# 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 Giliberta 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.

<ul><li>1a. Styles united throughout their length into a single column, not divided apically in fruit, stigmas sessile.</li><li>2a. Secondary and tertiary veins on leaves prominently raised on both surfaces, leaves all unlobed</li></ul>
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
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
leaves usually not glandular punctate
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
8a. Leaves ovate-oblong, $7-18(-22) \times 2-5(-7)$ cm, with $6-12$ pairs of lateral veins
8b. Leaves obvate-oblong to elliptic, $5-11 \times 1.5$ -4.5 cm, with 6-8 pairs of lateral veins 10. <i>D. bilocularis</i>
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
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
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
12b. Leaf blades ovate-elliptic or ovate-lanceolate to elliptic, broadest at or below middle,
tertiary veins usually prominently raised adaxially in dry material
11b. Secondary and tertiary venation of leaves obscure, especially abaxially.
13a. Fruit oblong-ovoid; styles 1.5–1.8 mm in fruit
13b. Fruit globose; styles ca. 1 mm in fruit
g-00000, 00, 00 00 1 1 1 1 1 1 1 1 1 1 1 1

# **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. macro-carpus* 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,  $(7-)12-19 \times (3-)5-9$  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 acuminate, 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),  $(4-)7-13(-27) \times 1.5-6(-8)$  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,  $10-15.5 \times 3.5-5.5$  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.  $7 \times 3.5$  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),  $6-14 \times 2-6$  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.

 $\bullet$  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– $14 \times (2.5$ –)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,  $7–18\times2–5$  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– $13 \times 1.5$ –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.

 $\bullet$  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  $\times$  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 trifidus** (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,  $(4.5-)7-12\times(2-)3.5-12(-17)$  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., 10-20flowered; 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 obloid,  $4-8 \times 3.5-7$  mm, ribbed when dry; stylar column persistent, 1–1.5 mm; stigmas sessile.

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

**14. Dendropanax proteus** (Champion ex Bentham) Bentham, Fl. Hongk. 136. 1861 ["protea"].

#### 变叶树参 bian ye shu shen

Hedera protea Champion ex Bentham, Hooker's J. Bot. Kew Gard. Misc. 4: 122. 1852; Dendropanax acuminatissimus 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 Bentham) Bentham; Gilibertia acuminatissima (Merrill) H. H. Hu; G. angustiloba H. H. Hu; G. parviflora (Champion ex Bentham) Harms; G. protea (Champion ex Bentham) Harms; H. parviflora Champion ex Bentham; Textoria parviflora (Champion ex Bentham)

pion ex Bentham) Nakai; *T. protea* (Champion ex Bentham) 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; stylar 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.

Flora of China 13: 442-446. 2007.