veins slightly raised abaxially, distinctly impressed adaxially in dry material, base acute to nearly rounded, margin entire or with 1–4 small teeth apically, apex acuminate. Inflorescence a terminal panicle of umbels, densely light brown to ferruginous stellate pubescent, then sparsely so and grayish; primary axis to 15(–25) cm; secondary axes to ca. 20 cm; pedicels 2–3 mm at anthesis, expanding to 8 mm in fruit. Calyx inconspicuously 5-toothed, sparsely stellate pubescent. Ovary (4 or)5-carpellate; styles united into a column. Fruit globose, 3–4 mm in diam., 5-ribbed when dry,

sparsely stellate pubescent to glabrous; styles persistent, 1.5–2 mm. Fl. Aug, fr. Oct–Nov.

• Mixed forests on dry mountain slopes; 1800–2500 m. C and SE Yunnan.

**23. *Schefflera rhododendrifolia*** (Griffith) Frodin in Frodin & Govaerts, World Checklist Bibliogr. Araliaceae, 317. 2004 [“2003”].

凹脉鹅掌柴 ao mai e zhang chai

*Panax rhododendrifolius* Griffith, Init. Pl. Khasiyah Mts. 487. 1848; *Agalma glaucum* Seemann; *A. tomentosum* (Buchanan-Hamilton) Seemann; *Hedera tomentosa* Buchanan-Hamilton; *Heptapleurum glaucum* (Seemann) C. B. Clarke (1879), not Kurz (1877); *H. impressum* C. B. Clarke; *Schefflera impressa* (C. B. Clarke) Harms.

Trees, to 20 m tall, andromonoecious. Petiole to 30 cm; petiolules 1–2.5 cm, stout; leaflets (5 or)6 or 7(–9), narrowly obovate or oblong-lanceolate to nearly elliptic, 12–20 × 3–5 cm, leathery, abaxially densely gray-white stellate pubescent when young, later glabrescent and glaucous, adaxially glabrous and rugose, secondary veins 8–12 pairs, tertiary veins distinctly impressed adaxially in dry material, base cuneate, margin entire, revolute, sometimes with serrate or pinnate lobes on young plants, apex acuminate. Inflorescence a terminal panicle of umbels, densely stellate tomentose, glabrescent; primary axis to 20 cm; secondary axes to 18 cm; pedicels 5–10 mm. Calyx ca. 3 mm, inconspicuously 5-toothed. Ovary 5-carpellate; styles united into a column. Fruit globose, 4–5 mm in diam., 5-angular when dry; styles persistent, 1.5–2 mm; stigmas subcapitate. Fl. Aug, fr. unknown.  $2n = 48$ .

Evergreen broad-leaved forests; 2500–3200 m. SE Xizang [Bhutan, India, Nepal].

**24. *Schefflera heptaphylla*** (Linnaeus) Frodin, Bot. J. Linn. Soc. 104: 314. 1991 [“1990”].

鹅掌柴 e zhang chai

*Vitis heptaphylla* Linnaeus, Mant. Pl. 2: 212. 1771; *Aralia octophylla* Loureiro; *Heptapleurum octophyllum* (Loureiro) Bentham ex Hance; *Paratropia cantoniensis* Hooker & Arnott; *Schefflera atrifoliata* R. H. Miao; *S. octophylla* (Loureiro) Harms; *S. rubriflora* C. J. Tseng & G. Hoo.

Trees, to 15 m tall, andromonoecious. Petiole (5–)10–30 cm; petiolules 1.5–5 cm; leaflets 6–9(–11), elliptic to oblong-elliptic or obovate-elliptic, 7–18 × 3–5 cm, papery to leathery, densely stellate pubescent when young, glabrescent except on midvein and in axils of veins, secondary veins 7–10 pairs, tertiary veins inconspicuous, base attenuate or cuneate to obtuse or rounded, margin entire, often serrate or pinnately lobed on young plants, apex abruptly acute to acuminate. Inflorescence a terminal panicle of umbels, densely stellate tomentose, glabrescent; primary axis to 35 cm; secondary axes 25(–35) cm, with a terminal umbel of bisexual flowers and several to many lateral umbels of bisexual or more often male flowers, usually also with 1 to several bisexual flowers borne just below apical umbel; pedicels 4–5 mm. Calyx pubescent at first, entire or 5- or 6-toothed. Ovary 5–9(or 10)-carpellate; styles united into a thick

column less than 1.5 mm. Fruit globose, ca. 5 mm in diam., inconspicuously angled when dry; styles persistent, to ca. 1.5 mm. Fl. Sep–Dec, fr. Dec–Feb.

Evergreen broad-leaved forests on mountain slopes; 100–2100 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, SE Xizang, Yunnan, S Zhejiang [India, Japan, Thailand, Vietnam].

This species is used for its timber and also medicinally.

**25. *Schefflera bodinieri*** (H. Léveillé) Rehder, J. Arnold Arbor. 11: 166. 1930.

短序鹅掌柴 duan xu e zhang chai

*Heptapleurum bodinieri* H. Léveillé, Bull. Acad. Int. Géogr. Bot. 24: 144. 1914; *Agalma lutchuense* Nakai; *A. octophyllum* (Loureiro) Seemann; *Aralia octophylla* Loureiro; *Eleutherococcus bodinieri* H. Léveillé; *Schefflera compacta* Frodin ex Lauener.

Shrubs or small trees, to 12 m tall, andromonoecious. Petiole 3.5–25 cm; petiolules 0.4–5(–6) cm; leaflets 5–9(–11), ovate-lanceolate to oblong-lanceolate or linear-lanceolate, rarely ovate to elliptic, 8–12(–18) × 1–4.5(–5.5) cm, membranous or papery, abaxially glabrous or sparsely minutely stellate pubescent, adaxially glabrous, secondary veins ca. 10 pairs, inconspicuous to slightly raised on both surfaces, base cuneate or broadly cuneate to rounded, margin entire or usually sparsely to moderately serrulate, apex acuminate to caudate-acuminate, sometimes falcate. Inflorescence a terminal panicle of umbels, gray or brown pubescent; primary axis 4–16(–20) cm, secondary axes 1.5–7 cm, with a terminal umbel of bisexual flowers and sometimes 1(or 2) lateral umbels of male flowers; pedicels 4–7 mm at anthesis, to 8 mm in fruit. Calyx sparsely gray-white stellate pubescent. Ovary 5-carpellate; styles united into a column, ca. 1 mm. Fruit subglobose to ellipsoid or ovoid, 4–7 × 4–6 mm; styles persistent, minutely capitate, to 1.5–3.5 mm. Fl. Oct–Nov, fr. Feb, Apr.

Dense forests on slopes or in valleys; 400–1000 m. Guangxi, Guizhou, W Hubei, Sichuan, Yunnan [Vietnam].

**26. *Schefflera marlipoensis*** C. J. Tseng & G. Hoo, Acta Phytotax. Sin., Addit. 1: 137. 1965.

麻栗坡鹅掌柴 ma li po e zhang chai

Trees, to ca. 8 m tall, probably hermaphroditic. Petiole 14–26 cm; petiolules unequal, 0.5–8 cm; leaflets 6 or 7, oblong or oblong-elliptic, 12–24 × 4–10.5 cm, papery, abaxially minutely ferruginous stellate, adaxially sparsely ferruginous to glabrous, secondary veins 8–11 pairs, raised abaxially, tertiary veins inconspicuous, base broadly cuneate, margin entire, minutely revolute, apex shortly acuminate. Inflorescence a terminal panicle of umbels, ferruginous pubescent; primary axis ca. 27 cm, secondary axes to 15 cm; pedicels 5–6 mm. Calyx ca. 4 mm, glabrous. Ovary 5- or 6-carpellate; styles united into a column, ca. 1.5 mm at anthesis. Fruit unknown. Fl. Feb.

• Forests; ca. 1000 m. SE Yunnan.

**27. *Schefflera minutistellata*** Merrill ex H. L. Li, Sargentia 2: 24. 1942.

星毛鹅掌柴 xing mao e zhang chai

*Schefflera angustifoliolata* C. N. Ho.

Shrubs or small trees, to 8 m tall, andromonoecious. Petiole 12–45(–90) cm; petiolules unequal, 1–7(–12) cm; leaflets 7–15, elliptic to ovate-lanceolate or oblong-lanceolate, rarely ovate, 7–20 × 4–7.5(–11) cm, papery or subleathery, abaxially densely to sparsely minutely stellate pubescent, later glabrescent to glabrous, adaxially glabrous, secondary veins 6–10 pairs, slightly raised abaxially, tertiary veins rarely impressed adaxially in dry material, base acute to obtuse or rounded, margin entire, rarely serrulate apically, minutely thickened, slightly revolute, apex abruptly acute or more often acuminate. Inflorescence a terminal panicle of umbels; primary axis longer than 50 cm, densely yellow-brown or ferruginous stellate pubescent, later sparsely so except at bases of inflorescence axes; pedicels 3–6 mm, expanding to 1(–1.6) cm in fruit. Calyx pubescent, 5-toothed. Ovary 5-carpellate; styles united into a column, 1–1.5 mm at anthesis. Fruit globose, ca. 4 mm in diam., 5-ribbed when dry; styles persistent, to 2(–2.5) mm. Fl. Aug–Oct, fr. Oct–Dec.

• Dense forests; 1000–1800 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan, Zhejiang.

**28. *Schefflera parvifoliolata*** C. J. Tseng & G. Hoo, Acta Phytotax. Sin., Addit. 1: 136. 1965.

小叶鹅掌柴 xiao ye e zhang chai

Shrubs, to ca. 5 m tall, andromonoecious. Petiole 9–20 cm; petiolules 0.5–4 cm; leaflets 6–10, linear-oblong to slightly oblanceolate, 3–11 × 1–2 cm, leathery, both surfaces glabrous, adaxially minutely white punctate, secondary veins 10–14 pairs, obscure abaxially, slightly impressed adaxially in dry material, tertiary veins inconspicuous, base broadly cuneate to subrounded, margin entire or remotely serrate apically, apex narrowly acute or shortly acuminate. Inflorescence a terminal panicle of umbels, densely ferruginous stellate pubescent; pedicels 3–4 mm. Calyx ca. 2 mm, 5-toothed. Ovary (4 or) 5-carpellate; styles united into a column. Fruit (immature) globose, ca. 3 mm in diam., ferruginous pubescent; styles persistent, ca. 1.5 mm. Fl. Oct–Nov.

• Scrub fields on rocky mountain slopes; 1300–1500 m. SE Yunnan.

**29. *Schefflera glabrescens*** (C. J. Tseng & G. Hoo) Frodin in Frodin & Govaerts, World Checklist Bibliogr. Araliaceae, 340. 2004 [“2003”].

光叶鹅掌柴 guang ye e zhang chai

*Schefflera impressa* (C. B. Clarke) Harms var. *glabrescens* C. J. Tseng & G. Hoo, Acta Phytotax. Sin., Addit. 1: 138. 1965.

Trees, to ca. 10 m tall, andromonoecious. Petiole (3–)10–17 cm; petiolules 0.6–1.8 cm; leaflets (3 or) 5 or) 7 or) 9, narrowly obovate, (7–)9–17 × 3–5.5 cm, leathery, both surfaces glabrous, secondary veins 6–10 pairs, tertiary veins visible on both surfaces, raised abaxially, distinctly impressed adaxially in dry material, base narrowly acute-cuneate, margin entire or with few widely spaced teeth apically, minutely revolute, apex acuminate. Inflorescence a terminal panicle of umbels, densely light brown stellate pubescent; primary axis to 25–40 cm, secondary axes to 18 cm, shorter apically, with a terminal umbel of

bisexual flowers and several lateral umbels of male flowers; pedicels 7–16 mm (those of male flowers ca. 5 mm). Calyx a minute rim, entire. Ovary 5-carpellate; styles united into a column. Fruit globose to slightly obovoid, 4.5–5 mm in diam., strongly 5-ribbed when dry, sparsely stellate, densely so just below calyx; styles persistent, 0.7–2.5 mm. Fl. Sep–Oct, fr. Sep–Nov.

Evergreen broad-leaved forests; 2500–3200 m. SE Xizang, NW Yunnan [N Myanmar].

**30. *Schefflera napuoensis*** C. B. Shang, Candollea 39: 480. 1984.

那坡鹅掌柴 na po e zhang chai

*Schefflera oblonga* C. B. Shang, Acta Phytotax. Sin. 18: 90. 1980, not Craib (1930).

Trees, to ca. 5 m tall, ?hermaphroditic. Petiole ca. 18 cm; petiolules 0.4–2 cm; leaflets 5–7, oblong or obovate-oblong, 4–10 × 2–5 cm, leathery, both surfaces glabrous, secondary veins 12–16 pairs, conspicuous, tertiary veins slightly impressed adaxially in dry material, base broadly cuneate to rounded, margin entire or remotely serrate apically, apex abruptly acute. Inflorescence a terminal panicle of umbels, yellow-brown pubescent, then glabrescent; primary axis ca. 25 cm, secondary axes to ca. 10 cm; pedicels 2–5 mm. Ovary 4- or 5-carpellate; styles united into a column. Fruit (immature) globose, ca. 7 mm in diam.; styles persistent, ca. 2 mm. Fl. May.

• Open slopes. W Guangxi (Napo).

**31. *Schefflera pes-avis*** R. Vig, Ann. Sci. Nat., Bot., sér. 9, 9: 334. 1909.

樟叶鹅掌柴 zhang ye e zhang chai

*Schefflera cinnamomifoliolata* C. B. Shang.

Trees, to ca. 8 m tall, andromonoecious. Petiole 3–10 cm, slender; leaflets (3–)5(–7), elliptic, rarely obovate-elliptic, 4–10 × 1.5–4 cm, leathery, both surfaces glabrous, secondary veins 5–8 pairs, tertiary veins weakly impressed adaxially in dry material, base attenuate to cuneate or slightly rounded, margin entire, minutely revolute, rarely serrulate apically, apex acute to acuminate. Inflorescence a terminal panicle of umbels, glabrous; primary axis to 17 cm, secondary axes 2–12 cm, tertiary axes 1.5–5 cm, with a terminal umbel of hermaphroditic flowers and usually several lateral umbels of male flowers (caducous). Calyx glabrous. Ovary 5-carpellate; styles connate into a conic column; stigmas minutely capitate. Fruit subglobose to ellipsoid, 3–5 mm in diam., 5-ribbed when dry; styles persistent, 2–3 mm. Fl. Aug–Sep, fr. Oct–Jan.

Rocky mountain slopes and hill tops; 600–800 m. SW Guangxi (Jingxi, Longzhou, Napo) [Vietnam].

**32. *Schefflera elata*** (Buchanan-Hamilton) Harms in Engler & Prantl, Nat. Pflanzenfam. 3(8): 38. 1894.

高鹅掌柴 gao e zhang chai

*Hedera elata* Buchanan-Hamilton in D. Don, Prodr. Fl. Nepal. 187. 1825; *Agalma elatum* (Buchanan-Hamilton) Seemann; *Heptapleurum elatum* (Buchanan-Hamilton) C. B. Clarke.

Trees, to ca. 13 m tall, andromonoecious. Petiole to 35 cm; petiolules 1.5–5 cm; leaflets 4–7, oblong-lanceolate to ovate-lanceolate, 10–23 × 4–6.5 cm, papery, both surfaces glabrous or abaxially sparsely stellate pubescent on midvein, secondary veins 8–15 pairs, conspicuous abaxially, base obtuse, margin entire, slightly revolute, apex acuminate, often falcate. Inflorescence a terminal panicle of umbels, sparsely stellate pubescent, nearly glabrescent; primary axis to 35 cm, secondary axes to 17 cm, with a terminal umbel of bisexual flowers and usually 1–4 lateral umbels of male flowers; pedicels 8–14 mm. Calyx glabrous. Ovary 5-carpellate. Fruit obovoid-globose, 4–5 × ca. 4 mm, 5-angled when dry; styles persistent, ca. 2 mm. Fl. Jul.

Forests. NW and SE Yunnan [Bhutan, India, Nepal, Vietnam].

**33. *Schefflera insignis*** C. N. Ho, Acta Phytotax. Sin. 2: 73. 1952.

粉背鹅掌柴 fen bei e zhang chai

Shrubs, probably hermaphroditic. Petiole 20–40 cm; petiolules 4–8 cm; leaflets 6–9, oblong-elliptic or elliptic to weakly ovate, 11–15 × 5–9 cm, subleathery, both surfaces glabrous, secondary veins 7–9 pairs, adaxially conspicuous, base obtuse to subrounded, margin entire, minutely revolute, apex abruptly acute. Inflorescence a terminal panicle of umbels, sparsely stellate pubescent or glabrous; primary axis to ca. 30 cm, secondary axes to 11 cm; pedicels 5–8 mm. Calyx ca. 2 mm, sparsely stellate pubescent. Ovary 5-carpellate; styles united into a column, ca. 2 mm; stigmas 5, distinct, capitate. Fl. Oct–Nov.

• Stream banks in forests. Guangdong (Yangchun).

**34. *Schefflera lociana*** Grushvitzky & Skvortsova, Bot. Zhurn. (Moscow & Leningrad) 60: 1437. 1975.

凉山鹅掌柴 liang shan e zhang chai

*Schefflera lociana* var. *megaphylla* C. B. Shang.

Trees, to 4 m tall, palmlike in habit, rarely branched, hermaphroditic. Petiole 24–65 cm, 7–10 mm in diam. at base; ligule prominent, 1.5–2.5 cm; petiolules 2–5 cm; leaflets 8–

10(–12), oblong-elliptic or obovate-oblong, 14–34 × 4.5–9 cm, leathery, abaxially glabrous or sparsely stellate pubescent on veins, secondary veins 14–22 pairs, adaxially impressed to weakly raised in dry material, base rounded to subcordate, margin entire, revolute, apex abruptly acute or rounded. Inflorescence a pseudo-lateral panicle of umbels, borne below leaves; primary axis 1–1.5 cm, secondary axes 5–7 cm; umbels arranged in racemes, 1.5–2 cm in diam. Calyx gray white pubescent, entire. Ovary 6-carpellate; styles united into a column. Fruit ovoid, 5–6 × 3–4 mm; styles persistent, ca. 2 mm; pedicels 3–4 mm, brown pubescent. Fl. Aug–Sep.

Dense forests on rocky mountain slopes. SW Guangxi (Longzhou) [N Vietnam].

This species is used as an ornamental.

**35. *Schefflera brevipedicellata*** Harms, Notizbl. Bot. Gart. Berlin-Dahlem 13: 449. 1937.

多核鹅掌柴 duo he e zhang chai

*Schefflera polypyrena* C. J. Tseng & G. Hoo; *S. menglaensis* H. Chu & H. Wang.

Shrubs or small trees, to 10 m tall, hermaphroditic. Petiole 19–30 cm, 2–4 mm in diam. at base; ligule 2–5 mm; petiolules 1–6 cm; leaflets 5–7(–9), oblong or oblong-elliptic, 10–22 × 4.5–11 cm, papery, both surfaces glabrous, secondary veins 8–11 pairs, slightly raised abaxially, tertiary veins inconspicuous, base obtuse to rounded, margin entire, apex acute to shortly acuminate. Inflorescence a pseudo-lateral panicle of umbels, borne below leaves, with brown bark; primary axis to 15 cm, secondary axes to 12 cm; pedicels 1–3 mm. Calyx ca. 3 mm, margin slightly sinuous. Ovary 7–11(–13)-carpellate; styles united into a column, ca. 1.5 mm. Fruit globose, 4–5 mm in diam., 7–11(–13)-ribbed when dry; styles persistent; pedicels 3–8 mm, stout. Fl. Sep–Oct, fr. Nov–Dec, Mar.

Disturbed lands, forests in wet valleys; 800–1300 m. W Guangxi (Jingxi), S Yunnan [Vietnam].

## 16. *METAPANAX* J. Wen & Frodin, Brittonia 53: 117. 2001.

梁王茶属 liang wang cha shu

Trees, small, or shrubs, evergreen, hermaphroditic (?or functionally andromonoecious), unarmed, glabrous. Leaves simple, palmately lobed or palmately compound, margins serrate; stipules absent. Inflorescence a terminal panicle of umbels, secondary axes with a terminal umbel of bisexual flowers, often also with 1 or 2(or 3) lateral umbels of smaller, later-blooming ?functionally male flowers. Pedicels articulate below ovary. Calyx rim entire or 5-toothed. Petals 5, valvate. Stamens 5. Ovary 2(–4)-carpellate; styles 2(–4), free to base or united up to 2/3 of their length. Fruit a drupe, laterally compressed. Seeds laterally compressed; endosperm smooth.

Two species: C and W China, N Vietnam; two species in China.

The first author recently included *Metapanax* in *Macropanax* (Shang and Ji, J. Nanjing Forest. Univ. 30(6): 41–43. 2006), casting doubt on the value of the morphological features used by Wen and Frodin (Brittonia 53: 116–121. 2001) to distinguish the two genera, an interpretation that is not favored by the second author.

- 1a. Leaves simple, entire or 3-lobed, rarely palmately compound with 3 sessile leaflets usually more than 2.5 cm wide ..... 1. *M. davidii*  
 1b. Leaves usually palmately compound (rarely simple); leaflets 2–5, 1–2.5(–4) cm wide, subsessile or with distinct petiolules to 10 mm ..... 2. *M. delavayi*

**1. *Metapanax davidii*** (Franchet) J. Wen & Frodin, *Brittonia* 53: 117. 2001.

异叶梁王茶 yi ye liang wang cha

*Panax davidii* Franchet, *Nouv. Arch. Mus. Hist. Nat.*, sér. 2, 8: 248. 1886 [“*davidii*”]; *Acanthopanax bockii* (Harms) R. Viguier; *A. davidii* (Franchet) R. Viguier; *A. diversifolius* Hemsley; *Aralia bodinieri* H. Léveillé; *Macropanax davidii* (Franchet) C. B. Shang & C. F. Ji; *Nothopanax bockii* Harms; *N. bodinieri* (H. Léveillé) S. Y. Hu; *N. davidii* (Franchet) Harms; *N. davidii* var. *gongshanensis* C. B. Shang; *N. diversifolius* (Hemsley) Harms; *N. latifolius* Handel-Mazzetti; *Pseudopanax davidii* (Franchet) Philipson.

Trees, small, to ca. 12 m tall. Petiole 3–20 cm, slender to stout; leaves simple, entire or 3-lobed, rarely palmately compound; blade oblong-ovate to oblong-lanceolate, 6–20 × (2.5–)3.5–6.5 cm, leathery, 3-veined from base, secondary veins 6–8 pairs, not prominently conspicuous, base acute to broadly cuneate, occasionally rounded, margin sparsely serrate, apex acuminate. Inflorescence terminal, a panicle of umbels; primary axis 6–12(–30) cm, secondary axes 1.5–3(–4.5) cm; umbels 1.5–2.5 cm in diam.; pedicels 6–8 mm at anthesis, 7–10 mm in fruit. Fruit laterally compressed, circular, 5–6 mm in diam.; styles united 1/2–2/3 their length, rarely free to base. Fl. Jun–Aug, fr. Sep–Oct.

Common in scrub, stream banks, forest margins, roadsides; 800–3000 m. Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan [N Vietnam].

Two varieties (*Nothopanax davidii* var. *davidii* and var. *gongshanensis*) have sometimes been distinguished on the basis of minor

differences in the petiole and inflorescence, but they were not retained by Wen and Frodin when those authors described *Metapanax*.

**2. *Metapanax delavayi*** (Franchet) J. Wen & Frodin, *Brittonia* 53: 118. 2001.

梁王茶 liang wang cha

*Panax delavayi* Franchet, *J. Bot. (Morot)* 10: 305. 1896; *Acanthopanax delavayi* (Franchet) R. Viguier; *Macropanax delavayi* (Franchet) C. B. Shang & C. F. Ji; *Metapanax delavayi* var. *longicaudatus* (K. M. Feng) R. Li & H. Li; *Nothopanax delavayi* (Franchet) Harms; *N. delavayi* var. *longicaudatus* K. M. Feng; *Pseudopanax delavayi* (Franchet) Philipson.

Shrubs, to 5 m tall. Petiole 4–15 cm, slender; leaves palmately compound, rarely simple; leaflets subsessile or petioles to 1 cm; leaflets 2–5, oblong-lanceolate to narrowly ovate or obovate, 5–13 × 1–2.5(–4) cm, leathery, base acute, margin serrulate, apex acuminate. Inflorescence terminal, a panicle of umbels; primary axis to 10(–15) cm, secondary axes 1–1.5 cm; umbels 1.5–2 cm in diam.; pedicels 3–5 mm. Fruit laterally compressed, circular to slightly oblate, 4–5 mm in diam.; styles 1.5–2 mm, united up to 1/2 of length, forked or divided nearly to base, free arms recurved. Fl. Sep–Oct, fr. Dec–Jan.

Mixed forests, scrub in valleys; 1500–3000 m. Guizhou, Sichuan, Yunnan [N Vietnam].

This species is used medicinally.

Two varieties (*Nothopanax delavayi* var. *delavayi* and var. *longicaudatus*) have sometimes been distinguished on the basis of minor differences in leaf size and the shape of the apex, but they were not retained by Wen and Frodin when those authors described *Metapanax*.

## 17. MACROPANAX Miquel, *Bonplandia* (Hannover) 4: 139. 1856.

大参属 da shen shu

Trees or shrubs, evergreen, hermaphroditic (?or functionally andromonoecious), unarmed. Leaves simple, palmately lobed, or palmately compound and leaflets 3–7, margin entire or serrate; stipules absent or connate into a short lamina within petiole or absent. Inflorescence a terminal panicle of umbels; secondary axes with a terminal umbel of bisexual flowers, sometimes also with lateral umbels of smaller, later flowering (?functionally male) flowers; bracts small, caducous. Pedicels articulate below ovary, often minutely bracteolate. Calyx entire or 5-toothed. Petals 5, valvate. Stamens 5. Ovary 2(or 3)-carpellate; styles united into a column or partially free apically. Fruit a drupe, subglobose or ovoid, sometimes laterally compressed (especially when dry). Seeds semiterete or laterally compressed; endosperm uniform, ruminant or rugose.

About 20 species: S and SE Asia; seven species (five endemic) in China.

- 1a. Styles united to ca. 3/4 their length, branches free apically ..... 1. *M. rosthornii*  
 1b. Styles united throughout, forming an unbranched column, stigmas sessile.  
 2a. Inflorescence glabrous throughout (occasionally pubescent in *M. undulatus* when young, but then leaflets with entire margins).  
 3a. Mature fruit 8–9 mm in diam.; calyx teeth and stamens 7–10 ..... 6. *M. decandrus*  
 3b. Mature fruit 5–6 mm in diam.; calyx teeth and stamens 5(or 6) ..... 7. *M. undulatus*  
 2b. Inflorescence densely shortly pubescent throughout.  
 4a. Stems and calyx pubescent; leaflets with 4–6 pairs of secondary veins ..... 5. *M. paucinervis*  
 4b. Stems and calyx glabrous; leaflets with 6–10 pairs of secondary veins.  
 5a. Terminal leaflet elliptic, ca. 2 × as long as wide, base rounded to broadly cuneate; petiole 3–7 cm ..... 2. *M. chienii*  
 5b. Terminal leaflet narrowly elliptic or oblong to slightly obovate, 2.4–4 × as long as wide, base narrowly acute to cuneate; petiole (8–)10–17 cm.  
 6a. Leaflets (3–)5(–7); fruit ellipsoid to oblong, height greater than diam. .... 3. *M. dispermus*  
 6b. Leaflets 3 or 4; fruit broadly ovoid, height not greater than diam. .... 4. *M. serratifolius*

**1. *Macropanax rosthornii*** (Harms) C. Y. Wu ex G. Hoo, *Acta Phytotax. Sin.*, Addit. 1: 166. 1965.

短梗大参 duan geng da shen

*Nothopanax rosthornii* Harms, *Bot. Jahrb. Syst.* 29: 487. 1900; *Acanthopanax rosthornii* (Harms) R. Viguier; *Heptapleurum esquirolii* H. Léveillé; *N. emeiensis* Z. Y. Zhu.

Trees, to ca. 8 m tall. Petiole 4–20 cm, slender; petiolules 3–12 mm or leaflets sessile; leaflets 3–7, oblanceolate to narrowly obovate, 5–15(–17) × 1–3(–4.5) cm, papery, secondary veins 8–10 pairs, distinct on both surfaces, base narrowly acute to attenuate, margin serrulate, minutely thickened, apex shortly acuminate to caudate, acumen usually curved. Inflorescence paniculate, glabrous throughout; primary axis 8–20 cm; peduncles 1–3 cm; pedicels 3–8 mm. Calyx rim inconspicuous. Fruit ovoid to globose, 4–5 mm in diam.; styles persistent, 1.5–2 mm, divided apically.

• Shaded places in forests, scrub, roadsides; below 1500 m. Fujian, S Gansu, N Guangdong, N Guangxi, S Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan.

This species is used medicinally.

**2. *Macropanax chienii*** G. Hoo, *Acta Phytotax. Sin.*, Addit. 1: 165. 1965.

显脉大参 xian mai da shen

Trees, to ca. 5 m tall, probably andromonoecious. Petiole 3–7 cm; petiolules 0.3–3 cm; leaflets 3 or 4, oblong-elliptic or oblong, 7–16.5 × 4–9 cm, papery, both surfaces glabrous, secondary veins 6–8 pairs, tertiary veins distinct, raised on both surfaces, base rounded, margin sparsely crenulate, apex shortly acuminate. Inflorescence paniculate, densely brown pubescent; primary axis ca. 20 cm, secondary axes to 6 cm, with a terminal umbel and usually 3 lateral umbels; pedicels 4–9 mm. Calyx 5-toothed, glabrous. Fruit unknown. Fl. Nov.

• Scrub on mountain slopes; 800–900 m. S Yunnan.

**3. *Macropanax dispermus*** (Blume) Kuntze, *Revis. Gen. Pl.* 1: 271. 1891.

大参 da shen

*Aralia disperma* Blume, *Bijdr.* 872. 1826; *Brassaiopsis floribunda* (Miquel) Seemann; *Hedera disperma* (Blume) Candolle; *H. serrata* Wallich; *Macropanax dispermus* (Blume) Kuntze var. *integer* C. B. Shang; *M. floribundus* Miquel; *M. oreophilus* Miquel.

Trees, to ca. 12 m tall. Petiole 7–20 cm; petiolules 0.5–5 cm; leaflets (3–)5(–7), elliptic or oblong-lanceolate, 7–20 × 2–8 cm, papery or subleathery, both surfaces glabrous, secondary veins 6–10 pairs, distinct, tertiary veins more distinct adaxially, base broadly cuneate or rounded, margin glandular serrulate, apex shortly acuminate. Inflorescence paniculate, densely shortly ferruginous stellate pubescent; primary axis 20–55 cm; pedicels 3–8 mm, to 1 cm in fruit. Calyx inconspicuous, glabrous, 5-toothed. Fruit ellipsoid to oblong, ca. 5 × 4 mm, slightly ribbed when dry; styles persistent, 2–3 mm. Fl. Aug–Sep, fr. Jan–Feb.

Mixed forests in valleys, scrub on mountain slopes; 300–2300 m.

Yunnan [Bhutan, India, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam].

**4. *Macropanax serratifolius*** K. M. Feng & Y. R. Li, *Fl. Yunnan.* 2: 473. 1979.

粗齿大参 cu chi da shen

Trees, 10–12 m tall, probably andromonoecious. Petiole 10–20 cm; petiolules 1–4.5 cm; leaflets 3 or 4, narrowly elliptic to slightly ovate or obovate, 9–20 × 3–7 cm, subleathery, both surfaces glabrous, secondary veins 7–10 pairs, tertiary veins distinct, raised on both surfaces, base acute to cuneate, margin sparsely to moderately serrate, apex acuminate. Inflorescence paniculate, densely shortly white pubescent; primary axis 23–30 cm; secondary axes to 14 cm, with a terminal umbel of bisexual flowers and a pair of closely spaced lateral scars (presumably of umbels with male flowers); pedicels 1–1.3 cm in fruit. Calyx inconspicuous, minutely 5-toothed. Fruit broadly ovoid to subglobose, 4–6 mm in diam.; styles persistent, undivided. Fr. Nov, Apr.

• Mixed forests in valleys or scrub on mountain slopes; 300–2300 m. Guangxi, Yunnan.

**5. *Macropanax paucinervis*** C. B. Shang, *Acta Phytotax. Sin.* 18: 93. 1980.

疏脉大参 shu mai da shen

Trees, to ca. 15 m tall. Petiole ca. 16 cm; petiolules 0.3–3.5 cm; leaflets 4–6, oblong or obovate-oblong, 6–14 × 3–7 cm, papery, glabrous, minutely scaly abaxially, secondary veins 4–6 pairs, base rounded or broadly cuneate, margin sparsely serrulate toward apical 2/3 or subentire, apex acute. Inflorescence paniculate, shortly gray-brown pubescent throughout, glabrescent; primary axis ca. 30 cm, secondary axes ca. 20 cm; pedicels 0.4–1.5 cm, to 0.8–2 cm in fruit. Calyx pubescent, teeth inconspicuous. Fruit globose, ca. 8 mm in diam.; style persistent, divided apically. Fl. May–Jun, fr. Nov–Dec.

• Forests in valleys; 500–800 m. SW Guangxi (Longzhou).

**6. *Macropanax decandrus*** G. Hoo, *Acta Phytotax. Sin.*, Addit. 1: 164. 1965.

十蕊大参 shi rui da shen

Trees, to 7 m tall. Trunk 18–30 cm d.b.h. Petiole 2.5–14 cm; petiolules 1–5 cm; leaflets 3–5, oblong-elliptic or oblong, 7.5–18 × 3–9 cm, papery, glabrous, secondary veins 4–6 pairs, base cuneate or broadly cuneate, margin entire, minutely thickened, revolute, apex abruptly shortly acuminate. Inflorescence paniculate, glabrous throughout; primary axis 5–12 cm, secondary axes 2–5.5 cm; pedicels 4–5 mm at anthesis, to 1.8 cm in fruit. Calyx glabrous, 7–10-toothed, sometimes obscurely so. Stamens 7–10. Fruit ovoid-globose, 1.1–1.3 cm × 8–9 mm; styles persistent, ca. 2 mm, undivided. Fl. Feb, fr. Apr–Jun.

• Dense forests in valleys, forest margins on mountain slopes; 700–1200 m. Hainan.

**7. *Macropanax undulatus*** (Wallich ex G. Don) Seemann, *J. Bot.* 2: 294. 1864 [*“undulatum”*].

波缘大参 bo yuan da shen

*Hedera undulata* Wallich ex G. Don, Gen. Hist. 3: 394. 1834; *Macropanax parviflorus* G. Hoo; *M. undulatus* var. *simplex* H. L. Li.

Trees, to ca. 15 m tall. Petiole 4–15 cm, glabrous; petioles 0.5–1.5 cm; leaflets 3–5, elliptic to slightly obovate, 5–16 × 2–6 cm, subleathery, glabrous, secondary veins 4–7 pairs, base broadly cuneate or rounded, margin entire, minutely thickened, sometimes denticulate apically, apex shortly acuminate. Inflorescence panicle, glabrous throughout; primary axis 15–

30 cm, secondary axes 4–15(–25) cm; peduncle 0.5–2 cm; pedicels 3–5 mm, to 8 mm in fruit. Calyx inconspicuous, 5-toothed. Fruit ovoid to ellipsoid, 5–8 × 4–6 mm, ribbed when dry.

Mixed forests; 400–2200 m. Guangxi, Guizhou, Yunnan [Bhutan, India, Kashmir, Myanmar, Nepal, Thailand, Vietnam].

Two varieties (*Macropanax undulatus* var. *undulatus* and var. *simplex*) have sometimes been distinguished on the basis of minor differences in inflorescence structure, but they do not appear to be worthy of recognition.

## 18. ELEUTHEROCOCCUS Maximowicz, Mém. Acad. Imp. Sci. St.-Pétersbourg Divers Savans 9 [Prim. Fl. Amur.]: 132. 1859.

五加属 wu jia shu

*Acanthopanax* (Decaisne & Planchon) Miquel; *Panax* subg. *Acanthopanax* Decaisne & Planchon.

Shrubs, erect or scandent, rarely small trees, hermaphroditic or andromonoecious, glabrous or pubescent, usually prickly, occasionally unarmed. Leaves palmately compound or trifoliolate; stipules absent or very weakly developed. Inflorescence a terminal (rarely axillary) panicle of umbels or a solitary umbel, secondary axes with a terminal umbel of bisexual flowers and 1 to many lateral umbels of later flowering bisexual or functionally male flowers. Pedicels not articulate or only slightly articulate below ovary. Calyx margin entire or with 5 minute teeth. Petals 5, valvate. Stamens 5. Ovary 2–5-carpellate; styles 2–5, free to base, or partially to fully united. Fruit a drupe, laterally compressed or subglobose. Seeds laterally compressed; endosperm smooth.

Nearly 40 species: E Asia, Himalayan region; 18 species (14 endemic) in China.

- 1a. Umbels 1(–3), borne in axils of leaves on short shoots.
  - 2a. Ovary (4 or)5-carpellate, styles united, forming a column; branches with dense bristles along with prickles at base of petiole ..... 1. *E. setulosus*
  - 2b. Ovary 2(or 3)-carpellate, styles free nearly to base; branches with few reflexed prickles or rarely unarmed ... 2. *E. nodiflorus*
- 1b. Umbels 1 to many, terminal on leafy shoots.
  - 3a. Styles united throughout their entire length, forming a column, stigmas sometimes forming a peltate to slightly recurved disk.
    - 4a. Flowers sessile, arranged in heads ..... 3. *E. sessiliflorus*
    - 4b. Flowers distinctly pedicellate, arranged in umbels.
      - 5a. Leaves near ends of branches sessile or very shortly petiolate, leaflets obovate-oblong to rhombic, 3–6 × 1–2.5 cm, margin entire, apex rounded to obtuse ..... 4. *E. brachypus*
      - 5b. Leaves with a distinct petiole at least 3–7 cm, leaflets variable in shape and size, margin serrate or biserrate, apex variable.
        - 6a. Prickles stout, compressed in cross-section, oriented downward (sometimes lacking on specimens) ..... 5. *E. henryi*
        - 6b. Prickles slender, terete in cross-section, oriented in various directions.
          - 7a. Flowers purple-yellow; branches with slender bristlelike prickles, often present between nodes; petiolule of central leaflet (0.6–)1.2–2 cm ..... 6. *E. senticosus*
          - 7b. Flowers yellow-green; branches with few prickles, generally present only at nodes, sometimes lacking; petiolule of central leaflet 0.3–1 cm.
            - 8a. Leaflets 6–14 × 2.5–6 cm; ovary glabrous ..... 7. *E. leucorrhizus*
            - 8b. Leaflets 4–7 × 1–2.5 cm; ovary pubescent at base when very young ..... 8. *E. baoxinensis*
    - 3b. Styles free at least apically, with distinct arms.
      - 9a. Inflorescence verticillate, primary axis with a terminal umbel and almost always 1 to several verticils of flowers, and also often with several flowers borne individually at base ..... 9. *E. verticillatus*
      - 9b. Inflorescence a solitary umbel or panicle of umbels, flowers never arranged in verticils.
        - 10a. Styles free to base or nearly so.
          - 11a. Branches usually pubescent when young and with prickles; peduncles and pedicels pubescent ..... 10. *E. cissifolius*
          - 11b. Branches glabrous and unarmed; peduncles and pedicels glabrous ..... 11. *E. eleutheristylus*
        - 10b. Styles united at least at base.
          - 12a. Ovary (3–)5-carpellate, styles (3–)5; leaflets (3–)5.
            - 13a. Branches with dense bristlelike prickles ..... 12. *E. giraldii*
            - 13b. Branches with slender prickles scattered or only on nodes.
              - 14a. Young branches purple-red; styles united only at base ..... 13. *E. wilsonii*
              - 14b. Young branches brownish; styles united to middle ..... 14. *E. rehderianus*



- 12b. Ovary 2-carpellate, styles 2; leaflets usually 3.  
 15a. Calyx and bractlets subtending pedicels white to gray woolly tomentose ..... 15. *E. lasiogyne*  
 15b. Calyx and bractlets subtending pedicels glabrous.  
 16a. Branches unarmed; leaflets membranous ..... 16. *E. scandens*  
 16b. Branches usually with at least some prickles; leaves papery.  
 17a. Leaflets adaxially glabrous or slightly setose on veins; margins serrulate ... 17. *E. trifoliatus*  
 17b. Leaflets adaxially ± densely setose on veins; margins setose-biserrulate ..... 18. *E. setosus*

**1. *Eleutherococcus setulosus*** (Franchet) S. Y. Hu, J. Arnold  
 Arbor. 61: 110. 1980.

细刺五加 xi ci wu jia

*Acanthopanax setulosus* Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 8: 249. 1886 [*“setulosum”*]; *A. zhejiangensis* X. J. Xue & S. T. Fang; *Eleutherococcus pseudosetosus* C. H. Kim & B. Y. Sun; *E. zhejiangensis* (X. J. Xue & S. T. Fang) H. Ohashi.

Shrubs, to 5 m tall. Branches slender, forming both long and short shoots, with sparse to dense red-brown or dark brown bristles or sparsely so, rarely a single prickle at nodes. Petiole 3–10 cm, slender, with prickles at base; petiolules very short; leaflets 5, obovate or oblong-obovate, 2–5 × 0.8–2 cm, papery, abaxially subglabrous, adaxially with scattered bristles on mid-vein and veins, secondary veins 3 or 4 pairs, conspicuous, base cuneate, margin serrulate above middle, apex acute. Inflorescence borne in axils of leaves on short shoots, a simple umbel of sometimes 2 or 3 umbels clustered together; peduncles 2–3 cm, densely bristly, then glabrous; pedicels 5–10 mm, slender, glabrous. Calyx with 5 teeth, glabrous. Ovary (4 or 5)-carpellate; styles united, forming a column. Fruit black at maturity, globose, ca. 5 mm in diam. Fl. Jul, fr. Sep.

• Scrub fields, forests, roadsides, stream banks; below 800 m in E and 2000 m in W part of range. S Anhui, Gansu, Sichuan, W Zhejiang.

This species is used medicinally.

**2. *Eleutherococcus nodiflorus*** (Dunn) S. Y. Hu, J. Arnold  
 Arbor. 61: 109. 1980.

细柱五加 xi zhu wu jia

*Acanthopanax nodiflorus* Dunn, J. Bot. 47: 199. 1909; *A. gracilistylus* W. W. Smith; *A. gracilistylus* var. *major* G. Hoo; *A. gracilistylus* var. *nodiflorus* (Dunn) H. L. Li; *A. gracilistylus* var. *pubescens* (Pampanini) H. L. Li; *A. gracilistylus* var. *trifoliolatus* C. B. Shang; *A. gracilistylus* var. *villosulus* (Harms) H. L. Li; *A. hondae* Matsuda; *A. spinosus* (Linnaeus f.) Miquel var. *pubescens* Pampanini; *A. villosulus* Harms; *Aralia palmata* Loureiro (1790), not Lamack (1783); *A. scandens* Poiret; *Eleutherococcus gracilistylus* (W. W. Smith) S. Y. Hu; *E. gracilistylus* var. *major* (G. Hoo) H. Ohashi; *E. gracilistylus* var. *nodiflorus* (Dunn) H. Ohashi; *E. gracilistylus* var. *pubescens* (Pampanini) S. Y. Hu; *E. gracilistylus* var. *trifoliolatus* (C. B. Shang) H. Ohashi; *E. gracilistylus* var. *villosulus* (Harms) Q. S. Wang; *E. nodiflorus* (Dunn) S. Y. Hu; *E. pubescens* (Pampanini) C. H. Kim & B. Y. Sun; *E. villosulus* (Harms) S. Y. Hu; *Hedera scandens* (Poiret) Candolle.

Shrubs, to 3 m tall, sometimes climbers. Branches slender, forming both long and short shoots, slightly pendulous, glabrous, with few, scattered, reflexed, short prickles at nodes,

rarely unarmed. Petiole 3–8 cm, glabrous, with small scattered prickles; petiolules very short; leaflets (3–)5, obovate or oblanceolate, 3–8 × 1–3.5 cm, submembranous to papery, both surfaces glabrous or sparsely setulose, abaxially sometimes pubescent or with brown or ferruginous tufted hairs in axils of veins, secondary veins 4 or 5 pairs, subconspicuous, base cuneate, margin crenate-serrulate, apex acute or shortly acuminate. Inflorescence borne in axils of leaves on short shoots, a solitary umbel or sometimes 2 or 3 umbels together; peduncles 1–4 cm; pedicels 6–10 mm, slender, glabrous. Calyx subtentire or with 5 minute teeth. Corolla yellowish green. Ovary 2(or 3)-carpellate; styles free nearly to base, ca. 2 mm, slender. Fruit black at maturity, subglobose, ca. 6 mm in diam.; styles persistent, reflexed, 2–3 mm. Fl. Apr–Jul, fr. Jun–Oct.

• Forest margins, scrub fields, mountain slopes, valleys, stream banks, roadsides; below 1000 m in E and 3000 m in W part of range. S Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, S Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang.

This species is a famous medicinal plant.

**3. *Eleutherococcus sessiliflorus*** (Ruprecht & Maximowicz) S. Y. Hu, J. Arnold Arbor. 61: 109. 1980.

无梗五加 wu geng wu jia

*Panax sessiliflorus* Ruprecht & Maximowicz, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15: 133. 1856 [*“sessiliflorum”*]; *Acanthopanax sessiliflorus* (Ruprecht & Maximowicz) Seemann; *A. sessiliflorus* var. *parviceps* Rehder; *Eleutherococcus sessiliflorus* var. *parviceps* (Rehder) S. Y. Hu.

Trees, small, to 5 m tall. Branches unarmed or with scattered, erect or recurved prickles. Petiole 3–12 cm, unarmed or with small prickles; petiolules 2–10 mm; leaflets 3–5, obovate, oblong-obovate, or oblong-lanceolate, 8–18 × 3–7 cm, papery, secondary veins 5–7 pairs, distinct, adaxially glabrous or slightly scabrous, base cuneate, margin irregularly serrate, apex acuminate. Inflorescence terminal, a raceme of umbels, borne on leafy shoots, with 3–6 capitate umbels; peduncles 0.5–3 cm, densely pubescent; pedicels absent (flowers sessile). Calyx with 5 teeth, white pubescent. Corolla dull purplish. Ovary 2-carpellate; styles united basally into a column, free apically. Fruit obovoid-globose, 1–1.5 cm; styles persistent, ca. 3 mm. Fl. Aug–Sep, fr. Sep–Nov.

Scrub fields and forests on mountain slopes; 200–1000 m. Hebei, Heilongjiang, Jilin, Liaoning, Shanxi [Korea].

This species is used medicinally.

Two varieties (*Eleutherococcus sessiliflorus* var. *sessiliflorus* and var. *parviceps*) have sometimes been distinguished on the basis of minor differences in leaf shape and fruit size, but they do not appear to be worthy of recognition.

**4. *Eleutherococcus brachypus*** (Harms) Nakai, Fl. Sylv. Kor. 16: 27. 1927.

短柄五加 duan bing wu jia

*Acanthopanax brachypus* Harms, Bot. Jahrb. Syst. 36 (Beibl. 82): 80. 1905; *A. obovatus* G. Hoo; *Eleutherococcus brachypus* var. *omeiensis* C. H. Kim & B. Y. Sun; *E. obovatus* (G. Hoo) H. Ohashi.

Shrubs, to ca. 2 m tall. Branches with few, short, recurved prickles at nodes, rarely unarmed. Petioles to 7 cm at bases of branches, gradually shorter apically; leaves nearly sessile toward apices of branches; petiolules very short, glabrous; leaflets 3–5, obovate-oblong to rhombic, 3–6 × 1–2.5 cm, papery, both surfaces glabrous, secondary veins 3–5 pairs, base cuneate, margin entire or rarely with few teeth apically, apex rounded to obtuse. Inflorescence terminal, a simple or compound umbel, borne on leafy shoots, with 1–4 umbels; peduncles ca. 2 cm; pedicels 1–1.5 cm, glabrous. Calyx with 5 teeth, glabrous, rarely slightly pubescent. Corolla greenish. Ovary 5-carpellate; styles united into a column. Fruit subglobose, ca. 5 mm; styles persistent, ca. 2 cm. Fl. Jul–Aug, fr. Sep–Oct.

• Scrub fields, roadsides on mountain slopes; 1000–2000 m. Gansu, Ningxia, Shaanxi.

**5. *Eleutherococcus henryi*** Oliver, Hooker's Icon. Pl. 18: t. 1711. 1887.

糙叶五加 cao ye wu jia

Shrubs, to 3 m tall. Branches densely and roughly pubescent when young, soon glabrescent, with scattered, stout prickles, compressed in cross-section, oriented downward (sometimes lacking on pressed specimens). Petiole 4–7 cm, densely hirsute; petiolules 3–6 mm or leaflets subsessile; leaflets (3–)5, elliptic or oblanceolate, 6–12 × 3–5 cm, papery, abaxially pubescent on veins, adaxially ± scabrous-pubescent, secondary veins 6–8 pairs, conspicuous, base narrowly cuneate, margin serrate apically, apex acute or acuminate. Inflorescence terminal, a panicle of umbels, borne on leafy shoots, with several umbels, glabrous or slightly pubescent; peduncles 1.5–3.5 cm; pedicels 0.7–1.5 cm. Calyx with 5 teeth, glabrous or slightly pubescent. Ovary 2–5-carpellate; styles united into a column. Fruit black at maturity, ellipsoid-globose, ca. 8 mm; styles persistent, ca. 2 cm, slender. Fl. Jul–Sep, fr. Sep–Oct.

• Scrub fields, forests, forest margins, roadsides, mountain slopes; 800–3200 m. Anhui, Henan, Hubei, Jiangxi, Shaanxi, Shanxi, Sichuan, Zhejiang.

- 1a. Leaflets abaxially ± pubescent, especially on secondary veins; umbels 2–3 cm in diam.; pedicels glabrous or sparsely pubescent ..... 3a. var. *henryi*  
 1b. Leaflets abaxially glabrous or glabrescent; umbels 1–2 cm in diam.; pedicels densely pubescent ..... 3b. var. *faberi*

**5a. *Eleutherococcus henryi* var. *henryi***

糙叶五加(原变种) cao ye wu jia (yuan bian zhong)

*Acanthopanax henryi* (Oliver) Harms.

Leaflets abaxially ± pubescent, especially on secondary

veins. Umbels 2–3 cm in diam. Pedicels glabrous or sparsely pubescent.

• Scrub fields, forest margins, roadsides, mountain slopes; 800–3200 m. Anhui, Henan, Hubei, Jiangxi, Shaanxi, Shanxi, Sichuan, Zhejiang.

**5b. *Eleutherococcus henryi* var. *faberi*** (Harms) S. Y. Hu, J. Arnold Arbor. 61: 109. 1980.

毛梗糙叶五加 mao geng cao ye wu jia

*Acanthopanax henryi* var. *faberi* Harms, Mitt. Deutsch. Dendrol. Ges., ed. 2, 27: 12. 1918; *A. connatistylus* S. C. Li & X. M. Liu; *Eleutherococcus connatistylus* (S. C. Li & X. M. Liu) C. H. Kim & B. Y. Sun; *E. huangshanensis* C. H. Kim & B. Y. Sun.

Leaflets abaxially glabrous or glabrescent. Umbels 1–2 cm in diam. Pedicels densely pubescent.

• Scrub fields, forests; 1200–1700 m. S Anhui (Huang Shan), S Shaanxi (Zhongnan Shan), NW Zhejiang (Tianmu Shan).

The name *Eleutherococcus divaricatus* (Siebold & Zuccarini) S. Y. Hu (*Panax divaricatus* Siebold & Zuccarini; *Acanthopanax divaricatus* (Siebold & Zuccarini) Seemann; *Kalopanax divaricatus* (Siebold & Zuccarini) Miquel) has been misapplied to this taxon. In addition, in FRPS (54: 96. 1978), the name *A. sieboldianus* Makino (*E. sieboldianus* (Makino) Koidzumi, a Japanese species) was misapplied to plants from Anhui that in fact belong to *E. henryi* var. *faberi*.

**6. *Eleutherococcus senticosus*** (Ruprecht & Maximowicz) Maximowicz, Mém. Acad. Imp. Sci. St.-Petersbourg Divers Savans 9 [Prim. Fl. Amur.]: 132. 1859.

刺五加 ci wu jia

*Hedera senticosa* Ruprecht & Maximowicz, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15: 134. 1856; *Acanthopanax cuspidatus* var. *tienchuanensis* G. Hoo; *A. senticosus* (Ruprecht & Maximowicz) Harms; *A. senticosus* var. *brevistamineus* S. F. Gu; *A. senticosus* f. *subinermis* (Regel) H. L. Li; *A. senticosus* var. *subinermis* (Regel) M. Kitagawa; *Eleutherococcus senticosus* f. *inermis* Komarov; *E. senticosus* var. *subinermis* Regel.

Shrubs, to 6 m tall. Branches with dense to scattered, slender, terete, bristlelike prickles. Petiole 3–12 cm, slender, sometimes with fine prickles; petiolule of central leaflet (0.6–)1.2–2 cm, usually brownish pubescent; leaflets (3–)5, elliptic-obovate or oblong, 5–13 × 3–7 cm, papery, abaxially pubescent on veins, adaxially with scattered hairs, secondary veins 6 or 7 pairs, conspicuous on both surfaces, base broadly cuneate, margin sharply biserrate, apex shortly acuminate or acuminate. Inflorescence terminal, a solitary or compound umbel, borne on leafy shoots, usually with 2–6 umbels together; peduncles 5–7 cm, glabrous; pedicels 1–2 cm, glabrous or slightly pubescent at base. Calyx subtentire or with 5 inconspicuous teeth, glabrous. Corolla purple-yellow. Ovary 5-carpellate; styles united into a column. Fruit ovoid-globose, ca. 8 mm; styles persistent, ca. 1.5 mm. Fl. Jun–Jul, fr. Aug–Oct.

Scrub fields, forests, roadsides, valleys; below 2000 m. Hebei, Heilongjiang, Henan, Jilin, Liaoning, N Shaanxi, Shanxi, Sichuan [Japan, Korea, Russia].

This species is used medicinally.

**7. *Eleutherococcus leucorrhizus*** Oliver, Hooker's Icon. Pl. 18: t. 1711. 1887.

藤五加 *teng wu jia*

Shrubs, to 4 m tall, sometimes climbers. Branches glabrous, with few, slender, terete prickles generally at nodes. Petiole 3–10 cm; petiolule of central leaflet 3–6 mm; leaflets (3–)5, oblong, oblanceolate, or lanceolate, rarely obovate, 6–14 × 2.5–6 cm, papery, both surfaces glabrous (rarely abaxially pubescent when young, glabrescent), secondary veins 6–10 pairs, base cuneate, margin sharply biserrate, apex acuminate or long acuminate. Inflorescence terminal, a corymbose panicle of umbels or a solitary umbel, borne on leafy shoots; peduncles 0.6–10 cm; pedicels 1–2 cm, glabrous. Calyx with 5 teeth, glabrous. Corolla yellowish green. Ovary 5-carpellate, glabrous; styles united into a column. Fruit ovoid-globose, 5–7 mm in diam.; styles persistent, 1–1.2 cm. Fl. Jun–Aug, fr. Aug–Nov.

• Scrub fields, forests, forest margins in valleys; 100–3200 m. Anhui, Gansu, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang [?Bhutan].

This species is used medicinally.

- 1a. Leaflets 3(–)5, both surfaces glabrous, abaxially glaucous or glaucescent ... 7d. var. *setchuenensis*  
 1b. Leaflets (3–)5, adaxially scabrous, abaxially pubescent, not glaucous.  
 2a. Leaflets abaxially pubescent when young, both surfaces soon glabrous ..... 7a. var. *leucorrhizus*  
 2b. Leaflets abaxially yellow pubescent on veins, adaxially scabrous or scabridulous.  
 3a. Petiolule and midvein of blade with fine prickles ..... 7b. var. *scaberulus*  
 3b. Petiolule and midvein of blade densely yellow pubescent, without fine prickles ..... 7c. var. *fulvescens*

**7a. *Eleutherococcus leucorrhizus* var. *leucorrhizus***

藤五加(原变种) *teng wu jia* (*yuan bian zhong*)

*Acanthopanax cuspidatus* G. Hoo; *A. leucorrhizus* (Oliver) Harms; *A. leucorrhizus* f. *angustifoliatum* G. Hoo; *A. leucorrhizus* var. *axillaritomentosum* G. Hoo; *Eleutherococcus cuspidatus* (G. Hoo) H. Ohashi; *E. leucorrhizus* var. *axillaritomentosus* (G. Hoo) H. Ohashi; *E. leucorrhizus* var. *brevipedunculatus* Y. R. Ling.

Leaflets (3–)5, abaxially pubescent when young, both surfaces soon glabrous.

• Scrub fields, forest margins in valleys; 100–3200 m. Anhui, Gansu, Guangdong, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

**7b. *Eleutherococcus leucorrhizus* var. *scaberulus*** (Harms & Rehder) Nakai, Fl. Sylv. Kor. 16: 29. 1927.

狭叶藤五加 *xia ye teng wu jia*

*Acanthopanax leucorrhizus* var. *scaberulus* Harms & Reh-

der in Sargent, Pl. Wilson. 2: 558. 1916; *A. simonii* Simon-Louis ex Mouillefert; *A. simonii* var. *longipedicellatus* G. Hoo; *Eleutherococcus simonii* (Simon-Louis ex Mouillefert) Hesse; *E. simonii* var. *longipedicellatus* (G. Hoo) H. Ohashi.

Leaflets (3–)5, adaxially scabrous, abaxially yellow pubescent on veins; petiolule and midvein of blade with fine prickles.

• Scrub fields on mountain slopes; 1000–3000 m. Anhui, N Guangdong, Guizhou, W Henan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

**7c. *Eleutherococcus leucorrhizus* var. *fulvescens*** (Harms & Rehder) Nakai, Fl. Sylv. Kor. 16: 27. 1927.

糙叶藤五加 *cao ye teng wu jia*

*Acanthopanax leucorrhizus* var. *fulvescens* Harms & Rehder in Sargent, Pl. Wilson. 2: 558. 1916; *A. longipes* Handel-Mazzetti.

Leaflets (3–)5, adaxially ± scabridulous, petiolule and midvein of blade densely yellow pubescent, without fine prickles.

• Forests, scrub fields; 1000–3100 m. N Guangdong, Guizhou, W Henan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan.

**7d. *Eleutherococcus leucorrhizus* var. *setchuenensis*** (Harms) C. B. Shang & J. Y. Huang, **comb. nov.**

蜀五加 *shu wu jia*

Basionym: *Acanthopanax setchuenensis* Harms, Bot. Jahrb. Syst. 29: 488. 1900; *A. setchuenensis* var. *latifoliatum* G. Hoo; *Eleutherococcus setchuenensis* (Harms) Nakai; *E. setchuenensis* var. *latifoliatum* (G. Hoo) H. Ohashi.

Leaflets usually 3, rarely 4 or 5, both surfaces glabrous, abaxially glaucous or glaucescent, margin entire or sparsely and irregularly serrate.

• Scrub fields; 1000–3200 m. Gansu, Guizhou, Henan, Hubei, Shaanxi, Sichuan.

**8. *Eleutherococcus baixinensis*** (X. P. Fang & C. K. Hsieh) P. S. Hsu & S. L. Pan, Sida 15: 594. 1993.

宝兴五加 *bao xing wu jia*

*Acanthopanax baixinensis* X. P. Fang & C. K. Hsieh, Bull. Bot. Res., Harbin 7(4): 89. 1987.

Shrubs, to 2 m tall. Branches glabrous or sometimes brown hirsute when young, with sparse, slender, terete, needle-like prickles at nodes. Petiole 3–10 cm; petiolules 1–5 mm, brown pubescent or setose; leaflets (3–)5, narrowly oblong or lanceolate, 4–7 × 1–2.5 cm, membranous, both surfaces brown pubescent or setose, secondary veins 6–10 pairs, abaxially conspicuous, base rounded or acute, margin setose-serrate or setose-biserrate, apex acuminate or abruptly so. Inflorescence terminal, a small panicle of umbels, borne on leafy shoots, glabrous; peduncles 1.5–7 cm; pedicels 4–10 mm, slender. Calyx of 5 teeth, glabrous. Corolla yellow-green. Ovary (4 or)5-carpellate, sparsely pubescent at base when young; styles united into a column, 0.5–1 mm. Fruit ovoid-globose; styles persistent, 1–1.5 mm. Fl. Jul–Aug, fr. Sep–Oct.

• Shaded slopes in dense forests; ca. 2200 m. Sichuan (Baoping).

**9. *Eleutherococcus verticillatus*** (G. Hoo) H. Ohashi, J. Jap. Bot. 62: 360. 1987.

轮伞五加 lun san wu jia

*Acanthopanax verticillatus* G. Hoo, Acta Phytotax. Sin., Addit. 1: 159. 1965; *A. xizangensis* Y. R. Li; *Eleutherococcus xizangensis* (Y. R. Li) H. Ohashi.

Shrubs. Branches purple, with recurved prickles 1.5–3 mm, base decurrent. Petiole 3–12 cm, with small prickles, glabrous; petiolules 1–10 mm; leaflets 3–5, obovate or broadly elliptic, 7–11.5 × 3.5–5 cm, secondary veins 6–8 pairs, distinct, base cuneate or broadly so, margin irregularly biserrate, teeth awned, apex acute, shortly acuminate, or caudate. Inflorescence terminal, a raceme of umbels, borne on leafy shoots, with a terminal umbel and almost always 1 to several verticals of flowers, and also often with several flowers borne individually at base; pedicels 1–1.5 cm, pubescent. Calyx with 5 teeth. Ovary (3–)5-carpellate; styles free. Fruit globose, ca. 5 mm in diam.; styles persistent, free portions recurved. Fl. Jul, fr. Aug.

- Shaded and wet forests; 2900–3200 m. SE Xizang.

This species is used medicinally.

**10. *Eleutherococcus cissifolius*** (Griffith ex C. B. Clarke) Nakai, Chosen-shokubutsu 1: 420. 1914.

乌蕊莓五加 wu lian mei wu jia

*Aralia cissifolia* Griffith ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 722. 1879; *Acanthopanax cissifolius* (Griffith ex C. B. Clarke) Harms; *A. cissifolius* var. *glaber* Y. R. Li; *Eleutherococcus cissifolius* var. *glaber* (Y. R. Li) P. S. Hsu & S. L. Pan.

Shrubs, to ca. 3 m tall. Branches usually pubescent when young, unarmed or with scattered short prickles. Petiole 4–12 cm, sometimes prickly, pubescent when young; petiolules 2–5 mm; leaflets (3–)5, oblong, oblanceolate, or ovate-lanceolate, 3–8 × 1.5–2.5 cm, papery, abaxially pubescent when young, later glabrescent, adaxially glabrous or scattered hispid, base attenuate, margin serrate or biserrate, apex acuminate. Inflorescence terminal, a simple or compound umbel, borne on leafy shoots; umbels 1 to several, densely pubescent when young; peduncles 3–12 cm; pedicels 0.8–1.5 cm. Calyx entire, glabrous. Corolla yellowish green. Ovary 3–5-carpellate; styles free to base or nearly so. Fruit globose, 6–8 mm in diam.; styles persistent, ca. 2 mm. Fl. Jul, fr. Oct.

Scrub fields; 2500–3600 m. Xizang, Yunnan [Bhutan, India (Sikkim), Nepal].

**11. *Eleutherococcus eleutheristylus*** (G. Hoo) H. Ohashi, J. Jap. Bot. 62: 358. 1987.

离柱五加 li zhu wu jia

*Acanthopanax eleutheristylus* G. Hoo, Acta Phytotax. Sin., Addit. 1: 155. 1965; *A. eleutheristylus* var. *simplex* G. Hoo; *Eleutherococcus eleutheristylus* var. *simplex* (G. Hoo) H. Ohashi.

Shrubs. Branches dark purple, glabrous, unarmed. Petiole 1.5–10 cm; petiolules 3–5 mm, glabrous; leaflets elliptic or

oblong-elliptic, lateral ones rhombic-elliptic, 3–8 × 1.5–3 cm, papery, both surfaces glabrous, secondary veins 6–8 pairs, distinct, tertiary veins raised abaxially, impressed adaxially, base rounded or narrowly cuneate, margin serrate or biserrulate, apex acuminate or caudate. Inflorescence terminal, a solitary umbel, borne on leafy shoots, glabrous; peduncles 2.5–4 cm, glabrous; pedicels 8–12 mm, glabrous. Calyx of 5 teeth. Corolla not seen. Ovary 5-carpellate; styles free nearly to base. Fruit ovoid-globose, 7–8 mm; styles persistent, reflexed. Fr. Jul.

- Scrub fields on mountain slopes. Gansu, Shaanxi (Hua Shan).

**12. *Eleutherococcus giraldii*** (Harms) Nakai, J. Arnold Arbor. 5: 9. 1924.

红毛五加 hong mao wu jia

*Acanthopanax giraldii* Harms, Bot. Jahrb. Syst. 36(Beibl. 82): 80. 1905; *A. giraldii* var. *hispidus* G. Hoo; *A. giraldii* var. *inermis* Harms & Rehder; *A. humillimus* Y. S. Lian & Xue L. Chen; *A. yui* H. L. Li; *A. yui* var. *longipedunculatus* G. Hoo; *A. yui* var. *parvispinosus* G. Hoo; *A. yui* var. *villosus* Y. R. Li; *Eleutherococcus giraldii* f. *hispidus* (G. Hoo) H. Ohashi; *E. giraldii* var. *hispidus* (G. Hoo) Q. S. Wang; *E. giraldii* var. *inermis* (Harms & Rehder) Nakai; *E. giraldii* var. *villosus* (Y. R. Li) P. S. Hsu & S. L. Pan; *E. humillimus* (Y. S. Lian & Xue L. Chen) Y. F. Deng; *E. yui* (H. L. Li) S. Y. Hu.

Shrubs, to ca. 3 m tall. Branches brownish, with dense bristlelike spreading or reflexed prickles, rarely unarmed. Petiole 3–7 cm, glabrous, rarely prickly; petiolules short; leaflets (3–)5, obovate-oblong, rarely ovate, 2.5–8 × 1.5–3 cm, abaxially pubescent, adaxially glabrous or scattered hispid, secondary veins ca. 5 pairs, inconspicuous, base cuneate, margin irregularly biserrate, apex acute or shortly acuminate. Inflorescence terminal, a solitary umbel, borne on leafy shoots; peduncles 0.5–1(–2) cm, stout; pedicels 0.5–1.5 cm, glabrous or pubescent when young. Calyx subtire, glabrous. Corolla white. Ovary 5-carpellate; styles united for 1/5–1/2 their length. Fruit black at maturity, globose, ca. 8 mm. Fl. Jun–Jul, fr. Sep–Oct.

- Scrub fields on mountain slopes; 1300–3500 m. Gansu, Henan, Hubei, Ningxia, Qinghai, Sichuan, Shaanxi, Yunnan.

Deng (Novon 13: 305–306. 2003) separated *Eleutherococcus humillimus* from *E. giraldii* on account of the former being a subshrub, only 5–15 cm tall (vs. 1–3 m), with 3 or 4(or 5) carpels and styles (vs. 5), and styles connate for ca. 1/5 their length (vs. 1/4–1/2 their length). Deng recorded *E. humillimus* from high elevations (2700–3000) in S Gansu and N Sichuan and noted that it might be an alpine vicariant of *E. giraldii*.

**13. *Eleutherococcus wilsonii*** (Harms) Nakai, J. Arnold Arbor. 5: 9. 1924.

狭叶五加 xia ye wu jia

Shrubs, to 5 m tall. Branches purple-red, glabrous or slightly pubescent, with slender recurved prickles on nodes. Petiole 0.5–6 cm, glabrous; petiolules very short; leaflets 3–5, oblong-lanceolate or oblanceolate, 4–5.5 × 0.5–1.6 cm, papery, abaxially glabrous or pilose, adaxially glabrous or with sparse fine bristles, secondary veins 4–8 pairs, inconspicuous, base attenuate, margin crenate-serrate, or serrulate or biserrulate,

apex acute or shortly acuminate. Inflorescence terminal, a solitary umbel, borne on leafy shoots; peduncles 1.5–5 cm; pedicels 1–1.7 cm, glabrous. Calyx subtire or with 5 teeth, glabrous. Corolla yellowish green. Ovary (3–)5-carpellate; styles united at base. Fruit subglobose, 6–7 mm; styles persistent, ca. 1.5 cm. Fl. Jun–Jul, fr. Sep–Oct.

• Scrub fields, forests; 2400–3600 m. Gansu, W Hubei, Qinghai, S Shaanxi, Sichuan, Xizang, Yunnan.

- 1a. Leaflet margin crenate-serrulate, abaxially glabrous ..... 13a. var. *wilsonii*  
 1b. Leaflet margin serrulate or biserrulate, abaxially sparsely or densely pilose ..... 13b. var. *pilosulus*

### 13a. *Eleutherococcus wilsonii* var. *wilsonii*

狭叶五加(原变种) xia ye wu jia (yuan bian zhong)

*Acanthopanax wilsonii* Harms in Sargent, Pl. Wilson. 2: 560. 1916; *A. nanpingensis* X. P. Fang & C. K. Hsieh; *A. stenophyllus* Harms; *A. stenophyllus* f. *angustissimus* Rehder; *A. stenophyllus* f. *dilatatus* Rehder; *Eleutherococcus nanpingensis* (X. P. Fang & C. K. Hsieh) P. S. Hsu & S. L. Pan; *E. stenophyllus* (Harms) Nakai; *E. stenophyllus* f. *angustissimus* (Rehder) S. Y. Hu; *E. stenophyllus* f. *dilatatus* (Rehder) S. Y. Hu.

Leaflets glabrous abaxially, margin crenate-serrulate.

• Scrub fields, forests; 2500–3600 m. S Gansu, W Hubei, S Shaanxi, Sichuan, Xizang, Yunnan.

**13b. *Eleutherococcus wilsonii* var. *pilosulus*** (Rehder) P. S. Hsu & S. L. Pan, Sida 15: 594. 1993.

毛狭叶五加 mao xia ye wu jia

*Acanthopanax giraldii* Harms var. *pilosulus* Rehder, J. Arnold Arbor. 9: 99. 1928; *A. wilsonii* var. *pilosulus* (Rehder) X. P. Fang & C. K. Hsieh; *Eleutherococcus giraldii* var. *pilosulus* (Rehder) S. Y. Hu; *E. pilosulus* (Rehder) C. H. Kim & B. Y. Sun; *E. wilsonii* var. *pilosulus* (Rehder) P. S. Hsu & S. L. Pan.

Leaflets sparsely or densely pilose abaxially, margin serrulate or biserrulate.

• Scrub fields; 2400–2900 m. Gansu, Qinghai.

**14. *Eleutherococcus rehderianus*** (Harms) Nakai, J. Arnold Arbor. 5: 9. 1924.

匙叶五加 chi ye wu jia

*Acanthopanax rehderianus* Harms in Sargent, Pl. Wilson. 2: 516. 1916; *A. rehderianus* var. *longipedunculatus* G. Hoo; *Eleutherococcus rehderianus* var. *longipedunculatus* (G. Hoo) H. Ohashi.

Shrubs, to ca. 3 m tall. Branches brownish, pubescent when young, with scattered recurved prickles. Petiole 2–7 cm, sometimes with a prickle at base; petiolules very short; leaflets (3–)5, oblong or oblanceolate, 2–8 × 0.8–3 cm, papery, both surfaces glabrous, secondary veins 5 or 6 pairs, base gradually narrowed, margin entire or apically crenate-serrate, apex acute to shortly acuminate. Inflorescence terminal, a solitary umbel,

borne on leafy shoots; peduncles 1–2 cm; pedicels ca. 1 cm, glabrous. Calyx subtire, glabrous. Ovary (4 or)5-carpellate; styles united to middle, free portions recurved. Fruit globose, ca. 6 mm. Fl. Jun–Jul, fr. Aug–Oct.

• Scrub fields on mountain slopes or roadsides; 2000–2600 m. Hubei, Shaanxi, Sichuan.

**15. *Eleutherococcus lasiogyne*** (Harms) S. Y. Hu, J. Arnold Arbor. 61: 109. 1980.

康定五加 kang ding wu jia

*Acanthopanax lasiogyne* Harms in Sargent, Pl. Wilson. 2: 563. 1916; *A. lasiogyne* var. *ferrugineus* Y. R. Li; *A. ternatus* Rehder; *A. wardii* W. W. Smith; *Eleutherococcus lasiogyne* var. *ferrugineus* (Y. R. Li) H. Ohashi; *E. wardii* (W. W. Smith) S. Y. Hu.

Trees, small, or shrubs, to 10 m tall. Branches glabrous, unarmed or with scattered recurved prickles, slightly flattened at base. Petiole 2–5 cm, glabrous; petiolules very short; leaflets 3, ovate, oblong-ovate, or obovate-oblong, 3–6 × 1.5–4 cm, papery, secondary veins 5 or 6 pairs, slightly conspicuous, base cuneate or broadly so, oblique on lateral leaflets, margin entire or apically serrate, apex acute or shortly acuminate. Inflorescence terminal, a solitary umbel or a small panicle of umbels, borne on leafy shoots, with 1 to several umbels; peduncles 0.5–2 cm; pedicels 5–10 mm, peduncles and pedicels white or ferruginous tomentose, soon glabrescent. Calyx with 5 teeth, white tomentose when young, glabrescent. Ovary 2-carpellate; styles united at base, free portions recurved. Fruit globose, slightly compressed laterally, 7–9 mm; styles persistent, ca. 1.5 mm, reflexed apically. Fl. Jul–Sep, fr. Sep–Nov.

• Scrub fields, forests, roadsides; 2000–3400 m. Sichuan, SE Xizang, NW Yunnan.

This species is used medicinally.

**16. *Eleutherococcus scandens*** (G. Hoo) H. Ohashi, J. Jap. Bot. 62: 359. 1987.

匍匐五加 pu fu wu jia

*Acanthopanax scandens* G. Hoo, Acta Phytotax. Sin., Addit. 1: 158. 1965.

Shrubs, scandent. Branches unarmed, glabrous. Petiole 2–5 cm, glabrous; leaflets 3, sessile, ovate or ovate-elliptic, 5–7 × 3.5–5 cm, membranous, both surfaces scattered setose, secondary veins 4–6 pairs, distinct, base broadly cuneate, margin setose-serrulate, apex acute or acuminate. Umbels terminal, solitary or 2 or 3 together in a small panicle; peduncles 1–2 cm; pedicels ca. 8 mm, glabrous. Calyx 5-toothed, glabrous. Ovary 2-carpellate; styles 2, united to middle. Fruit black, globose, slightly compressed, ca. 8 mm in diam. Seeds reniform, white. Fl. Jun–Jul, fr. Sep–Oct.

• Scrub fields, among scattered trees, along streams, roadsides; below 800 m. Anhui, N Fujian, Jiangxi, Zhejiang.

**17. *Eleutherococcus trifoliatum*** (Linnaeus) S. Y. Hu, J. Arnold Arbor. 61: 110. 1980.

白箭 bai le

*Zanthoxylum trifoliatum* Linnaeus, Sp. Pl. 1: 270. 1753;

*Acanthopanax aculeatus* (Aiton) Witte; *A. sepium* Seemann; *A. trifoliatum* (Linnaeus) Merrill; *Panax aculeatus* Aiton.

Shrubs, scandent or climbers, to 7 m tall. Branches with scattered, recurved prickles. Petiole 2–6 cm, glabrous, prickly; petiolules 2–8 mm; leaflets 3(–5), ovate, elliptic-ovate, or oblong, 4–10 × 2–4.5 cm, papery, adaxially glabrous or slightly setose on midvein and veins, secondary veins 5 or 6 pairs, base cuneate, margin serrulate, apex acute or acuminate. Inflorescence a terminal raceme of umbels or a compound umbel, borne on leafy shoots, with 3–10 umbels; peduncles 2–7 cm; pedicels 1–2 cm. Calyx with 5 teeth, glabrous. Ovary 2-carpellate; styles united to middle. Fruit globose, laterally compressed, 3–4 mm; style bifid, ca. 1.5 mm. Fl. Aug–Nov, fr. Sep–Dec.

Scrub fields, roadsides, forest margins, in valleys or on mountain slopes; below 1000 m in E and 3200 m in W part of range. S Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Hubei, S Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Japan, Philippines, Thailand, Vietnam].

This species is used medicinally.

Material from Guangxi with 3-foliolate leaves, generally entire leaflet margins, and more rounded leaflet bases may represent a new infraspecific taxon.

**18. *Eleutherococcus setosus*** (H. L. Li) Y. R. Ling, Acta Phytotax. Sin. 15(2): 85. 1977.

刚毛白筋 gang mao bai le

*Acanthopanax trifoliatum* (Linnaeus) Merrill var. *setosus* H. L. Li, Sargentia 2: 87. 1942; *A. setosus* (H. L. Li) C. B. Shang; *Eleutherococcus trifoliatum* var. *setosus* (H. L. Li) H. Ohashi.

Shrubs, scandent, to 4 m tall. Branches with scattered, recurved prickles. Petiole 4–6 cm, unarmed or with 1 or 2 small prickles; leaflets (3–)5, oblong or obovate-lanceolate, rarely ovate, 5–11 × 2–4 cm, papery, adaxially ± densely setose on midvein and veins, secondary veins 5–8 pairs, distinct, base rounded or broadly cuneate, margins setose-biserrulate, apex long acuminate. Inflorescence terminal; umbels 1–3, borne on leafy shoots; peduncles 1–3 cm; pedicels ca. 1 cm, glabrous. Calyx glabrous. Corolla white. Ovary 2-carpellate; styles fully united into a column or slightly bifid apically. Fruit black at maturity, compressed-globose, ca. 5 mm in diam.; pedicels to 1.5 cm. Fl. Jul–Oct, fr. Oct–Nov.

• Scrub fields, forest margins on mountain slopes or roadsides; below 1300 m. S Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Taiwan, Yunnan.

## 19. POLYSCIAS J. R. Forster & G. Forster, Char. Gen. Pl. 32. 1775.

南洋参属 nan yang shen shu

*Nothopanax* Miquel.

Shrubs or trees, evergreen, hermaphroditic, andromonoecious or dioecious, unarmed, often glabrous, some with sharply aromatic herbage. Leaves 1–5-pinnately compound, margins entire to crenate or serrate; stipules sometimes intrapetiolar and adnate to inside of petiole or absent. Inflorescence a terminal panicle of umbels, heads or spikes, sometimes with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers. Pedicel articulate below ovary. Calyx undulate or with 4 or 5(–8 or more) small lobes. Petals 4 or 5(–8 or more), valvate. Stamens as many as petals. Ovary 4 or 5(–8 or more) carpellate; styles free or rarely connate at base. Fruit a drupe, terete or laterally flattened. Seeds compressed, endosperm smooth.

About 150 species: paleotropical; five species (all introduced and cultivated) in S China.

- 1a. Leaves 3–5-pinnately compound ..... 2. *P. fruticosum*  
 1b. Leaves 1- or 2-pinnately compound.  
 2a. Flowers in heads, sessile; petiole with a short sheathing base, not clasping or alate ..... 4. *P. nodosum*  
 2b. Flowers in umbels, distinctly pedicellate; petiole with an evident sheathing, alate base.  
 3a. Leaflets 1–5, blades broadly elliptic to obovate or reniform, apex rounded, base shallowly cordate to convex (rarely rounded-truncate) ..... 5. *P. scutellaria*  
 3b. Leaflets 5–15, blades elliptic to oblong, base and apex obtuse to acute or acuminate.  
 4a. Margins of leaflets entire to coarsely crenate ..... 1. *P. cumingiana*  
 4b. Margins of leaflets sharply serrulate ..... 3. *P. guilfoylei*

**1. *Polyscias cumingiana*** (C. Presl) Fernández-Villar in Blanco, Fl. Filip., ed. 3, 4(Nov. App.): 102. 1880.

线叶南洋参 xian ye nan yang shen

*Paratropia cumingiana* C. Presl, Epimel. Bot. 250. 1831; *Aralia filicifolia* Moore ex E. Fournier; *Polyscias filicifolia* (Moore ex E. Fournier) Bailey.

Shrubs or treelets, 1.5–4 m tall, andromonoecious. Leaves 1- or 2-pinnate; petiole 8–20 cm, clasping at base, alate for 3–4.5 cm with membranous wings; petiolules 0.5–3 cm; leaflets

9–15, often variegated, elliptic to lanceolate or ovate, often narrowly so, 10–35 × 2–10 cm, papery, base obtuse to attenuate, margin entire to coarsely crenate, often with minute teeth, apex acuminate or acute to obtuse. Inflorescence terminal, pendent, a panicle of umbels; primary axis 15–30 cm; secondary axes 5–7, usually in verticils, 20–80(–140) cm; tertiary axes 10–25 per secondary axis, mostly grouped in 2–4(or 5) verticils, with a terminal umbellule of bisexual flowers and 2–6 lateral umbellules of staminate flowers, or further divided into 4th order axes; pedicels 4–8 mm (shorter in staminate flowers). Ovary (2 or)3–5-carpellate; styles free nearly to base, 1–1.4 mm at anthe-

sis, diverging, expanding in fruit to 1.7 mm. Fruit subglobose to broadly ovoid, 3–4(–5) mm high, base often shallowly cordate. Fl. autumn.

Cultivated in Fujian (Xiamen) and Hainan (Haikou) [native to SW Pacific islands].

This species is used as an ornamental.

**2. *Polyscias fruticosa*** (Linnaeus) Harms in Engler & Prantl, Nat. Pflanzenfam. 3(8): 45. 1894.

南洋参 nan yang shen

*Panax fruticosus* Linnaeus, Sp. Pl., ed. 2, 2: 1513. 1763 [“*fruticosum*”]; *Nothopanax fruticosus* (Linnaeus) Miquel.

Shrubs or treelets, to 3(–5) m tall, andromonoecious. Leaves 3–5-pinnate; petiole (2–)5–15 cm, clasping at base, inconspicuously alate with membranous wings; petiolules 1–5 cm; primary leaf divisions (7–)11–15, each further divided once or twice, sometimes variegated, usually lanceolate, (1–)2–18 × 0.2–5 cm, papery, base narrowly cuneate to attenuate, margin lacinate to spinulose-serrate, teeth 5–10 mm, apex long acuminate. Inflorescence terminal, erect, a panicle of umbels; primary axis 8–30(–60) cm; secondary axes 5–15, scattered or subverticillate, 7–25(–30) cm; tertiary axes 5–15 per secondary axis, mostly grouped in 2–4 verticils, with a terminal umbellule of bisexual flowers and 2–6 lateral umbellules of staminate flowers; pedicels 1.5–5 mm (shorter in staminate flowers). Ovary 2- or 3(or 4)-carpellate; styles free nearly to base, 0.8–1.2 mm at anthesis, recurving, expanding in fruit to 1.5 mm. Fruit laterally compressed or trigonous (rarely quadrangular), orbicular to ovate-orbicular, 4–5 × 4.5–6 mm, base rounded (sometimes shallowly subcordate). Fl. Aug–Sep.

Widely cultivated in Hainan (Wanning) [native to SW Pacific islands].

This species is used as an ornamental and for medicinal purposes.

**3. *Polyscias guilfoylei*** (W. Bull) L. H. Bailey, Rhodora 18: 153. 1916.

银边南洋参 yin bian nan yang shen

*Aralia guilfoylei* W. Bull, Cat. 83: 4. 1873.

Shrubs or treelets, to 5 m tall, andromonoecious. Leaves 1-pinnate (irregularly decompound or 2- or 3-pinnate in some forms); petiole 7–18 cm, clasping at base, alate for 1.5–3 cm with membranous wings; petiolules 1–3.5 cm; leaflets (5–)7–9, often variegated, elliptic, ovate, or obovate, often broadly so, 5–20 × 2.5–12 cm, papery, base broadly cuneate to attenuate, margin spinulose-serrate, teeth (1–)1.5–5 mm, apex obtuse to broadly acute or acuminate. Inflorescence terminal, pendent, a panicle of umbels; primary axis 3–6 cm; secondary axes 5–10, scattered toward base, upper ones forming a terminal umbel, 20–60 cm; tertiary axes 8–12 per secondary axis, grouped in 1–3 ver-

ticils, (1.5–)3–12 cm; peduncles 1–2 cm, with a terminal umbel of bisexual flowers and often 1(or 2) lateral umbels of staminate flowers; pedicels 4–10 mm. Ovary 3- or 4(or 5)-carpellate; styles free nearly to base, recurving in fruit. Fruit rarely seen, subglobose, 4–5 mm high.

Cultivated in gardens, yards, and as hedges. Fujian (Xiamen), Guangdong (Guangzhou), Hainan [native to SW Pacific islands].

**4. *Polyscias nodosa*** (Blume) Seemann, J. Bot. 3: 181. 1865.

结节南洋参 jie jie nan yang shen

*Aralia nodosa* Blume, Bijdr. 873. 1826.

Trees, to 25 m tall, dioecious. Leaves 1- or 2-pinnate; petiole ca. 30 cm, with a short sheathing base, not clasping or alate; petiolules absent or very short (leaflets sessile to subsessile); leaflets 21–33, ovate-oblong, 15–20 × 4–5 cm, papery, base rounded to truncate, margin shallowly crenate, apex apiculate. Inflorescence terminal, erect, a panicle of heads; primary axis 50–150 cm, secondary axes 15–40 cm, peduncles 6–15 mm, with heads of hermaphroditic flowers. Ovary 5-carpellate; styles free, spreading. Fruit subglobose, ca. 4 mm high.

Widely cultivated in Fujian (Fuzhou) and Guangdong (Guangzhou) [native to Malesia and the Solomon Islands].

This species is used as an ornamental.

**5. *Polyscias scutellaria*** (N. L. Burman) Fosberg, Occas. Pap. Univ. Hawaii 46: 9. 1948.

圆叶南洋参 yuan ye nan yang shen

*Crassula scutellaria* N. L. Burman, Fl. Indica, 78. 1768; *Aralia balfouriana* André; *Polyscias balfouriana* (André) L. H. Bailey.

Treelets or small trees, 2–6(–7) m tall, andromonoecious. Leaves 1- or 2-pinnate; petiole 35–30 cm, enlarged and clasping at base, alate for 1–6 cm with membranous wings; petiolules 1–5 cm; leaflets 1 (leaves unifoliolate), 3, or 5 (rarely 2 or 4), broadly elliptic to oblate or reniform, occasionally ovate or obovate, 5–20(–24) × 5–20(–26) cm, papery to subleathery, base shallowly cordate or convex, margin subentire to coarsely crenulate or shallowly serrate, teeth short, apex rounded. Inflorescence terminal, erect, a panicle of umbels; primary axis 30–100 cm; secondary axes 15–30, in 2–4 verticils, 15–50 cm; tertiary axes (peduncles) 7–30 per secondary axis, in irregular verticils, 2–18 mm, with a terminal umbel bisexual and lateral umbels of staminate flowers; pedicels 1.5–7 mm. Ovary (2 or)3–5-carpellate; styles free nearly to base, 0.4–0.6 mm at anthesis, spreading, expanding in fruit to 0.8 mm. Fruit infrequently seen, subglobose to depressed-globose (somewhat triangular to quadrangular when 3- or 4-carpellate), 4–6 mm high.

Cultivated in gardens. Fujian (Xiamen), Guangdong (Guangzhou) [native to SW Pacific islands].

## 20. HETEROPANAX Seemann, Fl. Vit. 114. 1866.

幌伞枫属 huang san feng shu

Shrubs or trees, evergreen, andromonoecious, unarmed, stellate pubescent. Leaves 2–5-pinnately compound, margins entire;

stipules inconspicuous. Inflorescence a terminal panicle of umbels, peduncles with a terminal umbel of bisexual flowers and usually 1 to several lateral umbels of male flowers; bracts and bracteoles persistent. Pedicels not articulate below ovary. Calyx rim minutely dentate. Petals 5, valvate. Stamens 5. Ovary 2-carpellate; styles 2, free or united to middle. Fruit a drupe, laterally compressed. Seed compressed, endosperm ruminant.

About eight species: S and SE Asia; six species (two endemic) in China.

- 1a. Fruit subglobose to weakly compressed laterally, 2–4 mm thick at maturity; leaves 3–5-pinnately compound.  
 2a. Styles connate to above middle, free arms divergent in fruit; leaflets narrowly elliptic, apex long acuminate to caudate ..... 1. *H. hainanensis*  
 2b. Styles divided to base, free arms strongly recurved in fruit; leaflets elliptic (rarely narrowly elliptic), apex acute to shortly acuminate ..... 2. *H. fragrans*
- 1b. Fruit strongly compressed laterally, 1–1.5 mm thick at maturity; leaves 2–5-pinnately compound.  
 3a. Pedicels 1.5–3.5(–4) mm in fruit.  
 4a. Leaves 2-pinnately compound, leaflets orbicular to ovate, base rounded ..... 3. *H. yunnanensis*  
 4b. Leaves 3–5-pinnately compound, leaflets elliptic to narrowly elliptic, base narrowly acute to acuminate ..... 4. *H. brevipedicellatus*
- 3b. Pedicels 4–10 mm in fruit.  
 5a. Leaves 2-pinnately compound, leaflets leathery, 8–11 × 3–6 cm ..... 5. *H. nitentifolius*  
 5b. Leaves 3–5-pinnately compound, leaflets papery, 2–6 × 0.8–2 cm ..... 6. *H. chinensis*

**1. *Heteropanax hainanensis*** C. B. Shang, *Adansonia*, sér. 3, 19: 80. 1997.

海南幌伞枫 hai nan huang san feng

Trees, to ca. 7 m tall. Leaves 3- or 4-pinnately compound; petiole and rachis glabrous; petiolules 4–10 mm; leaflets narrowly elliptic, 4.5–11 × 1.2–4.2 cm, papery, both surfaces glabrous, lateral veins 5 or 6 pairs, slightly distinct, base narrowly cuneate, margin entire, minutely revolute, apex acuminate to slightly caudate. Inflorescence brown-red stellate pubescent; primary axis more than 35 cm; secondary axes to 20 cm; peduncles 1.5–2.5 cm; umbels in fruit 2–3 cm in diam., terminal ones often larger; pedicels 5–10 mm. Fruit brown-red at maturity when dry, weakly compressed laterally, circular to oblate, 4–6 × 5–8 mm; styles 2, persistent, 2–3 mm, united below middle, free arms recurved. Fr. Dec.

• Forest margins, near villages; below 800 m. Hainan (Chengmai).

**2. *Heteropanax fragrans*** (Roxburgh ex Candolle) Seemann, *Fl. Vit.* 114. 1866.

幌伞枫 huang san feng

*Panax fragrans* Roxburgh ex Candolle, *Prodr.* 4: 254. 1830; *Heteropanax fragrans* var. *attenuatus* C. B. Clarke; *H. fragrans* var. *ferrugineus* Y. F. Deng; *H. fragrans* var. *subcordatus* C. B. Clarke.

Trees, to 30 m tall. Leaves 3–5-pinnately compound, 50–100 cm; petiole 15–45 cm, glabrous; leaflets opposite, sessile or with petiolules to ca. 1 cm, elliptic to elliptic-ovate, (3–)5.5–13 × (1.5–)3.5–6 cm, papery, both surfaces glabrous, lateral veins 6–10 pairs, distinct on both surfaces, base cuneate to rounded, margin entire, minutely revolute, apex shortly acuminate. Inflorescence densely ferruginous stellate tomentose, glabrescent; primary axis to 30 cm or more; secondary axes to 40 cm; peduncles to 9 cm; umbels of bisexual flowers 2–2.5 cm in diam., umbels of male flowers 1–1.5 cm in diam.; pedicels 4–8 mm, elongating in fruit. Fruit ovoid-globose to oblate or

slightly didymous, weakly compressed laterally, 5–7 × 3–5 mm at maturity, 2–3 mm thick; styles persistent, ca. 2 mm; pedicels ca. 8 mm. Fl. Oct–Dec, fr. Feb–Apr.

Hills, forests in valleys, or cultivated in gardens, near sea level to 1000 m. S Fujian, Guangdong, Guangxi, Hainan, SE Yunnan [Bhutan, India, Indonesia, Myanmar, Nepal, Thailand, Vietnam].

This species is used medicinally and for timber.

**3. *Heteropanax yunnanensis*** G. Hoo, *Acta Phytotax. Sin.*, *Addit.* 1: 167. 1965.

云南幌伞枫 yun nan huang san feng

Trees, evergreen, to ca. 10 m tall. Leaves 2-pinnately compound; petiole 6–22 cm, glabrous; petiolules 2–12 mm, terminal one to 2.2 cm; leaflets orbicular to ovate or elliptic; 4.5–6 × 2.5–4.5 cm, papery, both surfaces glabrous, lateral veins 4 or 5 pairs, slightly conspicuous on both surfaces, base rounded to broadly cuneate, margin entire, apex abruptly acute or shortly abruptly acuminate. Inflorescence densely ferruginous pubescent, glabrescent; primary axis ca. 15 cm; secondary axes 25–30 cm; peduncles 1.8–3.2 cm. Fruit compressed laterally, circular to slightly oblate, 6–8 mm in diam., ca. 1.5 mm thick; styles recurved, free to base, ca. 2 mm; pedicels 2–3 mm. Fl. Nov, fr. Apr–May.

• Forests in valleys; 100–1500 m. SW Yunnan (Jinggu, Lancang).

This species is used medicinally.

**4. *Heteropanax brevipedicellatus*** H. L. Li, *Sargentia* 2: 94. 1942.

短梗幌伞枫 duan geng huang san feng

Trees, to 7 m tall. Leaves 4- or 5-pinnately compound; petiole 10–45 cm, stout; leaflets sessile or with petiolule to 1 cm (often somewhat winged), dark green or more commonly gray-green adaxially when dry, lighter or more brown abaxially, elliptic or narrowly elliptic, occasionally slightly ovate, (2–)4–8.5 × 0.8–3.5 cm, papery, both surfaces glabrous, lateral veins 5 or 6 pairs, nearly obscure, base attenuate, margin entire, rarely sparsely and irregularly serrulate, minutely revolute, apex acu-



minate. Inflorescence densely dark ferruginous throughout, indumentum persistent; primary axis 30–70 cm; secondary axes 20–30 cm; peduncles 1–2 cm; umbels (0.5–)1–1.5 cm in diam.; pedicels 1.5–4 mm. Fruit strongly compressed laterally, circular to slightly oblate, 5–6 × 7–8 mm, ca. 1 mm thick; pedicels (3.5–)4 mm, ferruginous pubescent. Fl. Oct–Dec, fr. Nov, Jan–Feb.

Forests, forest margins, roadsides, often in shaded places; below 600 m. C Fujian, Guangdong, Guangxi, S and E Jiangxi [N Vietnam].

This species is used medicinally and as an ornamental.

**5. *Heteropanax nitentifolius*** G. Hoo, Acta Phytotax. Sin., Addit. 1: 166. 1965.

亮叶幌伞枫 liang ye huang san feng

Trees, evergreen, to 10 m tall. Leaves 2-pinnately compound; petiole ca. 10 cm, glabrous; petiolules 0.3–2 cm; leaflets shiny adaxially, oblong or elliptic, 8–12 × 3–6 cm, leathery, both surfaces glabrous, secondary veins ca. 8 pairs, prominent abaxially, slightly impressed adaxially, base broadly cuneate, attenuate, margin entire, apex shortly acuminate. Inflorescence densely ferruginous tomentose; primary axis to ca. 170 cm; secondary axes to ca. 20 cm; peduncles 1–2 cm; pedicels 5–11 mm. Fruit strongly compressed laterally, broadly ovate to oblate, 5–6 × 7–8 mm, ca. 1 mm thick; styles 3–4 mm. Fl. Sep–Nov, fr. Nov–Dec.

Forest margins, roadsides; 100–800 m. SE Yunnan (Hekou) [N Vietnam].

This species is used medicinally.

**6. *Heteropanax chinensis*** (Dunn) H. L. Li, Sargentia 2: 95. 1942.

华幌伞枫 hua huang san feng

*Heteropanax fragrans* (Roxburgh ex Candolle) Seemann var. *chinensis* Dunn, J. Linn. Soc., Bot. 38: 360. 1908.

Shrubs, to 3 m tall. Leaves 3–5-pinnately compound, 50–60 cm; petiole 15–35(–45) cm; leaflets shiny dark green to khaki green adaxially, sometimes slightly glaucous abaxially, narrowly elliptic, 2.5–6(–7.5) × 0.8–2(–3) cm, both surfaces glabrous, lateral veins ca. 6 pairs, obscure, base narrowly cuneate, margin entire, occasionally revolute, apex acuminate to caudate. Inflorescence densely ferruginous tomentose; primary axis to 70 cm; secondary axes to 20 cm; peduncles 1–3 cm; umbels ca. 2.5 cm in diam.; pedicels in flower ca. 4 mm, densely ferruginous tomentose. Fruit strongly compressed laterally, 8–9 mm in diam., less than 2 mm thick; styles recurved, 2–3 mm; pedicels 6–8 mm. Fl. Oct–Nov, fr. Jan–Feb.

Forests or scrub on mountain slopes; below 800 m. Guangxi (Nanning, Shangsi), S Yunnan (Simao) [N Vietnam].

This species is used medicinally.

## 21. PENTAPANAX Seemann, J. Bot. 2: 290, 294. 1864.

羽叶参属 yu ye shen shu

*Aralia* sect. *Pentapanax* (Seemann) J. Wen; *Hunaniopanax* C. J. Qi & T. R. Cao; *Parapentapanax* Hutchinson.

Trees or shrubs, evergreen or deciduous, sometimes epiphytic, hermaphroditic or andromonoecious, unarmed. Leaves pinnately compound, rarely simple; leaflets entire to serrate; stipules absent. Inflorescence a terminal panicle of umbels, heads, or racemes, glabrous or pubescent, developing from specialized floral buds, usually surrounded by numerous persistent bracts at base. Pedicels articulate below ovary. Calyx minutely 5-dentate. Petals 5(–7), imbricate. Stamens 5(–7). Ovary (3–)5(–7)-carpellate; styles united into a column or divided, as many as carpels. Fruit a drupe, globose to ellipsoid or ovoid. Seeds as many as carpels; endosperm uniform.

Between 18 and 22 species: restricted to Asia, especially the Sino-Himalayan region; 16 species (nine endemic) in China.

The first author finds it hard to accept Wen's point of view (see following paragraph), in which *Pentapanax* was treated as a section of the genus *Aralia*, and instead recognizes *Pentapanax* as distinct from *Aralia* on the basis of three main morphological differences: (1) inflorescences developing from specialized floral buds that are usually surrounded at the base by numerous persistent bracts (vs. from mixed buds, not surrounded by bracts at the base); (2) plants woody and unarmed (vs. woody and usually prickly, or herbaceous); and (3) leaves 1(–3)-pinnate (vs. leaves usually 2–4-pinnate).

Several phylogenetic studies have shown, however, that *Pentapanax* forms a group that is clearly nested within *Aralia* (Wen, Brittonia 45: 47–55. 1993; Wen, Edinburgh J. Bot. 58: 183–200. 2001; Wen et al., Acta Bot. Yunnan. 24: 557–568. 2002). The most recent revision (Wen, Cathaya 13–14: 1–116. 2002) treated the members of this group as a section within *Aralia*, an interpretation favored by the second author.

1a. Evergreen trees; ultimate inflorescence units racemose.

2a. Inflorescence glabrous; pedicels 2–3 mm; styles mostly united into a column ..... 1. *P. subcordatus*

2b. Inflorescence ± pilose; pedicels 0.5–1.5 mm; styles free to united to middle ..... 2. *P. racemosus*

1b. Deciduous shrubs, small trees, or herbs; ultimate inflorescence units umbellate or capitulate.

3a. Leaflets entire or finely serrulate at margin.

4a. Leaves simple, abaxially glaucous ..... 3. *P. hypoglaucus*

4b. Leaves pinnately compound, leaflets 3–5.

5a. Ovary 3(–5)-carpellate; styles free at apex only ..... 4. *P. glabrifoliolatus*

5b. Ovary 5-carpellate; styles united into a column.

6a. Inflorescence a terminal umbel or small panicle of umbels with distinct peduncles ..... 5. *P. parasiticus*

6b. Inflorescence with 1–3 verticils of flowers along primary axis ..... 6. *P. verticillatus*

- 3b. Leaflets serrate at margin (except in 13b. *P. fragrans* var. *forrestii*).
- 7a. Leaves 2- or 3-pinnately compound.
- 8a. Leaves 2- or 3-pinnately compound, often with accessory pinnae, leaflets often abaxially densely white tomentose ..... 15. *P. plumosus*
- 8b. Leaves mostly 2-pinnately compound, without accessory pinnae, leaflets abaxially glabrous.
- 9a. Leaflets ovate or suborbicular, 3–6 × 4–6.5 cm, apex acute; peduncle 2–4 cm ..... 12. *P. caesius*
- 9b. Leaflets ovate-oblong or ovate-lanceolate, 1.5–3 × 0.5–3.5 cm, apex acuminate; peduncle 3–6 cm ..... 16. *P. wilsonii*
- 7b. Leaves 1-pinnately compound or trifoliolate.
- 10a. Inflorescence without a distinct primary axis, or primary axis less than 2 cm.
- 11a. Secondary axes of inflorescence with a terminal umbel and 2–6 lateral verticellately arranged umbels ..... 13. *P. fragrans*
- 11b. Secondary axes of inflorescence with a single terminal umbel ..... 14. *P. longipedunculatus*
- 10b. Inflorescence with a distinct primary axis 5–50 cm.
- 12a. Styles free or united basally, free, reflexed apically.
- 13a. Inflorescence and leaflets pubescent; leaflets (3–)5; styles connate at base, free apically ..... 11. *P. tomentellus*
- 13b. Inflorescence and leaflets glabrous; leaflets 5–7; styles free, reflexed.
- 14a. Leaflets ovate to suborbicular, subleathery, apex acute, margin serrulate ..... 12. *P. caesius*
- 14b. Leaflets ovate-elliptic, membranous, apex acuminate, margin irregularly serrate ..... 7. *P. yunnanensis*
- 12b. Styles united into a column, sometimes divided at their apices.
- 15a. Inflorescence and leaflets glabrous.
- 16a. Leaflets (3–)5, margins serrate ..... 7. *P. yunnanensis*
- 16b. Leaflets 3, margins ciliate ..... 8. *P. longipes*
- 15b. Inflorescence densely pubescent; secondary veins more than 8 pairs.
- 17a. Leaflets 3–5, 7–20 × 4–11 cm ..... 9. *P. henryi*
- 17b. Leaflets 5–7, 6–9 × 2.5–4 cm ..... 10. *P. castanopsidicola*

**1. *Pentapanax subcordatus*** (Wallich ex G. Don) Seemann, J. Bot. 2: 295. 1864 [*“subcordatum”*].

心叶羽叶参 xin ye yu ye shen

*Hedera subcordata* Wallich ex G. Don, Gen. Hist. 3: 394. 1834; *Aralia subcordata* (Wallich ex G. Don) J. Wen; *Parapentapanax subcordatus* (G. Don) Hutchinson.

Trees, evergreen, small, sometimes epiphytic or semiepiphytic, probably hermaphroditic. Leaves 1-pinnately compound; petiole 10–16 cm; petiolules 1.5–3 cm; leaflets 3–5, ovate, 7.5–15 × 4.5–9 cm, thickly papery to subleathery, glabrous, secondary veins ca. 8 pairs, tertiary veins distinct on both surfaces, base subcordate to truncate, margin entire or crenate-serrulate, apex acuminate. Inflorescence a terminal panicle of racemes; primary axis 2–10 cm; secondary axes 6–12, each 20–35 cm; tertiary axes 7–20, each 3–8 cm; pedicels 2–3 mm, glabrous. Ovary 5-carpellate; styles almost entirely united into a column. Fruit globose, 3–4 mm in diam.; styles persistent, arms erect to slightly recurved.

Evergreen forests; ca. 2000 m. W Yunnan (Tengchong) [India].

**2. *Pentapanax racemosus*** Seemann, J. Bot. 2: 295. 1864 [*“racemosum”*].

总序羽叶参 zong xu yu ye shen

*Aralia gigantea* J. Wen; *A. lihengiana* J. Wen et al.; *Parapentapanax racemosus* (Seemann) Hutchinson.

Trees, evergreen, or epiphytic shrubs, to 10 m tall, probably hermaphroditic. Leaves 1-pinnately compound; petiole 9–

17 cm; petiolules 0.2–2 cm, those of terminal leaflets 3.5–7 cm; leaflets (3–)5–7, ovate, 7–21 × 3.5–13 cm, membranous or papery, glabrous, secondary veins 8–10 pairs, distinct, tertiary veins indistinct, base rounded to subcordate, rarely cordate or acute, margin subentire or sparsely serrate, apex acute to acuminate. Inflorescence a terminal panicle of racemes, pilose; primary axis 6–15 cm; secondary axes 6–16, each to 45 cm; tertiary axes 15–40, each 4–9 cm; pedicels 0.5–1.5 mm, pilose. Ovary 3–5-carpellate; styles free or united at base to middle. Fruit globose to ovoid-globose, 3–4 × 2.2–4 mm; styles persistent, recurved. Fl. May–Jul, fr. Jun–Aug.

Evergreen to warm-temperate forests; 1500–3200 m. SE Xizang (Cona), S, SW, and W Yunnan [Bhutan, E India, Nepal].

Wen (Cathaya 13–14: 89–92. 2002) recognized *Aralia lihengiana* as distinct from *Pentapanax racemosus* (for which the correct name is *A. gigantea* when treated in *Aralia*) on the basis of differences in the size and shape of inflorescence bracts, the number of carpels, the degree of style fusion, and fruit shape.

**3. *Pentapanax hypoglaucus*** (C. J. Qi & T. R. Cao) C. B. Shang & X. P. Li, Proc. Int. Symp. Bot. Gard. 626. 1990.

粉背羽叶参 fen bei yu ye shen

*Hunaniopanax hypoglaucus* C. J. Qi & T. R. Cao, Acta Phytotax. Sin. 26: 49. 1988; *Aralia hypoglauca* (C. J. Qi & T. R. Cao) J. Wen & Y. F. Deng.

Shrubs, epiphytic, 0.5–1 m tall, apparently andromonoecious. Leaves simple; petiole 1–5 cm; blade elliptic to ovate, 7–11 × 5–7 cm, thickly papery, glabrous, abaxially glaucous,

secondary veins 7 or 8 pairs, base truncate, rarely broadly cuneate, margin entire, apex acute. Inflorescence a terminal panicle, umbels few, often 2 at base, 1 terminal, often with some flowers verticillate on main axis, pubescent; peduncle 1.2–1.5 cm; pedicels 7–13 mm, pubescent. Calyx 0.65–0.8 mm, 5-denticulate. Ovary 5-carpellate; styles almost entirely united into a column. Fruit ovoid-globose, 3.5–4 mm high, slightly less in diam.; styles persistent, slightly divided at apex. Fl. Sep, fr. Sep–Oct.

• Dense, humid forests; 700–1400 m. Guangxi, SW Hunan (Chengbu).

**4. *Pentapanax glabrifoliolatus*** C. B. Shang, Acta Phytotax. Sin. 18: 94. 1980.

光羽叶参 *guang yu ye shen*

*Aralia glabrifoliolata* (C. B. Shang) J. Wen.

Trees, small, or shrubs, 3–6 m tall, andromonoecious. Leaves 1-pinnately compound; petiole 8–10 cm; petiolules 0.3–1.1 cm; leaflets 5, oblong-ovate to broadly ovate, 10–19 × 6–9 cm, subleathery, glabrous, secondary veins 6–9 pairs, tertiary veins distinct on both surfaces, base subcordate to rounded, margin entire or serrulate, apex acute. Inflorescence a terminal panicle of umbels, pubescent; primary axis lacking; secondary axes 8–15, each 10–25 cm; tertiary axes 20–30, each 1–1.5 cm, with a terminal umbel of bisexual flowers and usually 1–3 lateral umbels of male flowers; pedicels 3–76 mm. Ovary 3(–5)-carpellate; styles 1–1.5 mm, divided at apex only. Fruit subglobose, ca. 5 mm high, 3.5–4 mm in diam.; styles persistent.

• Thickets, forests; 1800–2500 m. SE Yunnan (Jinping, Malipo, Wenshan).

**5. *Pentapanax parasiticus*** (D. Don) Seemann, J. Bot. 2: 296. 1864 [*“parasiticum”*].

寄生羽叶参 *ji sheng yu ye shen*

Shrubs, scandent, to 3 m tall, hermaphroditic. Leaves 1-pinnately compound; petiole 2.5–10 cm; petiolules 3–5 mm; leaflets (2 or) 3–5, ovate to elliptic, 2.5–7 × 1.5–3 cm, membranous to thickly papery, glabrous, abaxially glaucous, secondary veins 6–9 pairs, tertiary veins distinct on both surfaces, base rounded or cuneate, margin entire, apex acute or acuminate. Inflorescence a terminal umbel or occasionally a small panicle of 2–5(–8) umbels, pubescent; peduncle 1–5 cm; pedicels 0.8–1.5 cm, glabrous or pubescent. Ovary 5-carpellate; styles united below, divided at apex. Fruit globose to ovoid, 4–4.5 mm high, 3.5–4 mm in diam.; styles persistent. Fl. Aug–Nov, fr. Nov–Dec.

Evergreen and deciduous forests, often epiphytic, sometimes parasitic; 2100–2500 m. Sichuan, C and NW Yunnan [Bhutan, India, Nepal, Thailand].

The two varieties recognized here were not retained by Wen (Cathaya 13–14: 59–64. 2002), who indicated that the characters on which they are based appear to vary randomly and do not show any geographic correlation.

1a. Inflorescence usually with 2–8 umbels on main rachis, peduncle and pedicels

glabrous ..... 5a. var. *parasiticus*

1b. Inflorescence usually a solitary umbel, peduncle and pedicels ferruginous

pubescent ..... 5b. var. *khastianus*

**5a. *Pentapanax parasiticus* var. *parasiticus***

寄生羽叶参(原变种) *ji sheng yu ye shen* (yuan bian zhong)

*Hedera parasitica* D. Don, Prodr. Fl. Nepal. 188. 1825; *Aralia parasitica* (D. Don) J. Wen (1993), not Buchanan-Hamilton ex D. Don (1825).

Inflorescence usually with 2–8 umbels on main rachis; peduncle and pedicels glabrous.

Evergreen and deciduous forests; ca. 2500 m. Sichuan (Ebian, Emei Shan), NW Yunnan [Bhutan, India, Nepal, Thailand].

**5b. *Pentapanax parasiticus* var. *khastianus*** C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 724. 1879 [*“khasiana”*].

毛梗寄生羽叶参 *mao geng ji sheng yu ye shen*

Inflorescence usually a solitary umbel; peduncle and pedicels ferruginous pubescent.

Forests; 2100–2400 m. C Yunnan (Songming) [India].

**6. *Pentapanax verticillatus*** Dunn, J. Linn. Soc., Bot. 35: 498. 1903 [*“verticillatum”*].

轮伞羽叶参 *lun san yu ye shen*

*Aralia verticillata* (Dunn) J. Wen.

Shrubs, to 5 m tall, hermaphroditic or possibly andromonoecious. Leaves 3-foliolate; petiole 3–9 cm; petiolules to ca. 5 mm; leaflets ovate to elliptic, 5.5–9 × 3–5 cm, subleathery, glabrous, abaxially glaucous, secondary veins 6–9 pairs, distinct on both surfaces, tertiary veins indistinct, base cuneate to rounded, margin entire, revolute, apex acute. Inflorescence a terminal, narrow panicle with 1–8 umbels on lower parts of primary axis and 1–3 verticils of flowers, pilose; peduncle 1.5–2.5 cm; pedicels 6–10 mm, pilose. Ovary 5-carpellate; styles united into a column, slightly divided at apex. Fruit ovoid-globose, ca. 4.5 mm high, 3.5–4 mm in diam.; styles persistent. Fl. Nov, fr. Dec–Feb.

Mixed forests, shrublands, commonly on limestone; 1200–2000 m. W Guangxi, E Yunnan [N Vietnam].

**7. *Pentapanax yunnanensis*** Franchet, J. Bot. (Morot) 10: 305. 1896.

云南羽叶参 *yun nan yu ye shen*

*Aralia delavayi* J. Wen; *A. shangiana* J. Wen.

Shrubs, 2–8 m tall, probably andromonoecious. Leaves 1-pinnately compound; petiole 4–12 cm; petiolules to 4 cm, shorter on lateral leaflets; leaflets (3–)5, ovate to ovate-elliptic or broadly ovate, 4–9.5 × 2.5–6.2 cm, papery to membranous, glabrous, secondary veins 5–9 pairs, tertiary veins distinct on both surfaces, base broadly acute to rounded or subcordate, margin serrate, apex acute to acuminate. Inflorescence a terminal panicle of umbels, pilose or glabrous; primary axis to ca. 30 cm; secondary axes 10–20, each to ca. 8–15 cm, with a terminal

umbel of bisexual flowers and 1 or 2 lateral umbels of male flowers; peduncle 1.5–4 cm (shorter in male umbels); pedicels 5–13 mm (shorter in male flowers), glabrous. Ovary 5-carpellate; styles united into a column, rarely divided to middle or base. Fruit globose, ca. 4 mm in diam.; styles persistent. Fl. May–Jun, fr. Jul–Aug.

• Montane evergreen forests, shrublands in valleys, roadsides, dry areas; 1200–2500 m. SW Sichuan, Yunnan.

Wen (Cathaya 13–14: 46–48. 2002) recognized *Aralia shangiana* as distinct from *Pentapanax yunnanensis* (for which the correct name is *A. delavayi* when treated in *Aralia*) on the basis of differences in several features, including leaflet shape and texture and inflorescence indument.

**8. *Pentapanax longipes* (Merrill) C. B. Shang & C. F. Ji, comb. nov.**

独龙羽叶参 du long yu ye shen

Basionym: *Gamblea longipes* Merrill, Brittonia 4: 128. 1941; *Aralia kingdon-wardii* J. Wen et al.; *Pentapanax trifoliatum* K. M. Feng.

Shrubs, to ca. 6 m tall, climbers or epiphytes, probably andromonoecious. Leaves trifoliolate; petiole 6–8 cm; central petiolule ca. 5 cm, lateral ones 1.5–2.5 cm; leaflets ovate, 8–17 × 4–10 cm, papery, glabrous, secondary veins 8–10 pairs, distinct, tertiary veins inconspicuous, base rounded to broadly acute, margin ciliate, apex acuminate. Inflorescence a terminal corymb of umbels, glabrous; primary axis 5–15 cm; secondary axes 11–12, each 11–17 cm, with several terminal umbels of bisexual flowers and a few lateral umbels of apparently male flowers; peduncle 2–4 cm; pedicels 1–2 cm. Ovary 5-carpellate; styles united basally into a column, free arms recurved. Fruit globose, 5–6 mm in diam.; styles persistent. Fl. Dec–Mar, fr. Mar–May.

Deciduous and mixed evergreen forests; 1200–2000 m. Xizang, NW Yunnan (Gongshan) [Bhutan, NE India, N Myanmar].

The oldest name for this species is *Gamblea longipes*, for which *Aralia kingdon-wardii* is a nomen novum recently proposed because the combination *A. longipes* Truffaut had already been made for another species. In *Pentapanax*, however, the specific epithet “*longipes*” is available and is accordingly combined here.

**9. *Pentapanax henryi* Harms, Bot. Jahrb. Syst. 23: 21. 1896.**

锈毛羽叶参 xiu mao yu ye shen

*Aralia franchetii* J. Wen; *Pentapanax henryi* var. *fangii* G. Hoo; *P. henryi* var. *tomentosus* G. Hoo; *P. henryi* var. *wangshanensis* W. C. Cheng; *P. lanceolatus* G. Hoo; *P. tomentellus* (Franchet) C. B. Shang var. *tomentosus* (G. Hoo) Y. F. Deng.

Shrubs or small trees to 8 m tall, andromonoecious. Leaves 1-pinnately compound; petiole 8–15(–25) cm; petiolules 2–8 cm; leaflets (3–)5, ovate to elliptic, 7–20 × 4–11 cm, papery, abaxially glabrous with small tufts of pubescence in axils of veins, adaxially glabrous, secondary veins 8–12 pairs, abaxially more distinct, tertiary veins indistinct, base rounded or obtuse, rarely subcordate, margin sharply serrate to serrulate, apex acute or shortly acuminate. Inflorescence a terminal panicle of umbels, reddish brown pubescent; primary axis 15–30 cm; sec-

ondary axes 18–25, each 4.5–11 cm, with a terminal umbel of bisexual flowers and up to ca. 8 lateral umbels of apparently male flowers. Ovary 5-carpellate; styles united into a column, sometimes divided at apex. Fruit globose, 4–5(–6) mm in diam.; styles persistent. Fl. Aug–Oct, fr. Sep–Dec.

• Scrub lands, cliffs, rocky slopes; 1000–3000 m. Anhui, Guangxi, Hubei, Jiangxi, Sichuan, Zhejiang.

This species was included within *Aralia tomentella* (*Pentapanax tomentellus*) by Frodin and Govaerts (World Checklist Bibliogr. Araliaceae, 75. 2004 [“2003”]), but is now recognized as distinct by J. Wen (pers. comm. to P. Lowry).

**10. *Pentapanax castanopsidicola* Hayata, Icon. Pl. Formosan. 5: 74. 1915 [“*castanopsicola*”].**

台湾羽叶参 tai wan yu ye shen

*Aralia castanopsidicola* (Hayata) J. Wen.

Shrubs or small trees, hermaphroditic or andromonoecious. Leaves 1-pinnately compound; petiole 4–13 cm; petiolule of terminal leaflet to 2.5 cm, those of lateral leaflets very short; leaflets 5–7, elliptic to narrowly ovate, 6–9 × 2.5–4 cm, papery, glabrous, secondary veins 9–10 pairs, distinct on both surfaces, base obtuse to rounded, margin serrulate, apex acuminate. Inflorescence a terminal panicle of umbels, pilose; primary axis ca. 25 cm; secondary axes 18–35, each 3.5–7 cm, with a terminal umbel of bisexual flowers and sometimes 1–5 smaller (probably male) lateral umbels; pedicels 7.5–10 mm, pilose. Ovary 5-carpellate; styles united into a column, free at apex. Fruit globose, 3–4 mm in diam.; styles persistent. Fl. Oct–Dec, fr. Jan.

• Evergreen forests, usually epiphytic on trunks of *Castanopsis*; 1800–2300 m. Taiwan.

**11. *Pentapanax tomentellus* (Franchet) C. B. Shang, J. Nanjing Inst. Forest. 1985(2): 24. 1985.**

马肠子树 ma chang zi shu

Shrubs or small trees, 2–7 m tall, apparently andromonoecious. Leaves 1-pinnately compound; petiole 6–14 cm; petiolules 1–6 mm; leaflets (3–)5–7, ovate to ovate-elliptic, 6–15 × 3–8 cm, papery, both surfaces sparsely pubescent or abaxially with tufts of pubescence in axils of veins, secondary veins 6–9 pairs, indistinct or slightly impressed adaxially, base rounded or broadly acute to subcordate, margin serrate, apex acute. Inflorescence a terminal panicle of umbels, densely brownish pubescent; primary axis to 50 cm; secondary axes 30–40, each 3–11 cm, with a terminal umbel of bisexual flowers and several lateral umbels of apparently male flowers; peduncle 1.5–2.5 cm; pedicels 5–10 mm (shorter in male flowers), densely pubescent. Ovary 5-carpellate; styles free nearly to base or united to middle. Fruit globose, 4–4.5 mm in diam.; styles persistent, reflexed. Fl. Sep–Oct, fr. Oct–Nov.

• Forests in valleys, shaded thickets, along streams, rocky areas, often on limestone; 1200–3200 m. SW Sichuan, Xizang, Yunnan.

This species is used medicinally.

The two varieties recognized here were not retained by Wen (Cathaya 13–14: 52–55. 2002), who indicated that the characters on which

*Pentapanax tomentellus* var. *distinctus* was based can be observed on the type specimen of *Aralia tomentella*.

- 1a. Leaflets abaxially subglabrous;  
inflorescence ca. 30 cm; styles united  
to middle ..... 11a. var. *tomentellus*  
1b. Leaflets abaxially densely tomentose;  
inflorescence to 40 cm; styles  
free nearly to base ..... 11b. var. *distinctus*

### 11a. *Pentapanax tomentellus* var. *tomentellus*

马肠子树(原变种) ma chang zi shu (yuan bian zhong)

*Aralia tomentella* Franchet, J. Bot. (Morot) 10: 304. 1896;  
*Pentapanax henryi* Harms var. *larium* (Handel-Mazzetti) Handel-Mazzetti; *P. larium* Handel-Mazzetti.

Leaflets abaxially subglabrous. Inflorescence ca. 30 cm. Styles united to middle.

• Shaded thickets, along streams, rocky areas, often on limestone; 1200–2600 m. SW Sichuan, Yunnan.

**11b. *Pentapanax tomentellus* var. *distinctus*** C. B. Shang, J. Nanjing Inst. Forest. 1985(2): 25. 1985.

离柱马肠子树 li zhu ma chang zi shu

Leaflets abaxially densely tomentose. Inflorescence to 40 cm. Styles free nearly to base.

• Forests in valleys. S and SW Yunnan.

**12. *Pentapanax caesius*** (Handel-Mazzetti) C. B. Shang, J. Nanjing Inst. Forest. 1985(2): 26. 1985.

圆叶羽叶参 yuan ye yu ye shen

*Aralia caesia* Handel-Mazzetti, Symb. Sin. 7: 702. 1933;  
*A. staphyleina* Handel-Mazzetti.

Shrubs, to 6 m tall, andromonoecious. Leaves 1- or 2-pinnately compound; petiole 2.5–9 cm; petiolules 0.2–9 cm; leaflets (3–)5–7, ovate or suborbicular, 3–6 × 4.5–6.5 cm, papery or subleathery, glabrous, secondary veins 4–6 pairs, tertiary veins distinct on both surfaces, base rounded, sometimes oblique or subcordate, margin sparsely serrulate, apex acute. Inflorescence a terminal panicle of umbels, glabrous; primary axis to ca. 30 cm; secondary axes 8–10, each ca. 30 cm, with a terminal umbel of bisexual flowers and 1–5 lateral umbels of male flowers; peduncle 2.5–4 cm; pedicels 1.2–1.3 cm (shorter in male flowers). Ovary 5-carpellate; styles 5, free. Fruit globose, 5–6.5 mm in diam.; styles persistent, reflexed. Fl. May–Jun, fr. Jul–Sep.

• Open thickets, rocky slopes, on limestone; 2400–3000 m. SW Sichuan, NW Yunnan.

**13. *Pentapanax fragrans*** (D. Don) T. D. Ha, Araliae Fl. Sev. V'etnama, Avtoref Diss. 1. 1972.

羽叶参 yu ye shen

Trees, small, or scandent or climbing shrubs, to 15 m tall, andromonoecious or sometimes hermaphroditic. Leaves 1-pinnately compound; petiole 6–18 cm; petiolules of terminal leaflet

3–10 cm, those of lateral leaflets shorter; leaflets (3–)5, ovate, narrowly ovate, or oblong to elliptic, 6–15 × 2.5–8 cm, both surfaces glabrous or abaxially pubescent on veins, secondary veins 8–10 pairs, conspicuous, base rounded to acute, margin ciliate to serrate, sometimes entire, apex acute to acuminate. Inflorescence a terminal corymb of umbels, glabrous to pilose; primary axis 0.5–3.5 cm; secondary axes 7–13, each 7–17 cm, with a terminal umbel of bisexual flowers and 2–6 lateral, verticillate umbels of male flowers, peduncle 2–4.5 cm; pedicels 5–15 mm, glabrous or pilose. Ovary 5-carpellate; styles united into a column. Fruit ovoid-globose, 4–5.5 mm in diam.; styles persistent. Fl. Jun–Aug, fr. Aug–Oct.

Moist forests, forests in valleys, forest margins, ravines, mountain slopes; 2000–3600 m. SW Sichuan, S Xizang, Yunnan [Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, N Thailand, N Vietnam].

This species is used medicinally.

Material of this species was referred by Wen (Cathaya 13–14: 75–82. 2002) to *Aralia leschenaultii*, which is the correct name when treated in that genus. Frodin and Govaerts (World Checklist Bibliogr. Araliaceae, 68. 2004 ["2003"]) incorrectly referred to this species as *A. fragrans* (D. Don) Jebb & J. Wen, which is illegitimate because it is a later homonym. The two varieties recognized here were not retained by Wen (loc. cit.).

- 1a. Leaflets (3–)5, papery or subleathery,  
margin ciliate to serrate ..... 13a. var. *fragrans*  
1b. Leaflets usually 3, membranous or  
papery, margin entire ..... 13b. var. *forrestii*

### 13a. *Pentapanax fragrans* var. *fragrans*

羽叶参(原变种) yu ye shen (yuan bian zhong)

*Hedera fragrans* D. Don, Prodr. Fl. Nepal. 187. 1825;  
*Aralia fragrans* (D. Don) Jebb & J. Wen (2001), not G. Don ex Loudon (1830); *A. leschenaultii* (Candolle) J. Wen; *H. leschenaultii* (Candolle) Wright & Arnott; *H. trifoliata* Wight & Arnott; *Panax bijugus* Wallich ex G. Don; *P. leschenaultii* Candolle; *Pentapanax leschenaultii* (Candolle) Seemann; *P. leschenaultii* var. *simplex* K. M. Feng; *P. leschenaultii* var. *villosus* Y. R. Li; *P. truncicola* Handel-Mazzetti.

Leaflets (3–)5, papery or subleathery, margin ciliate to serrate.

Moist forests, forest margins, ravines, mountain slopes; 2000–3600 m. SW Sichuan (Muli), S Xizang (Kamen He, Nyêmo, Yadong), Yunnan [Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, N Thailand, N Vietnam].

**13b. *Pentapanax fragrans* var. *forrestii*** (W. W. Smith) C. B. Shang in Y. W. Yuan et al., Proc. Int. Symp. Bot. Gard. 631. 1990.

全缘羽叶参 quan yuan yu ye shen

*Pentapanax forrestii* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 58. 1917; *P. leschenaultii* var. *forrestii* (W. W. Smith) H. L. Li.

Leaflets usually 3, membranous or papery, margin entire.

• Forests in valleys; 2300–3400 m. SE Xizang, NW Yunnan.

**14. *Pentapanax longipedunculatus*** N. S. Bui, *Adansonia*, sér. 2, 9: 392. 1969.

长梗羽叶参 chang geng yu ye shen

*Pentapanax fragrans* (D. Don) T. D. Ha var. *longipedunculatus* (N. S. Bui) T. D. Ha.

Shrubs, presumably hermaphroditic. Leaves 1-pinnately compound; petiole 8–13 cm; terminal petiolule to 3 cm, lateral ones ca. 5 mm; leaflets 5–7, elliptic or ovate-lanceolate, 6–15 × 3–5.5 cm, papery or subleathery, secondary veins ca. 7 pairs, tertiary veins distinct, base rounded to obtuse, margin serrulate, apex acuminate. Inflorescence a terminal corymb of umbels, glabrous to pilose; primary axis very short, secondary axes 4–10 cm, each with a single terminal umbel of bisexual flowers; pedicels 1–1.5 cm. Ovary 5-carpellate; styles united into a column.

Dense forests; 1700–2300 m. SE Yunnan [Thailand, N Vietnam].

Wen (*Cathaya* 13–14: 75. 2002) did not recognize this taxon as distinct from *Pentapanax fragrans* (for which the correct name when treated in the genus *Aralia* is *A. leschenaultii*).

**15. *Pentapanax plumosus*** (H. L. Li) C. B. Shang, *J. Nanjing Inst. Forest.* 1985(2): 26. 1985.

糙羽叶参 cao yu ye shen

*Aralia plumosa* H. L. Li, *Sargentia* 2: 114. 1942; *A. wilsonii* Harms var. *plumosa* (H. L. Li) K. M. Feng; *Pentapanax wilsonii* (Harms) C. B. Shang var. *plumosus* (H. L. Li) Y. F. Deng.

Shrubs, 0.5–5 m tall, andromonoecious or hermaphroditic. Leaves 2- or 3-pinnately compound; petiole 5–15 cm; petiolules very short to 1.5 cm; leaflets 3–5 per pinna, basal pair each with an accessory pinna of 3–5 leaflets; leaflets ovate, 1–4 × 0.4–2 cm, papery, abaxially glabrous to densely white tomentose, adaxially glabrous to strigose or tomentose, scabrous, secondary veins 4 or 5 pairs, distinct on both surfaces, base acute to

rounded or subcordate, margin irregularly serrulate or biserrulate, apex acuminate. Inflorescence a terminal panicle of umbels, glabrous to slightly pilose; primary axis 10–25 cm; secondary axes 10–15, each to ca. 15 cm, with a terminal umbel of bisexual flowers and 1–5 lateral umbels of bisexual or male flowers; peduncle 2–9 cm; pedicels 0.7–2 cm, glabrous. Ovary 5(or 6)-carpellate; styles united to middle. Fruit globose, ca. 4 mm in diam. Fl. Jun–Jul, fr. Aug–Oct.

• Forests, rocky slopes; 2300–3000 m. SW Sichuan (Jiulong, Mianning, Muli).

**16. *Pentapanax wilsonii*** (Harms) C. B. Shang, *J. Nanjing Inst. Forest.* 1985(2): 26. 1985.

西南羽叶参 xi nan yu ye shen

*Aralia wilsonii* Harms in Sargent, *Pl. Wilson.* 2: 567. 1916.

Shrubs, to 3 m tall, andromonoecious. Leaves (1 or)2- or 3-pinnately compound; petiole 5–15 cm; leaflets 3–5(–7) per pinna, ovate, 1.5–3 × 0.5–3 cm, papery, abaxially glabrous, adaxially glabrous or slightly pubescent, secondary veins 4–6 pairs, tertiary veins distinct on both surfaces, base broadly cuneate or rounded to subcordate, margin sharply and irregularly serrulate or biserrulate, apex acuminate. Inflorescence a terminal panicle of umbels, glabrous, sometimes slightly pilose when young; primary axis ca. 30 cm; secondary axes 7–20, each ca. 20 cm, with a terminal umbel of bisexual flowers and several lateral, sometimes verticillate umbels of male flowers; peduncle 3–6 cm; pedicels 0.7–2 cm (shorter in male flowers). Ovary 5(or 6)-carpellate; styles free or united basally. Fruit globose, ca. 5 mm in diam.; styles persistent. Fl. May–Jul, fr. Jun–Sep.

• Evergreen forests, rocks, open shrublands; 1700–2700 m. SW Sichuan, NW Yunnan.

“*Aralia caesia* var. *pubescens*” (K. M. Feng & D. D. Tao, *Vasc. Pl. Hengduan Mountains* 1: 1273. 1993) belongs here but was not validly published because no Latin description was provided and no type was indicated (*Vienna Code*, Art. 36.1 and 37.1).

## 22. *ARALIA* Linnaeus, *Sp. Pl.* 1: 273. 1753.

楸木属 cong mu shu

*Dimorphanthus* Miquel (1840–1841), not *Dimorphanthes* Cassini (1818).

Trees, small, or shrubs, prickly, or unarmed, rhizomatous herbs, andromonoecious or hermaphroditic. Leaves 1–3-pinnately compound, rachis articulate; leaflets 3–20, entire to serrate, serrulate, crenate, or undulate; stipules connate with petioles at base. Inflorescence terminal or axillary, paniculate, corymbose or umbellate, usually consisting of umbels, capitula, or racemes, occasionally umbels solitary. Pedicels articulate below ovary. Calyx rim 5-dentate. Petals 5, imbricate. Stamens 5. Ovary 5(or 6)-carpellate, occasionally aborted to 3; styles 5, distinct or connate at base. Fruit a berry, ± globose, sometimes 3–5-angular. Seeds laterally compressed; endosperm uniform.

About 40 species; mainly in SE Asia and China, a few in the Americas; 29 species (17 endemic) in China.

The first author circumscribes *Aralia* to exclude the species treated here in *Pentapanax*. Wen, however, has provided evidence showing that this group is clearly nested within *Aralia* and must be included therein in order to avoid rendering *Aralia* paraphyletic. Wen’s interpretation is favored by the second author. For further details and references see the discussion under *Pentapanax*.

A thorough revision of *Aralia* sect. *Dimorphanthus* was recently published by Wen (*Cathaya* 15–16: 1–187. 2004), treating material assigned to the first 19 species presented below. Wen adopted circumscriptions of several species that differ significantly from those used by the first author in the present treatment (most notably *A. armata*, *A. dasyphylla*, and *A. elata*).

Several species are used medicinally and as a vegetable (young stems and leaves).

- 1a. Prickly trees or shrubs (*A. sect. Dimorphanthus* (Miquel) Miquel).
- 2a. Ultimate inflorescence units heads; flowers sessile or subsessile ..... 1. *A. dasyphylla*
- 2b. Ultimate inflorescence units umbels; flowers with a distinct pedicel.
- 3a. Leaflet margins crenate (sometimes sparsely so).
- 4a. Leaflets glabrous ..... 2. *A. bipinnata*
- 4b. Leaflets densely pubescent ..... 3. *A. decaisneana*
- 3b. Leaflet margins serrate, biserrate, or serrulate.
- 5a. Leaflets densely hirsute, leathery; inflorescence bracts and bracteoles abaxially densely hirsute; pedicels densely setose ..... 4. *A. searelliana*
- 5b. Leaflets pubescent to rarely hirsute, appressed pubescent or glabrous, thinly papery to papery; if pedicels setose, leaflets less than 10 cm (*A. spinifolia*).
- 6a. Leaflets mostly 15–25 cm, strigose; inflorescence hirsute ..... 5. *A. vietnamensis*
- 6b. Leaflets usually less than 15 cm, not strigose; inflorescence not hirsute.
- 7a. Leaves usually 3-pinnately compound (occasionally 2- or 4-pinnately compound).
- 8a. Umbels 20–50-flowered; pedicels 8–25 mm; inflorescence bracts sometimes caducous at fruiting stage; fruit 4.5–5.5 mm in diam. .... 8. *A. armata*
- 8b. Umbels 7–15-flowered; pedicels 5–13 mm; inflorescence bracts persistent; fruit 3–3.5 mm in diam. .... 7. *A. foliolosa*
- 7b. Leaves 2-pinnately compound (occasionally 3-pinnately compound).
- 9a. Leaves and inflorescence setose and prickly; prickles of two types (straight and slender; recurved and conic); pedicels setose and furfureous ..... 9. *A. spinifolia*
- 9b. Leaves and inflorescence not setose; pedicels not setose and furfureous.
- 10a. Leaflets abaxially green or yellowish green, pubescent, pilose, villous, or hirsute, cuticle striate.
- 11a. Inflorescence glabrous or pilose.
- 12a. Umbels 20–50-flowered; leaflets 2.5–7.5 × 1–3.5 cm ..... 10. *A. finlaysoniana*
- 12b. Umbels 10–15-flowered; leaflets 6–14.5 × 2.5–6.5 cm ..... 8. *A. armata*
- 11b. Inflorescence densely pubescent to tomentose.
- 13a. Umbels 20–50-flowered; pedicels 8–17 mm; leaflets basally subcordate to rounded ..... 6. *A. chinensis*
- 13b. Umbels 8–25-flowered; pedicels 2–11 mm; leaflets basally rounded to obtuse ..... 12. *A. thomsonii*
- 10b. Leaflets abaxially glaucous or whitish green, often glabrous, sometimes pubescent; cuticle coronulate.
- 14a. Leaves tomentose to canescent, at least pilose on veins or sometimes adaxially scabrous.
- 15a. Leaves adaxially scabrous on veins, elsewhere glabrous ..... 13. *A. scaberula*
- 15b. Leaves at least abaxially on veins tomentose to pilose.
- 16a. Inflorescence with a primary axis 15–25 cm, longer than secondary axes; bracts 10–20 mm ..... 14. *A. gintungensis*
- 16b. Inflorescence with a primary axis 2–5 cm, shorter than secondary axes; bracts 2–5 mm ..... 11. *A. elata*
- 14b. Leaves glabrous.
- 17a. Stems with prickles needlelike and straight, or straplike and recurved.
- 18a. Prickles needlelike and straight ..... 16. *A. echinocaulis*
- 18b. Prickles straplike and recurved ..... 16. *A. officinalis*
- 17b. Stems with prickles conic and grayish.
- 19a. Inflorescence with a primary axis 5–20(–30) cm; leaflet margins undulate ..... 17. *A. undulata*
- 19b. Inflorescence with a primary axis longer than 35 cm; leaflet margin serrate.
- 20a. Small shrubs, 1–2 m tall; leaflets membranous, 3–6 × 1.2–3 cm; styles free ..... 18. *A. debilis*
- 20b. Shrubs or small trees, 2–10 m tall; leaflets papery to subleathery, 5–12 × 2.5–8 cm; styles united basally ..... 19. *A. stipulata*
- 1b. Perennial herbs, unarmed (*A. sect. Aralia*).
- 21a. Inflorescences corymbose, primary axis to ca. 5 cm.
- 22a. Leaflets 1–3.5 × 1–2 cm; margin deeply incised ..... 20. *A. apioides*
- 22b. Leaflets usually at least 3 × 2 cm, margin not incised.
- 23a. Lateral petiolules 5–25 mm; leaflets sparsely setose-scabrous ..... 21. *A. atropurpurea*
- 23b. Lateral petiolules 0–12 mm; leaflets strigose, villous or scabrous, not setose.
- 24a. Both surfaces of leaflets white strigose on veins, abaxially gray; umbels 10–30-flowered ..... 22. *A. yunnanensis*
- 24b. Both surfaces of leaflets sparsely scabrous or villous, abaxially green; umbels 3–20-flowered.
- 25a. Both surfaces of leaflets villous on veins, apex caudate, margin crenate ..... 23. *A. henryi*
- 25b. Both surfaces of leaflets sparsely scabrous, abaxially pubescent on veins, apex acuminate, margin serrate ..... 24. *A. fargesii*
- 21b. Inflorescences paniculate, primary axis longer than 10 cm.

- 26a. Leaflets broadly ovate, 2–4 × 2–4.5 cm, both surfaces sparsely white setose on veins, apex long acuminate; panicle sparsely branched, always with an axillary umbel at base ..... 25. *A. melanocarpa*
- 26b. Leaflets obovate, elliptic-obovate, oblong-ovate, or ovate; panicle well branched.
- 27a. Leaflets homomorphic (lateral and terminal leaflets similar in shape).
- 28a. Leaflets 3–5 × 1–2.5 cm, both surfaces setose, densely so on veins, apex long acuminate; panicle compact, umbels corymbosely arranged ..... 26. *A. kansuensis*
- 28b. Leaflets 4–15 × 3–9 cm, abaxially sparsely pubescent on veins, adaxially glabrous, apex acute; panicle sparsely branched, umbels racemosely arranged ..... 27. *A. cordata*
- 27b. Leaves heteromorphic (lateral and terminal leaflets of noticeably different shapes).
- 29a. Terminal leaflets obovate to elliptic-obovate; lateral leaflets oblong or elliptic to ovate, both surfaces gray pubescent; pedicels 5–6(–10) mm ..... 28. *A. continentalis*
- 29b. Terminal leaflets oblong-ovate; lateral leaflets rhombic-oblong or cordate, both surfaces sparsely pubescent; pedicels 8–10 mm, slender ..... 29. *A. tibetana*

**1. *Aralia dasyphylla*** Miquel, Bonplandia (Hannover) 4: 138. 1856.

头序榕木 *tou xu cong mu*

*Aralia chinensis* Linnaeus var. *dasyphyloides* Handel-Mazzetti; *A. dasyphyloides* (Handel-Mazzetti) J. Wen.

Shrubs or small trees, 1.5–10 m tall, andromonoecious. Branches with short, straight prickles less than 6 mm. Leaves 2-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole longer than 30 cm, densely yellow-brown tomentose, prickly or unarmed; petiolules 0–5 mm; leaflets 7–9 per pinna, ovate to broadly oblong, 5.5–15.5 × 3–10 cm, subleathery, abaxially densely tomentose, adaxially densely pubescent, secondary veins 7–14 pairs, prominent abaxially, subconspicuous adaxially, tertiary veins conspicuous, base rounded to subcordate, margin mucronate-serrulate, apex acute to acuminate. Inflorescence a terminal panicle of heads or dense umbels, unarmed; primary axis to ca. 60 cm; secondary axes 40–65 cm, densely yellow-brown tomentose; ultimate axes with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; bracts persistent, oblong, ca. 3 mm; umbels 7–12-flowered; pedicels 0.5–2 cm or flowers sessile in heads. Ovary 5-carpellate; styles 5, free. Fruit globose to subglobose, 3–4 mm in diam.; styles persistent, radiating. Fl. Aug–Oct, fr. Oct–Dec.

Forests, forest margins, along streams, roadsides and rocky slopes on hillsides and mountains; 100–1300(–1900) m. S Anhui (Qimen), Chongqing (Nanchuan, Wuxi), Fujian, Guangdong, Guangxi, Guizhou, C and SW Hubei (Dangyang, Jianshi), Hunan, Jiangxi, Sichuan, Zhejiang (Tianmu Shan) [Indonesia, Malaysia, Vietnam].

This species is circumscribed broadly by the first author to include material from Java, Sumatra, and S Peninsular Malaysia, which comprises *Aralia dasyphylla* sensu stricto, along with gatherings from China, which Wen (Cathaya 15–16: 79–82. 2004) recognized as a distinct species, *A. dasyphyloides*, based on a suite of distinguishing features including leaflet color, shape, and cuticle features, the indument and bracts of the inflorescence, and fruit shape.

**2. *Aralia bipinnata*** Blanco, Fl. Filip. 222. 1837.

台湾榕木 *tai wan cong mu*

*Aralia hypoleuca* C. Presl.

Shrubs or treelets, 2.7–7 m tall, andromonoecious. Branches with straight, conic prickles 4–8 mm. Leaves 2-pinnately compound, with a pair of accessory leaflets at each division of

rachis; petiole to ca. 40 cm, prickly; petiolules 2–12 mm; leaflets 5–11 per pinna, ovate to lanceolate, 3.5–15 × 1.5–6.5 cm, papery to leathery, both surfaces glabrous, abaxially glaucous, secondary veins 6–8 pairs, distinct on both surfaces, tertiary veins indistinct, base rounded to subcordate, margin crenate, apex acuminate to caudate. Inflorescence a terminal panicle of umbels, furfuraceous, unarmed; primary axis 10–40 cm; secondary axes 15–65 cm; ultimate axes with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; bracts persistent, lanceolate to triangular, to ca. 4 mm; umbels 10–25-flowered; pedicels 4.5–10 mm, furfuraceous. Ovary 5-carpellate; styles 5, free. Fruit globose, ca. 3 mm in diam.; styles persistent, radiating. Fl. and fr. all year.

Dry places; (500–)1000–2100 m. Taiwan (Ali Shan) [Indonesia (Irian Jaya), Japan, Papua New Guinea, Philippines].

**3. *Aralia decaisneana*** Hance, Ann. Sci. Nat., Bot., sér. 5, 5: 215. 1866.

台湾毛榕木 *tai wan mao cong mu*

Shrubs, to 3 m tall, andromonoecious. Branches with needlelike prickles. Leaves 2-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole 20–40 cm, pubescent, with sparse prickles; petiolules 0.5–3(–8) mm; leaflets 7–13 per pinna, ovate to broadly ovate or oblong-ovate, 6–15 × 3–10 cm, leathery, abaxially yellow-brown tomentose, especially on veins, adaxially pubescent or strigose, secondary veins 6–8 pairs, base rounded, rarely subcordate, margin crenate to serrulate, apex acute to acuminate. Inflorescence a terminal panicle of umbels, densely fulvous-tomentose, unarmed; primary axis 0–5 cm; secondary axes 30–50(–60) cm; ultimate axes with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; bracts persistent, linear, 0.8–1.5 cm, densely tomentose; umbels 30–50-flowered; pedicels 4.5–7 mm, tomentose. Ovary 5-carpellate; styles 5, free. Fruit globose, 3–4 mm in diam.; styles persistent, recurved. Fl. Oct–Jan, fr. Dec–Feb.

• Sparse forests or scrub fields on slopes; below 1300 m. Anhui (Huang Shan), Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi (Longnan, Xunwu), Taiwan, S and SE Yunnan (Simao, Xichou).

The first author circumscribes this species broadly to include material from both Taiwan (where the type was collected) and several provinces in E and S China. By contrast, Wen (Cathaya 15–16: 90–93. 2004) treated *Aralia decaisneana* as endemic to Taiwan, placing all populations on the mainland in her substantially revised *A. chinensis*.



**4. *Aralia searelliana*** Dunn, J. Linn. Soc., Bot. 35: 498. 1903.

粗毛櫨木 cu mao cong mu

Trees, small, to unbranched treelets, 3–10 m tall, andromonoecious. Branches densely fulvous hispid and with short, stout prickles. Leaves 2-pinnately compound, with a pair of accessory leaflets or 3–5-foliolate pinnae at each division of rachis; petiole to 100 cm, stout, densely fulvous hirsute, with short prickles; petiolules (0–)0.5–3 mm; leaflets 5–9 per pinna, ovate, 10–22 × 5–11 cm, leathery, abaxially densely fulvous hirsute, especially on veins, adaxially rugose and ± hirsute, secondary veins 8–10 pairs, abaxially conspicuous, tertiary veins inconspicuous, base subcordate to rounded, margin serrulate, apex acuminate. Inflorescence a terminal panicle of umbels, densely fulvous hirsute-tomentose, with short, straight, conic prickles; primary axis to ca. 200 cm; secondary axes 10–60 cm; ultimate axes with a terminal umbel of bisexual flowers and several lateral umbels of male flowers; bracts caducous, lanceolate, to 2 cm; umbels 20–40-flowered; pedicels 1–8 mm, densely fulvous hispid. Ovary 5-carpellate; styles 5, free. Fruit globose to ovoid-globose, 3.5–4 × 3–3.5 mm; styles persistent, radiating. Fl. Oct, fr. Jan–Feb.

Forests, open areas, roadsides, riversides; 500–2400 m. C and SE Yunnan (Hekou, Jingdong, Pingbian) [Myanmar, Vietnam].

**5. *Aralia vietnamensis*** T. D. Ha, Novosti Sist. Vyssh. Rast. 11: 236. 1974.

偃毛櫨木 yan mao cong mu

*Aralia strigosa* C. Y. Wu ex C. B. Shang.

Shrubs or small trees, 2–12 m tall, andromonoecious. Branches with conic prickles. Leaves 2(or 3)-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole to 70 cm, fulvous strigose, with straight, conic prickles; petiolules 3–10 mm; leaflets 5–13 per pinna, ovate or to broadly ovate, 8–26 × 4–17 cm, papery to leathery, abaxially densely fulvous strigose, adaxially sparsely fulvous strigose, more densely so on veins, secondary veins 8–10 pairs, prominent abaxially, impressed adaxially, base cordate to subcordate or rounded, margin serrate, apex acute, sometimes acuminate. Inflorescence a terminal panicle of umbels, densely strigose, unarmed; primary axis to 2–5 cm; secondary axes 45–170 cm; ultimate axes with a terminal umbel of bisexual flowers and several lateral umbels of male flowers; bracts persistent, triangular, to 1 cm; umbels 10–30-flowered; pedicels 2–12 mm, pubescent. Ovary 5-carpellate; styles 5, united basally, free apically. Fruit globose to ovoid-globose, 3–4 mm in diam.; styles persistent, recurved. Fl. Sep–Dec, fr. Nov–Jan.

Hillsides, secondary forests and forest margins, roadsides; 100–1500 m. Guangdong, W Guangxi (Jingxi), Guizhou, SE Yunnan (Malipo, Xichou) [N Vietnam].

**6. *Aralia chinensis*** Linnaeus, Sp. Pl. 1: 273. 1753.

黄毛櫨木 huang mao cong mu

Shrubs or small trees, 1.5–7 m tall, andromonoecious. Branches prickly. Leaves 2-pinnately compound, with a pair of accessory leaflets or pinnae at each division of rachis; petiole

25–40 cm, pubescent and prickly; petiolules (1–)3–7(–12) mm; leaflets 5–13 per pinna, ovate to broadly ovate, 7–16.5 × 5–11.5 cm, papery to thickly papery, abaxially pale grayish green, tomentose, adaxially dark shining green, densely pubescent, secondary veins 9–11 pairs, base subcordate to rounded and often slightly oblique, margin serrate, apex acuminate to acute. Inflorescence a terminal panicle of umbels; primary axis ca. 20 cm; secondary axes 35–80 cm; ultimate axes with a terminal umbel of bisexual flowers and several lateral umbels of male flowers; bracts and bracteoles persistent, lanceolate, narrowly triangular or linear, sometimes leaflike, to 2.5 cm; umbels 20–50-flowered; pedicels 8–21 mm, densely pubescent. Ovary 5-carpellate; styles 5, united basally, free apically. Fruit globose to ovoid-globose, 3–4.5 mm in diam.; styles persistent, recurved. Fl. Sep–Dec, fr. Nov–Jan.

• Stream banks in forests, scrub fields on slopes. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi.

**7. *Aralia foliolosa*** Seemann ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 723. 1879.

小叶櫨木 xiao ye cong mu

*Aralia lantsangensis* G. Hoo.

Shrubs or treelets, 1.5–10 m tall, andromonoecious. Branches with short prickles. Leaves (2 or 3)-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole glabrous, with recurved prickles; petiolules (0–)0.5–3 mm; leaflets 5–11 per pinna, ovate to elliptic, 3.5–11 × 2.5–5 cm, papery to leathery, both surfaces glabrous, secondary veins 6–9 pairs, abaxially conspicuous, reticulate veins inconspicuous on both sides, slightly impressed adaxially, base rounded to subcordate, margin serrulate, apex acuminate. Inflorescence a large, terminal panicle of umbels, glabrous, with short prickles; primary axis to ca. 100 cm; secondary axes 30–40 cm; ultimate axes with a terminal umbel of bisexual flowers and several lateral umbels of male flowers; bracts persistent, narrowly oblong, to 4.5 cm; umbels 7–15-flowered; pedicels 5–13 mm, glabrous. Ovary 5-carpellate; styles 5, united basally, free apically. Fruit globose to ovoid-globose, 3–3.5 mm in diam.; styles persistent, recurved. Fl. Sep–Mar.

Secondary forests, stream banks in forests, hillsides, roadsides; 700–1800 m. S and SW Yunnan [Bangladesh, Bhutan, India, Myanmar, Thailand, Vietnam].

**8. *Aralia armata*** (Wallich ex G. Don) Seemann, J. Bot. 6: 134. 1868.

野櫨头 ye cong tou

*Panax armatus* Wallich ex G. Don, Gen. Hist. 3: 386. 1834; *Aralia tengyuehensis* C. Y. Wu; *A. thomsonii* Seemann ex C. B. Clarke var. *glabrescens* C. Y. Wu.

Shrubs, to 4 m tall, andromonoecious. Branches with conic, often recurved prickles shorter than 4 mm. Leaves 2- or 3-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole to 100 cm, armed; leaflets 5–9 per pinna, ovate-oblong, 4–11 × 2–5 cm, papery, both surfaces pilose, especially on veins, secondary veins 6 pairs, conspicuous on both surfaces, reticulate veins inconspicuous, cuticle striate

or not, base rounded to cordate, margin serrate, apex acuminate. Inflorescence a terminal panicle of umbels, glabrous or pubescent, with recurved prickles; primary axis to ca. 40 cm; ultimate axes with a terminal umbel of bisexual flowers and several lateral umbels of male flowers; bracts caducous, linear, 1.2–2.5 mm; umbels 20–50-flowered; pedicels 1–1.5 cm, with thin prickles and stout trichomes. Ovary 5-carpellate; styles 5, free. Fruit globose, ca. 4 mm in diam., styles persistent, radiating to recurved. Fl. Aug–Oct, fr. Sep–Dec.

Forests, *Pinus* forests, forests in valleys, forest margins; below 1600 m. Guangdong, Guangxi, Guizhou, Hainan, Jiangxi (Wugong Shan), S and W Yunnan [India, Malaysia, N Myanmar, Thailand, Vietnam].

Wen (Cathaya 15–16: 115–117. 2004) treated *Aralia armata* to exclude material from S China (Guangdong, Guangxi, Guizhou, Hainan, and Jiangxi) and Vietnam, all of which she referred to *A. finlaysonianana* (see below).

**9. *Aralia spinifolia*** Merrill, Philipp. J. Sci. 15: 249. 1920 [“1919”].

长刺楸木 chang ci cong mu

*Aralia nantouensis* S. S. Ying.

Shrubs, to 3 m tall, andromonoecious. Branches with dense, flat prickles 1–10 mm and slender setae 2–4 mm. Leaves 2(or 3)-pinnately compound, with a pair of accessory leaflets at each division of rachis, petioles, rachis, secondary rachis, and leaflets with scattered, slender and nearly straight prickles, recurved, conic prickles, and numerous slender, spreading setae; petiole to ca. 50 cm; petiolules (0–)0.5–3 mm; leaflets 5–9 per pinna, ovate to narrowly ovate, rarely lanceolate, 5–17 × 2.5–9 cm, papery to submembranous, secondary veins 5–8 pairs, conspicuous on both surfaces, reticulate veins conspicuous abaxially, inconspicuous adaxially, base rounded to slightly subcordate, margin serrate or biserrate (teeth ciliate), apex acuminate. Inflorescence a terminal panicle of umbels, setose, with prickles and bristles, lax; ultimate axis with a terminal umbel of bisexual flowers and 1 or 2 lateral umbels of male flowers; bracts persistent or caducous, oblong, 3–6 mm; umbels 20–50-flowered; pedicels 1.2–1.6 cm (shorter in male flowers), densely setose and furfuraceous. Ovary 5-carpellate; styles 5, united basally, free apically. Fruit globose, 5–5.5 mm in diam.; styles persistent, radiating. Fl. Aug–Oct, fr. Oct–Dec.

• Mountain slopes, open woods, forest margins, ravines, roadsides; 200–800 m. Fujian, Guangdong, Guangxi (Jinxu, Wuzhou, Yuanbao Shan), Hunan (Qianyang, Tongdao), Jiangxi (Ruijin, Xingguo, Xunwu), Taiwan, Zhejiang.

This species is used for washing boils.

**10. *Aralia finlaysonianana*** (Wallich ex G. Don) Seemann, J. Bot. 6: 134. 1868.

虎刺楸木 hu ci cong mu

*Panax finlaysonianus* Wallich ex G. Don, Gen. Hist. 3: 386. 1834.

Shrubs, slender, sometimes vinelike, 1.5–4 m tall, andromonoecious. Branches prickly. Leaves 3- or 4-pinnately compound, with a pair of accessory leaflets or pinnae at each division of rachis; petiole 25–55 cm, glabrous or setaceous, with

dense prickles; petiolules absent or ca. 15 mm; leaflets 3–5 per pinna, ovate, narrowly ovate, or lanceolate, 2.5–7.5 × 1–3.5 cm, papery to thinly papery, abaxially pale green, pubescent or pilose, rarely glabrescent, adaxially green, sparsely strigose, secondary veins 5–7 pairs, base rounded to obtuse, margin serrulate to serrate or doubly serrate, ± ciliate, apex acuminate to long acuminate. Inflorescence a terminal or axillary panicle of umbels, with short, recurved prickles; primary axis to 80 cm; ultimate axes with a terminal umbel of bisexual flowers and several lateral umbels of male flowers; bracts caducous, narrowly triangular to lanceolate; umbels 20–50-flowered; pedicels 10–25 mm, bristly, sometimes pilose or glabrescent. Ovary 5(–7)-carpellate; styles 5(–7), united basally, free apically. Fruit globose to ovoid-globose, 5–6 mm in diam.; styles persistent, recurved. Fl. Jan–Dec, fr. Jan–Dec.

Dense forests, forest margins, thickets, open thickets, streambanks, roadsides; 100–1300 m. Guangxi, Guizhou, Hainan, Yunnan [N Thailand, Vietnam].

**11. *Aralia elata*** (Miquel) Seemann, J. Bot. 6: 134. 1868.

楸木 cong mu

Shrubs or small trees, 2–5(–8) m tall, andromonoecious. Branches armed with sparse prickles. Leaves 2(or 3)-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole to ca. 50 cm, glabrous or pubescent, prickly; petiolules 3–5 mm; leaflets 5–11(–13) per pinna, broadly ovate to elliptic-ovate or narrowly ovate, 5–12(–19) × 2.5–8 cm, membranous, papery, or subleathery, abaxially glabrous or light yellow or gray pubescent, sometimes or more densely pubescent on veins, or sometimes glabrescent, adaxially sparsely strigose, secondary veins 6–10 pairs, raised abaxially, conspicuous adaxially, base cordate to subcordate or rounded, margin serrulate, apex acuminate. Inflorescence a terminal panicle of umbels, densely yellow-brown or gray pubescent, unarmed; primary axis 1–5 cm; secondary axes 20–35 cm; ultimate axes with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; bracts persistent, lanceolate to subulate, 2–5 mm, sometimes ciliate; umbels 6–15-flowered; pedicels 1–10 mm, densely pubescent. Ovary 5-carpellate; styles 5, free or united to middle. Fruit globose, ca. 3–4 mm in diam.; styles persistent. Fl. Jul–Sep, fr. Sep–Dec.  $2n = 24^*$ .

Forests, forest margins, scrub fields, roadsides; near sea level to 2700 m. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, N Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea, E Russia].

- 1a. Leaflets papery or subleathery, abaxially pubescent or sometimes glabrescent; pedicels 1–6 mm ..... 11a. var. *elata*  
 1b. Leaflets membranous or papery, abaxially glabrous or sparsely pubescent and echinulate on veins; pedicels 5–10 mm ..... 11b. var. *glabrescens*

**11a. *Aralia elata* var. *elata***

楸木(原变种) cong mu (yuan bian zhong)

*Dimorphanthus elatus* Miquel, Comm. Phytogr. 95. 1840;

*Aralia chinensis* Linnaeus var. *elata* (Miquel) Lavallée; *A. emeiensis* Z. Y. Zhu; *A. gaoshania* Z. Y. Zhu; *A. hupehensis* G. Hoo; *A. planchoniana* Hance; *A. spinosa* Linnaeus var. *elata* (Miquel) Sargent; *A. subcapitata* G. Hoo; *A. taibaiensis* Z. Z. Wang & H. C. Zheng.

Leaflets papery or subleathery, abaxially pubescent or sometimes glabrescent. Pedicels 1–6 mm.

• Forests, forest margins, scrub fields, roadsides; near sea level to 2700 m. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hebei (Fuping, Xiaowutai Shan), Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi (Qin Ling), Shanxi (Yangcheng, Yuanqu), Sichuan, Yunnan, Zhejiang.

This variety is circumscribed by the first author to include material from throughout most of China, including collections from Gansu, Hebei, Shaanxi, and Sichuan that Wen (Cathaya 15–16: 48–52. 2004) placed in *Aralia stipulata* (including the types of *A. gaoshania* and *A. taibaiensis*).

**11b. *Aralia elata* var. *glabrescens*** (Franchet & Savatier) Pojarkova in Schischkin, Fl. URSS 16: 27. 1950.

辽东榲木 liao dong cong mu

*Aralia spinosa* var. *glabrescens* Franchet & Savatier, Enum. Pl. Jap. 1: 191. 1873; *A. chinensis* var. *glabrescens* (Franchet & Savatier) C. K. Schneider; *A. chinensis* var. *mandshurica* (Ruprecht & Maximowicz) Rehder; *A. elata* var. *mandshurica* (Ruprecht & Maximowicz) J. Wen; *A. mandshurica* Ruprecht & Maximowicz; *Dimorphanthus mandshuricus* (Ruprecht & Maximowicz) Maximowicz.

Leaflets membranous or papery, abaxially glabrous or sparsely pubescent and echinulate on veins. Pedicels 5–10 mm.

Forests, scrub fields; below 1000 m. NE Hebei, Heilongjiang, Jilin (Antu, Jiaohe, Manjiang), Liaoning (Jiguanshan), N Shandong [Japan, Korea, E Russia].

The first author treats this variety to include material from Japan (including the type of *Aralia spinosa* var. *glabrescens*) and S Korea that Wen (Cathaya 15–16: 71–75. 2004) included in her concept of *A. elata* var. *elata*.

This variety is used medicinally and as a vegetable.

**12. *Aralia thomsonii*** Seemann ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 723. 1879.

云南榲木 yun nan cong mu

Shrubs or treelets, 1.5–10 m tall, andromonoecious. Branches softly fulvous villous, with short conic prickles 3–4 mm. Leaves 2(or 3)-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole to 20–50 cm, pubescent, prickly; petiolules 0–12 mm; leaflets 3–15 per pinna, lanceolate to ovate, 8–20 × 3–10.5 cm, papery, both surfaces densely and softly fulvous villous, secondary veins 8–10 pairs, prominent abaxially, subconspicuous adaxially, tertiary veins subconspicuous abaxially, obscure adaxially, cuticle striate, base rounded to obtuse, margin serrulate, apex acuminate, occasionally acute. Inflorescence a terminal panicle of umbels, densely pubescent, unarmed; primary axis 10–25 cm; secondary axes 40–90 cm; ultimate axes with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; bracts

persistent, narrowly triangular to lanceolate, to 3.5 cm; umbels 8–25-flowered; pedicels 2–11 mm, densely pubescent. Ovary 5-carpellate; styles 5, free. Fruit globose to ovoid-globose, 3.5–5 mm in diam.; styles persistent, radiating. Fl. (May–)Jun–Aug, fr. Oct–Nov.

Forests and forest margins on slopes or in valleys, roadsides, along streams; 200–2700 m. Guangxi, Yunnan [India, Malaysia, Myanmar, Thailand, Vietnam].

The first author recognizes the following two varieties based on differences in indument and pedicel length, but they were not retained by Wen (Cathaya 15–16: 128. 2004), who indicated that pedicel length does not appear to exhibit any geographic structuring and can vary even within a single population.

1a. Pedicels 8–11 mm ..... 12a. var. *thomsonii*  
1b. Pedicels 2–6 mm ..... 12b. var. *brevipedicellata*

**12a. *Aralia thomsonii* var. *thomsonii***

云南榲木(原变种) yun nan cong mu (yuan bian zhong)

All parts of plants densely fulvous villous; pedicels 8–11 mm.

Forests and forest margins on slopes or in valleys; 200–2700 m. Guangxi (Lingyun), Yunnan (Fengqing, Xichou, Xishuangbanna) [India, Malaysia, Myanmar, Thailand, Vietnam].

**12b. *Aralia thomsonii* var. *brevipedicellata*** K. M. Feng, Fl. Yunnan. 2: 498. 1979.

短柄云南榲木 duan bing yun nan cong mu

Pedicels 2–6 mm.

• Forests, usually in valleys; 600–1100 m. S Yunnan (Xishuangbanna).

**13. *Aralia scaberula*** G. Hoo, Acta Phytotax. Sin., Addit. 1: 173. 1965.

糙叶榲木 cao ye cong mu

Shrubs, 1.5–2.5 m tall, andromonoecious. Branches with scattered lenticels and straight, conic prickles 4–5 mm. Leaves 2-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole 15–20 cm, glabrous, with sparse prickles; petiolules 0–5 mm; leaflets 3–5 per pinna; oblong-ovate, ovate, or rarely lanceolate, 6–12 × 3–4.5 cm, papery or subleathery, abaxially scabrous on veins and glaucous, adaxially glabrous, secondary veins 5 or 6 pairs, tertiary veins prominent, conspicuous on both surfaces, base broadly cuneate to rounded, margin serrate, apex acuminate. Inflorescence a terminal panicle of umbels, pilose, unarmed; primary axis 1.5–5 cm; secondary axes 15–25 cm; ultimate axes with a terminal umbel of bisexual flowers and numerous lateral umbels of male flowers; bracts persistent, lanceolate, 3–5 mm; umbels 15–20-flowered; pedicels 2–3 mm, pilose. Ovary 5-carpellate; styles free. Fruit globose to ellipsoid, ca. 5 × 4 mm; styles persistent, radiating. Fl. Jul–Aug, fr. Aug–Sep.

• Forests on mountain slopes; 1100–1500 m. Fujian (Chong'an), Jiangxi.

**14. *Aralia gantungensis*** C. Y. Wu, Fl. Yunnan. 2: 496. 1979.

景东榲木 jing dong cong mu

Shrubs or treelets, 1.5–12 m tall, andromonoecious. Branches densely yellow-brown tomentose, with sparse slender prickles 4–8 mm. Leaves 2-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole 10–27 cm, pubescent, unarmed or sparsely armed; petiolules 1–6 mm; leaflets 5–7 per pinna, elliptic to ovate, 2–12 × 1–5 cm, papery to subleathery, abaxially densely yellow-brown or gray tomentose, especially on veins, adaxially hirsute on veins, secondary veins 5–13 pairs, base obtuse to rounded, margin serrate to coarsely serrate, apex acute to acuminate. Inflorescence a terminal panicle of umbels, densely yellow-brown tomentose, unarmed to sparsely armed at base; primary axis 15–25 cm; secondary axes to ca. 10 cm, with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; bracts persistent, narrowly triangular, 1–2 cm; umbels 10–25-flowered; pedicels 5–8 mm, tomentose. Ovary 5-carpellate; styles 5, basally united, apically free. Fruit globose to subglobose, 3–3.5 mm in diam.; styles persistent, free arms reflexed. Fl. Jul–Nov, fr. Aug–Nov.

Mixed forests, thickets, roadsides; 1400–2900 m. C and W Yunnan (Jingdong, Longling) [Vietnam].

Wen (Novon 4: 401. 1994) recognized a second variety endemic to Myanmar: *Aralia gintungensis* var. *multinervis* J. Wen.

**15. *Aralia echinocaulis*** Handel-Mazzetti, Symb. Sin. 7: 704. 1933.

棘茎櫟木 ji jing cong mu

Trees, small, or shrubs, 2–10 m tall, andromonoecious. Branches with dense, brownish, slender needlelike prickles 5–20 mm. Leaves 2-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole 30–44 cm, usually unarmed; petiolules 3(–10) mm; leaflets 5–9 per pinna, oblong-ovate to lanceolate, 6–14.5 × 2.5–8 cm, membranous to papery, both surfaces glabrous, abaxially glaucous, secondary veins 6–9 pairs, prominent on both surfaces, tertiary veins subconspicuous abaxially, slightly impressed adaxially, base rounded to obtuse, margin serrate, apex acuminate. Inflorescence a terminal panicle of umbels, glabrous, unarmed; primary axis to ca. 40 cm; secondary axes 10–20 cm; ultimate axes with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; bracts narrowly triangular to lanceolate, ca. 4 mm; umbels 12–25(–30)-flowered; pedicels 1–2 cm, furfuraceous. Ovary 5-carpellate; styles 5, free. Fruit globose to subglobose, 3.5–4.5 mm in diam.; styles persistent, radiating. Fl. Jun–Aug, fr. Sep–Nov.

• Forests, roadsides, thickets, rocky cliffs; 200–1600 m. Anhui (Huang Shan), Fujian, Guangdong (Lechang, Lianshan, Yingde), Guangxi, Guizhou (Fanjing Shan), Hubei (Badong), Hunan, Jiangxi, Sichuan, Yunnan (Jingdong), Zhejiang (Changhua, Tianmu Shan).

**16. *Aralia officinalis*** Z. Z. Wang in Z. Z. Wang & G. H. Hu, Biol. Study Utilization Pl. Genus *Aralia*, 40. 2001.

陕鄂櫟木 shan e cong mu

Trees 3–10 m tall, andromonoecious. Branches with dense, flat, recurved prickles. Leaves 2- or 3-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole ca. 35 cm, glabrous, somewhat prickly; petiolules 5–10 mm; leaf-

lets 5–17 per pinna, ovate to narrowly ovate, 8–11 × 4–6 cm, papery to subleathery, abaxially glaucous, adaxially green, both surfaces glabrous, secondary veins 11–12 pairs, base subcordate, slightly oblique, margin mucronate, apex long acuminate. Inflorescence a terminal panicle of umbels, armed; primary axis to 50 cm; ultimate axes with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; bracts lanceolate to narrowly ovate, 12–14 mm; umbels 17–45-flowered; pedicels 6–8 mm, pubescent. Ovary 5-carpellate; styles 5, basally united, apically free. Fruit globose, 4–5 mm in diam.; styles persistent, free arms recurved. Fl. Aug–Sep, fr. Sep–Oct.

• Thickets, mountain valleys. Chongqing, SE Shaanxi, Sichuan.

**17. *Aralia undulata*** Handel-Mazzetti, Symb. Sin. 7: 705. 1933.

波缘櫟木 bo yuan cong mu

*Aralia undulata* var. *cirrhifolia* Z. Z. Wang; *A. undulata* var. *nudifolia* Z. Z. Wang.

Shrubs or trees, 1–10 m tall, hermaphroditic (? or andromonoecious). Branches with sparse, short, conic prickles. Leaves 2-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole 20–35 cm, glabrous, sparsely shortly prickly; petiolules (1–)3–10 mm; leaflets 5–15 per pinna, ovate or ovate-lanceolate to broadly ovate, 7–14 × 3–7 cm, papery to nearly membranous, both surfaces glabrous, abaxially glaucous, secondary veins 7–10 pairs, tertiary veins distinct, base rounded to obtuse or subcordate, margin undulate-mucronate to entire, apex acuminate or caudate. Inflorescence a terminal panicle of umbels, sparsely lenticellate, unarmed; primary axis 5–20(–30) cm; secondary axes 25–55 cm; bracts persistent or sometimes caducous, lanceolate to narrowly triangular, 3–10 mm, ciliate; umbels 10–25-flowered; pedicels 3–9 mm, slightly furfuraceous. Ovary 5-carpellate; style 5, free. Fruit globose, 3.5–4 mm in diam.; styles persistent, radiating. Fl. Jun–Aug, fr. Oct.

Dense forests, sparse woods; 500–2500 m. Chongqing (Wuxi), Guangdong, Guangxi (Jiuwan Dashan, Longsheng), Hubei, Hunan (Chengbu, Xinning), Jiangxi, Sichuan (Huili, Leibo), Yunnan [N Vietnam].

**18. *Aralia debilis*** J. Wen, Novon 4: 400. 1994.

秀丽櫟木 xiu li cong mu

*Aralia elegans* C. N. Ho, Acta Phytotax. Sin. 2: 77. 1952, not Linden ex Decaisne & Planchon (1854).

Shrubs, 1–2 m tall, andromonoecious. Branches with sparse, slender, conic prickles. Leaves 2-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole 10–15 cm, glabrous, prickly, sometimes sparsely so; petiolules 5–10 mm; leaflets 2–8 per pinna, ovate to lanceolate, 3–6 × 1.2–3 cm, membranous, both surfaces glabrous, abaxially glaucous, secondary veins 4–7 pairs, conspicuous on both surfaces, tertiary veins inconspicuous, base rounded, margin coarsely serrate, apex acute to acuminate. Inflorescence a terminal panicle of umbels, glabrous, unarmed; primary axes longer than 35 cm; secondary axes to ca. 10 cm; ultimate axes with a terminal umbel of bisexual flowers and several lateral umbels of male flowers; bracts persistent, narrowly triangular, to 9 mm; um-

bels 8–15-flowered; pedicels 3–6 mm, pilose, slightly furfuraceous. Ovary 5-carpellate; styles 5, free. Fruit globose to ovoid-globose, 4–4.5 × 3.5–4 mm; styles persistent, radiating. Fl. Jun–Jul.

- Valleys, thickets, 800–1000 m. Guangdong, Guangxi.

**19. *Aralia stipulata*** Franchet, J. Bot. (Morot) 10: 304. 1896.

披针叶槲木 pi zhen ye cong mu

*Eleutherococcus mairei* H. Léveillé.

Shrubs or small trees, 2–10 m tall, andromonoecious. Branches nearly unarmed, with swollen, conic prickles at base. Leaves 2-pinnately compound, with a pair of accessory leaflets at each division of rachis; petiole to ca. 15 cm, glabrous, unarmed; petiolules to 4 mm; leaflets 3–11 per pinna, ovate to narrowly ovate, 5–12 × 2.5–8 cm, papery to subleathery, both surfaces glabrous, abaxially rarely pilose on veins, secondary veins 6 or 7 pairs, base rounded, margin serrate, apex acute to acuminate. Inflorescence a terminal panicle of umbels, unarmed; primary axis to 45 cm; secondary axes 30–45 cm; ultimate axes with a terminal umbel of bisexual flowers and 1 to several lateral umbels of male flowers; bracts persistent, lanceolate, 8–15 mm; umbels 20–40-flowered; pedicels 8–12 mm, pubescent. Ovary 5-carpellate; styles 5, united basally, free apically. Fruit globose, ca. 3 mm in diam.; styles persistent, recurved. Fl. Jun–Aug.

- Forests; ca. 3000 m. Yunnan (Eryuan, Jingdong, Weixi).

Wen (Cathaya 15–16: 48–52. 2004) circumscribed this species more broadly to encompass material from Gansu, Hubei, Shaanxi, and Sichuan (including the types of *Aralia gaoshania* and *A. taibaiensis*; see *A. elata* var. *elata* in the present treatment).

**20. *Aralia apioides*** Handel-Mazzetti, Symb. Sin. 7: 701. 1933.

芹叶龙眼独活 qin ye long yan du huo

Herbs, perennial, 1–1.5 m tall, with stout, horizontal rhizome. Leaves 2- or 3-pinnately compound (upper leaves often simple); petiole 2–15 cm; petiolules 1–5 mm; leaflets 3–9 per pinna, broadly ovate, 1–3.5 × 1–2 cm, membranous, abaxially slightly pilose to glabrescent on veins, adaxially glabrous to slightly pilose-scabrid, secondary veins 4 or 5 pairs, subconspicuous, tertiary veins subconspicuous abaxially, base cordate to obtuse, margin deeply incised and biserrate (teeth setose, acuminate), apex of terminal leaflets long acuminate, lateral leaflets often obtuse. Inflorescence a terminal or axillary corymb of umbels, sparsely pilose to glabrescent; primary axis to 5 cm; bracts linear-lanceolate, small; umbels racemously arranged, 5–12-flowered; pedicels 1–4 mm. Ovary (3–)5-carpellate; styles (3–)5, free. Fruit subglobose, ca. 5 mm in diam.; styles persistent, united to middle, apically free, recurved. Fl. Jun, fr. Aug.

- Grasslands, forests; 3000–3600 m. C Sichuan (Shimian), NW Yunnan (Dèqên, Zhongdian).

**21. *Aralia atropurpurea*** Franchet, J. Bot. (Morot) 10: 301. 1896.

浓紫龙眼独活 nong zi long yan du huo

*Panax atropurpureus* (Franchet) Handel-Mazzetti.

Herbs, perennial, 1–1.5 m tall, with elongate rhizome. Leaves 1- or 2-pinnately compound; petiole 1.5–4 cm; petiolules 5–25 mm (terminal one to 4 cm); leaflets 3–7 per pinna, ovate, 3–8 × 2–3 cm, membranous, both surfaces sparsely setose-scabrous, secondary veins 5–7 pairs, subconspicuous, tertiary veins inconspicuous, base broadly cuneate, margin biserrate, apex long acuminate. Inflorescence a terminal corymb of umbels, glabrous to slightly scabrid; primary axis to 5 cm; secondary axes to 18 cm; bracts linear, 5–10 mm; umbels 7–10-flowered; pedicels 5–10 mm, scabrid. Ovary 5-carpellate; styles 5, free. Fruit globose, ca. 3.5 mm in diam.; styles persistent, recurved. Fl. Jun–Jul, fr. Aug–Sep.

- Among scattered trees, grasslands on slopes or roadsides; 2700–3300 m. Sichuan, Xizang (Bomi), Yunnan (Dèqên).

**22. *Aralia yunnanensis*** Franchet, J. Bot. (Morot) 10: 303. 1896.

云南龙眼独活 yun nan long yan du huo

*Aralia fargesii* Franchet var. *yunnanensis* H. L. Li.

Herbs, perennial, to ca. 1 m tall, with stout, elongate rhizome. Leaves 2-pinnately compound; petiole 3–15 cm; petiolules 9–12 mm (terminal one to 3 cm), glabrous to slightly pilose; leaflets 3–5 per pinna, ovate to narrowly ovate, (2–)3–8 × 1.3–4.5 cm, papery, sparsely white strigose on veins, truncate to subcordate, margin serrate, apex acuminate. Inflorescences terminal or axillary corymb of umbels, pilose; primary axis to 5 cm, bracts linear-lanceolate, 3–7 mm; umbels 10–30-flowered; pedicels 4–8 mm. Ovary 5-carpellate; styles 5, free. Fruit globose, ca. 3 mm in diam.; styles persistent, radiating. Fl. Jun–Aug, fr. Aug–Oct.

- Forests or scrub fields on slopes; 1900–2800 m. SW Sichuan (Muli), C and NW Yunnan (Dèqên, Heqing, Songming).

**23. *Aralia henryi*** Harms, Bot. Jahrb. Syst. 23: 12. 1896.

柔毛龙眼独活 rou mao long yan du huo

*Aralia houheensis* W. X. Wang et al.; *A. pilosa* Franchet.

Herbs, perennial, 40–100 cm tall, with short rhizome. Leaves 2-ternately to 2-pinnately compound; petiole 3–10 cm, puberulous to glabrous; petiolules 3–5 mm (terminal one to 2 cm); leaflets 3 per rachis, oblong-ovate, 3.5–10 × 2–6 cm, membranous, both surfaces villous on veins, secondary veins 6–8 pairs, subconspicuous, tertiary veins inconspicuous, base subcordate, margin crenate, apex caudate. Inflorescence a terminal corymb of umbels, villous; primary axis to 5 cm; bracts, linear, 2–7 mm; umbels 3–10-flowered; pedicels 2–3 mm, filiform. Ovary (3–)5-carpellate; styles (3–)5, free. Fruit subglobose, ca. 3 mm. Fl. Jul–Aug, fr. Sep–Nov.

- Forests; 1500–2300 m. Anhui (Huang Shan), Chongqing (Jinbo Shan), Hubei (Xingshan), Shaanxi (Yangxian), Sichuan (Leibo).

**24. *Aralia fargesii*** Franchet, J. Bot. (Morot) 10: 302. 1896.

龙眼独活 long yan du huo

Herbs, perennial, to ca. 1 m tall, with stout, elongate rhizome. Leaves 1–3-pinnately compound (upper ones 1- or 2-pin-

nate); petiole ca. 15 cm; petiolules to 1.2 cm (terminal one to 3 cm), glabrous or sparsely pilose; leaflets 3–5 per pinna, broadly ovate or oblong-ovate, 8–15 × 5–7 cm, membranous, both surfaces scabrous, pubescent on veins abaxially, secondary veins 5 or 6 pairs, conspicuous on both surfaces, tertiary veins conspicuous only abaxially, base cordate, margin serrate, apex acuminate. Inflorescence a few branched terminal or axillary corymb of umbels, glabrous or sparsely pilose; bracts lanceolate, 2–3 mm; umbels racemosely arranged, 10–20-flowered; pedicels 2–5 mm, glabrous or slightly scabrid. Ovary 5-carpellate; styles 5, basally united, apically free. Fruit subglobose, ca. 5 mm in diam.; styles persistent, free arms radiating. Fl. Jul–Aug, fr. Oct–Nov.

• Forests, stream banks; 1800–2700 m. Shaanxi (Taibai Shan), Sichuan, Yunnan (Heqing, Kunming, Songming).

This species is used medicinally.

**25. *Aralia melanocarpa*** (H. Léveillé) Lauener, Notes Roy. Bot. Gard. Edinburgh 32: 94. 1972.

黑果土当归 hei guo tu dang gui

*Eleutherococcus melanocarpus* H. Léveillé, Bull. Acad. Int. Géogr. Bot. 24: 282. 1914; *Aralia dumetorum* Handel-Mazzetti.

Herbs, perennial, to 1.5 m tall, with elongate rhizome. Leaves 1- or 2-pinnately compound; petiole ca. 4 cm, glabrous; petiolules 8–20 mm (terminal one to 4.5 cm); leaflets 3–5 per pinna, broadly ovate, 2–4 × 2–4.5 cm, membranous, sparsely white setose on veins, secondary veins 5–7 pairs, conspicuous on both surfaces, tertiary veins inconspicuous, base cordate, margin biserrate, apex long acuminate. Inflorescence a sparsely branched terminal panicle of umbels; primary axis longer than 10 cm, always with a single axillary umbel at base; bracts lanceolate, ca. 5 mm; umbels 12–18-flowered; pedicels to 7 mm. Ovary 5-carpellate; styles 5, free. Fruit globose, ca. 7 mm in diam. Fl. Jul.

• Forest margins, scrub fields; ca. 2600 m. Guizhou (Weining), Sichuan (Hongxi, Maowen), NE Yunnan.

**26. *Aralia kansuensis*** G. Hoo, Acta Phytotax. Sin., Addit. 1: 174. 1965.

甘肃土当归 gan su tu dang gui

Herbs, perennial, to ca. 50 cm tall, with elongate rhizome. Leaves 2- or 3-pinnately compound; petiole 4–12 cm, sparsely pubescent; petiolules 0–10 mm (terminal one 5–15 mm), densely villous; leaflets 3–9 per pinna, ovate to oblong-ovate, 3–5 × 1–2.5 cm, membranous, both surfaces setose, more densely so on veins, secondary veins 5–7 pairs, conspicuous abaxially, tertiary veins inconspicuous or subconspicuous abaxially, base rounded to cordate, margin biserrate, apex long acuminate. Inflorescence a compact panicle of umbels; primary axis longer than 10 cm; secondary axes 15–20 cm; bracts linear-lanceolate to ovate-lanceolate, ca. 1.5 cm; umbels corymbosely arranged, rarely racemosely arranged, 8–12-flowered; pedicels 2–5 mm, villous. Ovary 5-carpellate; styles 5, free. Fruit globose, ca. 3 mm in diam.; styles persistent. Fl. Jun.

• Grasslands or scrub fields on slopes; ca. 3100 m. S Gansu (Xihe).

**27. *Aralia cordata*** Thunberg, Fl. Jap. 127. 1784.

食用土当归 shi yong tu dang gui

*Aralia taiwaniana* Y. C. Liu & F. Y. Lu.

Herbs, perennial, 0.5–3 m tall. Stem stout, with elongate, cylindrical rhizome. Leaves 2- or 3-pinnately compound; petiole 15–30 cm, glabrous or sparsely pubescent; petiolules to 2.5 cm (terminal one to 5 cm); leaflets 3–5 per pinna, narrowly ovate to oblong-ovate, 4–15 × 3–9 cm, membranous to subleathery, abaxially sparsely pubescent on veins, adaxially glabrous, secondary veins 6–8 pairs, tertiary veins distinct abaxially, inconspicuous adaxially, base rounded to cordate, margin coarsely serrate, apex acute. Inflorescence a lax terminal or axillary few branched panicle of umbels; primary axis longer than 10 cm; bracts linear, 3–5 mm; umbels racemosely arranged, few- to many flowered; pedicels 1–1.2 cm, filiform, pubescent. Ovary 5-carpellate; styles 5, free. Fruit globose, ca. 3 mm in diam.; styles persistent, ca. 2 mm.  $2n = 24^*$ ,  $48^*$ .

• Shaded places in forests, grasslands on slopes; 1300–1600 m. Anhui (Huang Shan), Fujian (Chong'an), Guangxi (Longsheng, Ziyuan), Hubei (Enshi, Xuan'en), Jiangxi, Taiwan, Zhejiang.

This species is used medicinally and as a vegetable.

**28. *Aralia continentalis*** Kitagawa, Bot. Mag. (Tokyo) 49: 228. 1935.

东北土当归 dong bei tu dang gui

*Aralia cordata* Thunberg var. *continentalis* (Kitagawa) Y. C. Zhu.

Herbs, perennial, to 1 m tall, with stout rhizome. Leaves 2- or 3-pinnately compound; petiole 11–25 cm, sparsely gray pilose; petiolules 0–10 mm; leaflets 3–7 per pinna, heteromorphic, lateral ones oblong or elliptic to ovate, terminal ones obovate to elliptic-obovate, 5–15 × 3–9 cm, membranous, both surfaces gray pubescent, abaxially more densely so, base cuneate to cordate, margin irregularly serrate or biserrate, apex acute to acuminate. Inflorescence a compact terminal or axillary panicle of umbels, gray pubescent; hairy; bracts ovate, 1.5–2 mm, membranous, ciliate; umbels many flowered; pedicels 5–6(–10) mm, pubescent. Ovary 5-carpellate; styles 5, basally united, apically free. Fruit globose, ca. 3 mm in diam.; styles persistent, free arms recurved. Fl. Jul–Aug, fr. Aug–Sep.

Forests and grasslands on slopes; 800–3200 m. Anhui, Hebei (Fuping, Tangxian, Xiaowutai Shan), Henan (Lushi), Jilin (Changbai Shan, Huadian, Tonghua), Liaoning (Wulongbei), Shaanxi (Fuping), Sichuan, Xizang (Gyirong, Yadong) [Korea, Russia].

**29. *Aralia tibetana*** G. Hoo, Acta Phytotax. Sin., Addit. 1: 175. 1965.

西藏土当归 xi zang tu dang gui

Herbs, perennial. Leaves 2-pinnately compound; petiole 7–16 cm, glabrous; petiolules 3–7 mm (terminal one to 3 cm), pubescent; leaflets 3–5 per pinna, heteromorphic, terminal ones oblong-ovate, 5.5–7.5 × 2.2–4 cm, lateral ones rhombic-oblong or cordate, 3–6.5 × 1.4–2.8 cm, membranous or papery, both surfaces sparsely pubescent, secondary veins 5–8 pairs, tertiary

veins conspicuous abaxially, base rounded to subcordate, margin serrulate, apex long acuminate. Inflorescence a terminal panicle of umbels; primary axis longer than 10 cm; secondary axes 2–6 cm, slender, pubescent, 2–6 verticillately arranged near middle of primary axis; bracts conic, densely pubescent; um-

bels 1–3 per secondary axis, many flowered; pedicels 8–10 mm, densely pubescent. Ovary 5-carpellate; styles 5, basally united, apically free. Fruit ovoid. Fl. Aug, fr. Sep.

- Forests, scrub fields; 3200–3500 m. Xizang.

### 23. PANAX Linnaeus, Sp. Pl. 2: 1058. 1753.

人参属 ren shen shu

Herbs, perennial, with stout rootstock, hermaphroditic or perhaps andromonoecious, unarmed. Stem simple, with scales at base. Leaves palmately compound, in whorls of 3–5; leaflets entire to serrate or dentate or pinnately lobed. Inflorescence a solitary, terminal umbel. Pedicels articulate below bisexual flowers, inarticulate below male flowers. Calyx shortly 5-toothed. Petals 5, imbricate. Stamens 5. Ovary 2- or 3(–5)-carpellate; styles distinct or basally united, as many as carpels. Fruit a drupe, globose, sometimes slightly compressed or triangular. Seeds laterally compressed, as many as carpels; endosperm smooth.

About eight species: E Asia, Himalayan region, Indochina, North America; seven species (one introduced) in China.

We were unable to treat *Panax wangianus* S. C. Sun (Icon. Pl. Omei. 2(1): 194. 1946 [“*wangianum*”]; *P. pseudoginseng* Wallich var. *wangianus* (S. C. Sun) G. Hoo & C. J. Tseng), described from Sichuan, because we were unable to consult the type material.

- 1a. Rootstock usually horizontal, flagellate or moniliform; seeds ovoid, 3–5 × 2–4 mm ..... 1. *P. japonicus*
- 1b. Rootstock fusiform or tuberous; seeds globose-nephroid or compressed-globose, 5–8 mm in diam.
  - 2a. Leaflets 2-pinnatifid, adaxially setose on veins; styles 2, usually united into a column; seeds subglobose ..... 2. *P. stipuleanatus*
  - 2b. Leaflets not 2-pinnatifid; styles 2(or 3), divided at least apically.
    - 3a. Rootstock tuberous, resembling that of species of *Zingiber*; leaflets sessile or subsessile; seeds triangular-subglobose ..... 3. *P. zingiberensis*
    - 3b. Rootstock fusiform; leaflets usually petiolulate; seeds ovoid-globose or laterally compressed.
      - 4a. Seeds ovoid-globose, slightly 3-ridged, not laterally compressed, thickness 5–6 mm; leaflets obovate or obovate-oblong; umbels 80–100(or more)-flowered; styles united at least to middle ..... 4. *P. notoginseng*
      - 4b. Seeds laterally compressed, thickness 2–2.5 mm; leaflets elliptic or oblong, or if obovate then apically acuminate; umbels 20–50-flowered; styles 2, free to base.
        - 5a. Leaflets 1.5–2 mm, adaxially setose on veins, apically long caudate-acuminate; bases of petioles and of petiolules with numerous lanceolate, stipulelike appendages; pedicels longer, glabrous; rootstock fleshy, 2–5-fascicled ..... 5. *P. pseudoginseng*
        - 5b. Leaflets ca. 1 mm, glabrous or adaxially sparsely setose, apically shortly acuminate, margin serrate; bases of petiole and petiolules without stipulelike appendages or with only hairlike appendages; pedicels rough; rootstock usually 1- or 2-fascicled.
          - 6a. Peduncle longer than petiole; leaflets sparsely minutely setose on veins, margin densely serrulate ..... 6. *P. ginseng*
          - 6b. Peduncle not exceeding petiole; leaflets sparsely setose on veins or glabrous, margin coarsely serrate or dentate ..... 7. *P. quinquefolius*

1. **Panax japonicus** (T. Nees) C. A. Meyer, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 1: 340. 1843.

竹节参 zhu jie shen

Herbs, 50–80(–100) cm tall. Rootstock horizontal, flagellate or moniliform. Stem straight, glabrous. Leaves 3–5, verticillate at apex of stem, palmately compound; petiole base without stipule or stipulelike appendages; leaflets 5, obovate-elliptic to narrowly elliptic, 5–18 × 2–6.5 cm, membranous, both surfaces sparsely setose on veins, base broadly cuneate to subrounded, margin serrulate or biserrate, apex acuminate or long acuminate. Inflorescence a solitary, terminal umbel 50–80(or more)-flowered; peduncle 12–21 cm, glabrous or slightly pubescent; pedicels 7–12 mm. Filaments shorter than petals. Ovary 2–5-carpellate; styles 2–5, united to middle. Fruit red, subglobose, 5–7 mm in diam.; seeds 2–5, white, triangular-ovoid, 3–5 × 2–4 mm. Fl. May–Jun, fr. Jul–Sep.

Forests, forests in valleys; 1200–3600 m. S Anhui, N Fujian, Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan, Zhejiang [Bhutan, N India, Japan, Korea, Myanmar, Nepal, NE Thailand, Vietnam].

All four varieties are used medicinally.

- 1a. Rootstock flagellate, resembling rhizome of bamboo.
  - 2a. Leaflets obovate-elliptic to oblong, 2.5–3 × as long as wide, apex long acuminate ..... 1a. var. *japonicus*
  - 2b. Leaflets narrowly lanceolate, ca. 5 × as long as wide, apex long caudate-acuminate ..... 1b. var. *angustifolius*
- 1b. Rootstock moniliform or moniliform-mounded.
  - 3a. Rootstock moniliform; leaflets

- obovate-elliptic to elliptic, not pinnatifid ..... 1c. var. *major*  
 3b. Rootstock moniliform-mounded, rarely like knot of bamboo; leaflets 2-pinnatifid ..... 1d. var. *bipinnatifidus*

**1a. *Panax japonicus* var. *japonicus***

竹节参(原变种) zhu jie shen (yuan bian zhong)

*Panax schin-seng* T. Nees var. *japonicus* T. Nees, Pl. Medecin. Suppl. [under *Panax schin-seng*]. 1833; *Aralia quinquefolia* (Linnaeus) Decaisne & Planchon var. *repens* (Maximowicz) Burkill; *P. pseudoginseng* Wallich subsp. *japonicus* (T. Nees) H. Hara; *P. pseudoginseng* var. *japonicus* (T. Nees) G. Hoo & C. J. Tseng; *P. repens* Maximowicz.

Rootstock flagellate, like rhizome of bamboo. Leaflets not 2-pinnatifid, obovate-elliptic to oblong, 2.5–3 × as long as wide, apex long acuminate. Fl. May–Jun, fr. Jul–Sep.

Forests; 1200–3600 m. S Anhui, N Fujian, Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang [Japan, Korea, Vietnam].

“*Panax quinquefolium* var. *japonicus*” (Siebold, Verh. Batav. Genootsch. Kunsten 12: 45. 1830) belongs here but is a nomen nudum.

**1b. *Panax japonicus* var. *angustifolius*** (Burkill) C. C. Cheng & Chu, Acta Pharm. Sin. 9: 538. 1962.

狭叶竹节参 xia ye zhu jie shen

*Aralia quinquefolia* var. *angustifolia* Burkill, Bull. Misc. Inform. Kew 1902: 7. 1902; *P. pseudoginseng* var. *angustifolius* (Burkill) H. L. Li.

Rootstock flagellate. Leaflets not 2-pinnatifid, narrowly lanceolate, ca. 5 × as long as wide, apex long caudate-acuminate.

Forests; 1600–3600 m. Guizhou, Sichuan, Yunnan [Bhutan, NE India, Nepal, NE Thailand].

**1c. *Panax japonicus* var. *major*** (Burkill) C. Y. Wu & K. M. Feng, Acta Phytotax. Sin. 13(2): 43. 1975.

珠子参 zhu zi shen

*Aralia quinquefolia* var. *major* Burkill, Bull. Misc. Inform. Kew 1902: 7. 1902; *Panax major* (Burkill) K. C. Ting ex C. Pei & Y. L. Chou; *P. pseudoginseng* var. *major* (Burkill) H. L. Li.

Rootstock moniliform. Leaflets not 2-pinnatifid, obovate-elliptic to elliptic, apex acuminate, rarely long acuminate.

Forests; 1700–3600 m. Gansu, Guizhou, Henan, Hubei, Shanxi, Sichuan, Xizang, Yunnan [N Myanmar, Nepal, N Vietnam].

**1d. *Panax japonicus* var. *bipinnatifidus*** (Seemann) C. Y. Wu & K. M. Feng, Acta Phytotax. Sin. 13(2): 43. 1975.

疙瘩七 ge da qi

*Panax bipinnatifidus* Seemann, J. Bot. 6: 54. 1868; *Aralia bipinnatifida* (Seemann) C. B. Clarke; *A. quinquefolia* var. *elegantior* Burkill; *P. pseudoginseng* var. *bipinnatifidus* (Seemann) H. L. Li; *P. pseudoginseng* var. *elegantior* (Burkill) G. Hoo &

C. J. Tseng.

Rootstock moniliform-mounded, rarely like knot of bamboo. Leaflets 2-pinnatifid.

Forests in valleys; 1800–3400 m. Gansu, Hubei, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, N India, Myanmar, Nepal].

**2. *Panax stipuleanatus*** C. T. Tsai & K. M. Feng, Acta Phytotax. Sin. 13(2): 44. 1975.

屏边三七 ping bian san qi

Herbs, perennial, 45–55 cm tall. Rootstock fusiform. Leaves 3, verticillate at apex of stem, palmately compound; petiole base without stipule or stipulelike appendages; leaflets 5(–7), 2-pinnatifid, 6–12 × 2.5–6 cm, membranous, adaxially setose on veins, base broadly cuneate or subrounded, margin serrate, setose, apex caudate-acuminate. Inflorescence a solitary, terminal umbel 50–80-flowered; peduncle 8–10 cm, glabrous. Filaments ca. as long as petals or slightly longer. Ovary 2-carpellate; styles 2, usually united into a column. Fruit red, subglobose or globose-nephroid, ca. 8 mm in diam.; seeds 2, subglobose. Fl. May–Jun, fr. Jul–Aug.

Forests in valleys; 1100–1700 m. SE Yunnan [N Vietnam].

This species is used medicinally.

**3. *Panax zingiberensis*** C. Y. Wu & K. M. Feng, Acta Phytotax. Sin. 13(2): 42. 1975.

姜状三七 jiang zhuang san qi

Herbs, perennial, 20–60 cm tall. Rootstock fleshy, horizontal, resembling that of species of *Zingiber*. Leaves 3–7, verticillate at apex of stem, palmately compound; petiole base without stipule or stipulelike appendages; leaflets 3–5, sessile or subsessile, elliptic to obovate-oblong, 6–18 × 3–6 cm, membranous, both surfaces setose on veins, base cuneate, margin serrate or slightly biserrate, setose, apex acuminate to long acuminate. Inflorescence a solitary, terminal umbel; peduncle 24–26 cm, pubescent. Filaments longer than petals. Ovary 2-carpellate; styles 2, united to middle. Fruit red, globose-nephroid; seeds 2, triangular-subglobose. Fl. Jul–Aug, fr. Aug–Oct.

Broad-leaved evergreen forests. SE Yunnan [N Vietnam].

This species is used medicinally.

**4. *Panax notoginseng*** (Burkill) F. H. Chen ex C. Chow & W. G. Huang, Acta Phytotax. Sin. 13(2): 41. 1975.

三七 san qi

*Aralia quinquefolia* (Linnaeus) Decaisne & Planchon var. *notoginseng* Burkill, Bull. Misc. Inform. Kew 1902: 7. 1902; *Panax pseudoginseng* Wallich var. *notoginseng* (Burkill) G. Hoo & C. J. Tseng.

Herbs, perennial, 20–60 cm tall. Rootstock fleshy, roots 1 to numerous, fusiform. Leaves 3–6, verticillate at apex of stem, palmately compound; petiole base without stipule or stipulelike appendages; leaflets obovate or obovate-oblong, 3.5–13 × 1.5–7 cm, membranous, both surfaces sparsely setose on veins, base oblique, margin biserrate, setose, apex acuminate or long acuminate. Inflorescence a solitary, terminal umbel 80–100(or



more)-flowered; peduncle 7–25 cm, glabrous or sparsely pubescent; pedicels 1–2 cm, slender, slightly pubescent. Filaments ca. as long as petals. Ovary 2-carpellate; styles 2, united at least to middle, divergent in fruit. Fruit red, compressed globose-nephroid, ca. 1 cm in diam.; seeds 2, triangular-ovoid, slightly 3-ridged, thickness 5–6 mm. Fl. Jul–Aug, fr. Aug–Oct.  $2n = 24$ .

Forests; 1200–1800 m. SE Yunnan; cultivated in Fujian, SW Guangxi, Jiangxi, Zhejiang [N Vietnam].

This species is used medicinally.

**5. *Panax pseudoginseng*** Wallich, Trans. Med. Soc. Calcutta 4: 117. 1829 [*"pseudo-ginseng"*].

假人參 jia ren shen

*Aralia pseudoginseng* (Wallich) Bentham ex C. B. Clarke; *A. quinquefolia* (Linnaeus) Decaisne & Planchon var. *pseudoginseng* (Wallich) Burkill.

Herbs, perennial, ca. 50 cm tall. Rootstock short, with 2–5 fleshy roots, fusiform, 2–4 cm, ca. 1 cm in diam. Leaves usually 4, verticillate at apex of stem, palmately compound; bases of petiole and petiolules with numerous lanceolate, stipulelike appendages; leaflets 3 or 4, obovate-elliptic to obovate-oblong, 9–10 × 3.5–4 cm (lateral ones smaller), membranous, abaxially glabrous, adaxially setose on veins (trichomes 1.5–2 mm), base attenuate, margin biserrate, apex long caudate-acuminate. Inflorescence a solitary, terminal umbel 20–50-flowered; peduncle ca. 12 cm; pedicels ca. 1 cm, glabrous. Ovary 2-carpellate; styles 2 divided, reflexed.

Forests; 2400–4200 m. S Xizang [?Bhutan, ?N India, Nepal].

This species is used medicinally.

**6. *Panax ginseng*** C. A. Meyer, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 1: 340. 1843.

人參 ren shen

*Aralia ginseng* (C. A. Meyer) Baillon; *A. quinquefolia* (Linnaeus) Decaisne & Planchon var. *ginseng* (C. A. Meyer) Anon-

ymous; *Panax quinquefolius* Linnaeus var. *ginseng* (C. A. Meyer) Regel & Maack; *P. schin-seng* T. Nees.

Herbs, perennial, 30–60 cm tall. Rootstock usually with 1- or 2-fascicled roots, fusiform or cylindrical. Leaves 3–6, verticillate at apex of stem, palmately compound; petiole base without stipule or stipulelike appendages; leaflets 3–5, membranous, abaxially glabrous, adaxially sparsely setose (trichomes ca. 1 mm), base broadly cuneate, margin densely serrulate, apex long acuminate; central leaflet elliptic to oblong-elliptic, 8–12 × 3–5 cm; lateral leaflets ovate to rhombic-ovate, 2–4 × 1.5–3 cm. Inflorescence a solitary, terminal umbel 30–50-flowered; peduncle 15–30 cm, usually longer than petiole; pedicels 0.8–1.5 cm. Ovary 2-carpellate; styles 2, distinct. Fruit red, compressed-globose, 4–5 × 6–7 mm; seeds nephroid, white.  $2n = 48^*$ .

Mixed forests, deciduous broad-leaved forests. E Heilongjiang, E Jilin, E Liaoning; recently cultivated in Hebei and Shanxi [Korea, E Russia].

This species is used medicinally.

**7. *Panax quinquefolius*** Linnaeus, Sp. Pl. 2: 1058. 1753 [*"quinquefolium"*].

西洋参 xi yang shen

*Aralia quinquefolia* (Linnaeus) Decaisne & Planchon.

Herbs, perennial, 20–50 cm tall. Rootstock spindle-shaped. Leaves palmately compound; bases of petiole and petiolules with numerous lanceolate, stipulelike appendages; leaflets oblong-obovate, 8–14 × (2–)2.5–8 cm, membranous, sparsely setose on veins or glabrous adaxially, margin coarsely serrate or dentate, apex abruptly or boldly acuminate. Inflorescence a solitary, terminal umbel 6–20-flowered; peduncle not exceeding petioles. Ovary 2-carpellate; styles 2. Fruit bright red, ca. 1.2 cm in diam.  $2n = 48^*$ .

Recently widely cultivated. Guizhou, Heilongjiang, Jiangsu, Jiangxi, Jilin, Liaoning [native to Canada and the United States].

This species is used medicinally.