

## AQUIFOLIACEAE

冬青科 dong qing ke

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Trees or shrubs, evergreen or deciduous. Leaves alternate, rarely opposite; leaf blade leathery, papery, or membranous, margin entire, serrate, or spinose; stipules minute, persistent or caducous, scar callose; petiole present, rarely absent. Inflorescence a cyme usually of order 1, 2, or 3(–5), respectively composed of a maximum of 1, 3, or 7(–31) developed flowers, axillary, solitary on current year's branchlets or fasciculate on second year's branchlets. Plants dioecious. Flowers hypogynous, regular, small, unisexual, by stamens or ovary abortive, 4–6(–23)-merous; calyx persistent; corolla often white or cream, rarely green, yellow, pink, or red; petals imbricate, mostly connate at base up to half of their length. Male flowers: calyx 4–8-lobed; petals 4–8; stamens isomerous, alternating with petals, epipetalous; anthers oblong-ovoid, introrse, longitudinally dehiscent; rudimentary ovary subglobose or pulvinate, rostrate. Female flowers: calyx 4–8-lobed; petals 4–8; staminodes sagittate or cordate, isomerous, alternating with petals, epipetalous; ovary superior, ovoid, 4–8(–10)-loculed, rarely pubescent; style rarely developed; stigma capitate, discoid, or columnar. Fruit a drupe, red, brown, or black (or green in *Ilex chapaensis*), usually globose; exocarp membranous or papery; mesocarp fleshy. Pyrenes (1–)4–6(–23); endocarp smooth, leathery, woody, or stony, striate, striate-sulcate, or rugose, and/or pitted.

One genus and 500–600 species: tropical and subtropical to temperate regions of both the N and S Hemispheres, mainly in the tropical regions of Central and South America and Asia; 204 species (149 endemic) in China, distributed in regions south of the Chang Jiang and Qinling Mountains, mainly in S and SW China.

Chen Shukun & Feng Yuxing. 1999. Aquifoliaceae. In: Chen Shukun, ed., Fl. Reipubl. Popularis Sin. 45(2): ii–ix, 1–296.

*Ilex emarginata* Thunberg (in Murray, Syst. Veg., ed. 14, 168. 1784) is the basionym of *Eurya emarginata* (Thunberg) Makino in the Theaceae (see Fl. China 12: 460. 2007).

*Ilex kingiana* Cockerell (Torrey 11: 264. 1911) is a synonym of *I. insignis* J. D. Hooker (1875), not Heer (1869), but the occurrence of this species in China (Yunnan, 1933, *Comber*) requires confirmation.

*Ilex leiboensis* Z. M. Tan (Bull. Bot. Res., Harbin 8(1): 117. 1988) and *I. serrata* Thunberg subsp. *cathayensis* T. R. Dudley (Holly Soc. J. 9(4): 5. 1991) are synonyms of *Celastrus hirsutus* H. F. Comber in the Celastraceae (see p. 472).

*Ilex nokoensis* Hayata (J. Coll. Sci. Imp. Univ. Tokyo 30(1): 56. 1911) is the basionym of *Symplocos nokoensis* (Hayata) Kanehira in the Symplocaceae (see Fl. China 15: 244. 1996).

*Ilex racemosa* Oliver is the basionym of *Perrottetia racemosa* (Oliver) Loesener in the Dipentodontaceae (see p. 495).

*Ilex rarasanensis* Sasaki (Trans. Nat. Hist. Soc. Formosa 21: 154. 1931), described from Taiwan, could not be treated here because we did not see the type material.

### 1. ILEX Linnaeus, Sp. Pl. 1: 125. 1753.

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Morphological characters and geographic distribution are the same as those of the family.

The genus is classified into three subgenera. *Ilex* subg. *Byronia* (Endlicher) Loesener has only one species, *I. polypyrena*, and *I.* subg. *Prinos* includes 12 species. All other species belong to *I.* subg. *Ilex* and they are grouped into six sections.

- 1a. Deciduous trees or shrubs, often with spur branchlets, current year's branchlets often with conspicuous lenticels; leaf blade membranous, papery, or thinly leathery, rarely subleathery (*I.* subg. *Prinos*) ..... Key 6
- 1b. Evergreen trees or shrubs, without spur branchlets, lenticels mostly absent on current year's branchlets, and usually equally absent on second and third year's branchlets, if present, usually on older branchlets; leaf blade leathery or thickly leathery, rarely papery.
  - 2a. Infructescences: 6-fruited cymes; pyrenes 14 or 15; plant fruiting in July, endemic to Guangxi (*I.* subg. *Byronia*) ..... 1. *Ilex polypyrena*
  - 2b. Plants without the above combination of characters (*I.* subg. *Ilex*).
    - 3a. Female inflorescences: cymes solitary, rarely fasciculate (*I. triflora*), axillary; pyrenes abaxially usually sulcate, smooth, or striate, sometimes concave, or flat, or sulcate, or 2- or 3-striate and 1- or 2-sulcate, rarely convex, never rugose or pitted, endocarp usually leathery, sometimes subwoody, woody, or stony, rarely bony, subbony, or subleathery.

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- 4a. Male inflorescences: cymes solitary, axillary on current year's branchlets; pyrenes abaxially usually sulcate, sometimes concave, or flat, or 2- or 3-striate and 1- or 2-sulcate, rarely smooth, or 2- or 3-striate and not sulcate, endocarp usually leathery, sometimes subwoody, woody, or stony, rarely bony, subbony, or subleathery (*I. sect. Lioprinus*) ..... Key 1
- 4b. Male inflorescences: cymes fasciculate, axillary on current to third year's branchlets, or solitary on current year's branchlets; pyrenes abaxially smooth, or striate, rarely convex, 1-sulcate, or 3-striate and sulcate, endocarp leathery, rarely bony (*I. sect. Paltoria*) ..... Key 2
- 3b. Male and female inflorescences: usually cymes fasciculate, axillary on current to third year's branchlets, sometimes solitary, rarely pseudoracemose or pseudopaniculate; pyrenes abaxially usually striate and sulcate, or striate only, rarely smooth, sulcate or ridged only, sometimes rugose and/or pitted abaxially and/or laterally, endocarp usually leathery, woody, or stony, rarely subwoody or bony.
- 5a. Female cymes 1(–3)-flowered; pyrenes usually 4, rarely 1–3 or 6, endocarp usually stony or woody, rarely leathery or bony (*I. sect. Ilex*) ..... Key 3
- 5b. Female cymes 1(–5)-flowered, rarely compound cymes; pyrenes usually 4–6, sometimes 7, rarely 2 or 8, endocarp usually leathery, rarely woody or subwoody.
- 6a. Male and female inflorescences: cymes fasciculate or pseudopaniculate, or compound cymes pseudopaniculate; leaf blade 7–20 × 3–7 cm (*I. sect. Lauroilex*) ..... Key 4
- 6b. Male and/or female inflorescences: cymes usually fasciculate, sometimes solitary, rarely pseudopaniculate or pseudoracemose; leaf blade (1–)4–9(–25) × (0.5–)1.5–3.5(–7) cm (*I. sect. Pseudoaquifolium*) ..... Key 5

**Key 1** (*Ilex* sect. *Lioprinus* (Loesener) S. Y. Hu)

- 1a. Margin of leaf blade entire; pyrenes abaxially 2- or 3-striate and 1- or 2-sulcate, or smooth, or 2- or 3-striate and not sulcate, or 1-sulcate.
- 2a. Pyrenes abaxially smooth, or 2- or 3-striate and not sulcate, endocarp leathery ..... 32. *I. excelsa*
- 2b. Pyrenes 2- or 3-striate and 1- or 2-sulcate, rarely 1-sulcate (*I. suichangensis*), endocarp woody or subwoody.
- 3a. Male flowers: peduncle 3–13 mm; calyx not ciliate.
- 4a. Leaf blade 4–9 × 1.8–4 cm ..... 33. *I. rotunda*
- 4b. Leaf blade 3.5–5 × 1.5–2 cm ..... 34. *I. angulata*
- 3b. Male flowers (not seen in *I. suichangensis*): peduncle 14–25 mm; calyx ciliate.
- 5a. Pyrenes 6–10 ..... 35. *I. umbellulata*
- 5b. Pyrenes 5 or 6.
- 6a. Fruit ca. 10 mm in diam., pyrenes narrowly ellipsoidal, 9–10 mm, abaxially 1-sulcate; branchlets, peduncles, and pedicels glabrous ..... 36. *I. suichangensis*
- 6b. Fruit ca. 4 mm in diam., pyrenes ellipsoidal, 2–2.5 mm, abaxially 3-striate and 2-sulcate; branchlets, peduncles, and pedicels pubescent ..... 37. *I. godajam*
- 1b. Margin of leaf blade usually entire, rarely serrate, crenate, crenate-serrate, or serrulate; pyrenes abaxially usually sulcate, sometimes concave or flat.
- 7a. Margin of leaf blade entire, leathery or thickly leathery, rarely thinly leathery.
- 8a. Inflorescence: a compound cyme, secondary axis well developed; leaf blade 9–19 × 3.5–8.5 cm ..... 2. *I. maclurei*
- 8b. Female inflorescence or inflorescence: a simple cyme, secondary axis not developed; leaf blade (2–)3–17 × 1–8.5 cm.
- 9a. Leaf blade linear-lanceolate, lanceolate, or narrowly oblong, 9–16 × 1.1–5 cm.
- 10a. Current year's branchlets purple-black, glabrous; leaf blade reticulate veins adaxially obscure ..... 3. *I. jiuwanshanensis*
- 10b. Current year's branchlets sulfur-colored curved pubescent; leaf blade reticulate veins adaxially evident ..... 4. *I. lancilimba*
- 9b. Leaf blade not above-mentioned shapes, (2–)3–17 × 1–8.5 cm.
- 11a. Fruiting pedicels 0.5–1 mm, much shorter than peduncles ..... 5. *I. tugitakayamensis*
- 11b. Female flowers: pedicels or fruiting pedicels 3–8 mm.
- 12a. Plant densely pubescent.
- 13a. Leaf blade leathery, 3–11 × 1–3.2 cm ..... 6. *I. dasyphylla*
- 13b. Leaf blade thinly leathery, 4–11 × 2–4.5 cm ..... 7. *I. lonicerifolia*
- 12b. Plant glabrous.
- 14a. Peduncle 1.2–3.3 cm ..... 8. *I. sterrophylla*
- 14b. Peduncle shorter than 2 cm.
- 15a. Fruit (6–)9–10(–12) mm in diam. .... 9. *I. editicostata*
- 15b. Fruit 5–7 mm in diam.
- 16a. Branchlets and petioles stout; fruit with persistent calyx not ciliate ..... 10. *I. robusta*
- 16b. Branchlets and petioles slender; fruit with persistent calyx ciliate.

- 17a. Leaf blade midvein adaxially pubescent, reticulate veins obscure, petiole ± pubescent; pyrenes smooth when dry, abaxially shallowly sulcate ..... 11. *I. litseifolia*
- 17b. Leaf blade midvein adaxially glabrous, reticulate veins evident on both surfaces, petiole glabrous; pyrenes rugose when dry, abaxially deeply 1-sulcate ..... 12. *I. linii*
- 7b. Margin of leaf blade entire, serrate, crenate, crenate-serrate, or serrulate, leathery or subleathery, rarely papery, or papery to leathery.
- 18a. Branchlets glabrous throughout, sometimes current year's branchlets and terminal bud puberulent or glabrescent.
- 19a. Leaf blade 12–18 × 4–7 cm.
- 20a. Leaf blade midvein abaxially densely yellow tomentose or glabrous ..... 13. *I. atrata*
- 20b. Leaf blade midvein abaxially glabrous.
- 21a. Branchlets brown-yellow; leaf blade thinly leathery to papery, margin entire ..... 14. *I. machilifolia*
- 21b. Branchlets purple-black; leaf blade papery, margin sparsely and shallowly serrulate ..... 15. *I. pseudomachilifolia*
- 19b. Leaf blade 2.5–11.7 × 1–5.5 cm.
- 22a. Inflorescences: often cymes umbelliform, rarely 1-flowered cymes; fruiting peduncles and pedicels 1.5–2.8 cm.
- 23a. Leaf blade 2.5–5 × 1–2 cm ..... 16. *I. huana*
- 23b. Leaf blade 5–6.5(–10) × 2–2.5(–4) cm ..... 17. *I. suaveolens*
- 22b. Inflorescences: cymes usually not umbelliform; fruiting peduncles and pedicels 0.5–3.5 cm.
- 24a. Leaf blade broadly elliptic, similar to pear leaves, margin serrulate or serrate; pyrenes oblong, endocarp stony ..... 18. *I. pyrifolia*
- 24b. Leaf blade elliptic, oblong-elliptic, lanceolate, or oblong, rarely ovate, margin crenate, sometimes serrate (when young), entire, or sparsely serrulate; pyrenes with endocarp leathery, thickly leathery, or substony.
- 25a. Fruit narrowly globose or subglobose; leaf blade deep brown when dry.
- 26a. Leaf blade glabrous throughout, rarely adaxially pilose on midvein when young ..... 19. *I. chinensis*
- 26b. Leaf blade of all young leaves and midvein of mature leaves adaxially puberulent ..... 20. *I. pubigera*
- 25b. Fruit globose; leaf blade purple-brown or yellowish brown when dry.
- 27a. Leaf blade 6–11.5 × 3–6 cm ..... 21. *I. melanophylla*
- 27b. Leaf blade 4–11.7 × 1.5–4.3 cm ..... 22. *I. ficifolia*
- 18b. Branchlets densely pubescent, hirsute, or at least puberulent.
- 28a. Leaf blade oblong, obovate, lanceolate, or ovate-elliptic, 5–22 × 3.5–10 cm; inflorescences 3- or more flowered cymes; fruit 7–10 mm in diam.
- 29a. Leaf blade with midvein flat adaxially ..... 25. *I. dehongensis*
- 29b. Leaf blade with midvein impressed adaxially.
- 30a. Male inflorescences with peduncles 1.5–2.8 cm ..... 24. *I. latifrons*
- 30b. Male inflorescences with peduncles 0.9–1.2 cm ..... 23. *I. kwangtungensis*
- 28b. Leaf blade ovate, ovate-elliptic, elliptic, oblong-elliptic, or elliptic-lanceolate, 2–12 × 1.5–5(–7.5) cm; female inflorescences usually 1–3-flowered, rarely 3–6-flowered cymes; fruit 5–10 mm in diam.
- 31a. Leaf blade margin sparsely serrate, undulate, or indistinctly serrulate, blade elliptic, glabrous except midvein puberulent adaxially.
- 32a. Leaf blade 9–11 × 4–5 cm ..... 26. *I. cheniana*
- 32b. Leaf blade 5–9 × 2.5–3.5(–7.5) cm ..... 27. *I. qianlingshanensis*
- 31b. Leaf blade margin sparsely crenate-serrate, sometimes entire or undulate-crenulate, both surfaces hairy or adaxially only midvein pubescent.
- 33a. Leaf blade leathery, ovate or ovate-elliptic, 2–7 × 1.5–3.5 cm, both surfaces ferruginous villous ..... 28. *I. ferruginea*
- 33b. Leaf blade papery, leathery, or thinly leathery, elliptic, oblong-elliptic, or elliptic-lanceolate, 6–12 × 2–4 cm, both surfaces densely hirsute, yellow tomentose, or rarely adaxially only on midvein.
- 34a. Leaf blade 8–12 cm, margin entire ..... 29. *I. manneiense*
- 34b. Leaf blade 6–9 cm, margin sparsely crenate-serrate or undulate-crenulate.
- 35a. Fruiting peduncles ca. 15 mm ..... 30. *I. hirsuta*
- 35b. Fruiting peduncles 3–5 mm ..... 31. *I. longzhouensis*

**Key 2** (*Ilex* sect. *Paltoria* (Ruiz & Pavon) Maximowicz)

- 1a. Leaf blade abaxially punctate; pyrenes 4, 3–5 mm in diam., abaxially usually smooth, striate, not sulcate.
- 2a. Branchlets usually zigzag; male cymes 1–3-flowered, rarely more flowered; pedicels equaling or slightly longer than peduncles; rudimentary ovary pyramidal ..... 38. *I. triflora*
- 2b. Branchlets straight; male cymes 1–7-flowered, more than 1-flowered cymes with pedicels shorter than peduncles; rudimentary ovary subglobose or conical.

- 3a. Flowers 4- or 5-merous; leaf blade ovate, ovate-lanceolate, ovate-elliptic, elliptic, or ovate-oblong, (2-)3-8 × (1-)2-4 cm; male cymes 1-7-flowered, solitary on current year's branchlets, rarely fasciculate ..... 39. *I. szechwanensis*
- 3b. Flowers 4-merous; leaf blade usually obovate or elliptic, rarely obovate-elliptic or oblong-elliptic, 0.5-7 × 0.4-3 cm; male cymes fasciculate on current year's branchlets or solitary.
- 4a. Leaf blade elliptic or broadly elliptic, 0.5-3 × 0.4-1.5 cm, petiole 2-4 mm.
- 5a. Leaf blade broadly elliptic, 0.5-1.2 × 0.4-0.9 cm, apex obtuse or acute, base rounded or obtuse, midvein adaxially obscure ..... 40. *I. subcrenata*
- 5b. Leaf blade elliptic, 1-3 × 0.8-1.5 cm, apex acute, cuspidate, base obtuse or broadly cuneate, midvein adaxially impressed ..... 41. *I. yuana*
- 4b. Leaf blade obovate, elliptic, obovate-elliptic, or oblong-elliptic, 1-7 × 0.5-3 cm, petiole usually longer than 4 mm.
- 6a. Leaf blade 1-3.5 × 0.5-1.5 cm; fruiting pedicel 4-6 mm; persistent stigma thickly discoid; pyrenes oblong-ellipsoidal, abaxially smooth, striate, not sulcate ..... 42. *I. crenata*
- 6b. Leaf blade 2-7 × 1-3 cm; fruiting pedicel longer than 7 mm; pyrenes abaxially convex, striate, and slightly rugose or smooth and 5-striate.
- 7a. Petioles 4-6 mm, lateral veins evident on both surfaces of leaves; fruit 9-11 mm in diam., persistent stigma discoid-mammilliform; pyrenes ellipsoidal, abaxially convex, striate, and slightly rugose ..... 43. *I. viridis*
- 7b. Petioles 5-10 mm, lateral veins indistinct on both surfaces of leaves; fruit 7-8 mm in diam., persistent stigma thinly discoid; pyrenes ovoid-ellipsoidal, abaxially smooth, 5-striate ..... 44. *I. maximowicziana*
- 1b. Leaf blade abaxially not punctate; pyrenes 4 or 5(or 6), 1-3 mm in diam., abaxially usually smooth, neither striate nor sulcate, rarely 1-striate, or 1-sulcate, or 3-striate and sulcate.
- 8a. Pyrenes abaxially smooth, longitudinally 1-striate; pedicel of female flower 4-4.5 cm; leaf blade 4-12.5 cm, petiole 1.5-2.5 cm ..... 45. *I. pedunculosa*
- 8b. Pyrenes abaxially smooth, neither striate nor sulcate, rarely 3-striate and sulcate, or 1-sulcate; pedicel of female flower 0.2-1.5 cm; leaf blade 1-5.7 cm, petiole 2-8 mm.
- 9a. Pyrenes 3-striate and sulcate, or 1-sulcate.
- 10a. Pyrenes 4, ellipsoidal, ca. 2 mm, ca. 1 mm in diam., abaxially longitudinally 1-sulcate; leaf blade ovate-oblong, apex long acuminate, base cuneate ..... 52. *I. nanchuanensis*
- 10b. Pyrenes 4 or 5, oblong, 4-5 mm, 2.5-3 mm in diam., abaxially thickly 3-striate; leaf blade elliptic-ovate, apex acute or slightly obtuse, base gradually shortly attenuate or truncate to briefly cuneate ..... 53. *I. shennongjiaensis*
- 9b. Pyrenes smooth, neither striate nor sulcate.
- 11a. Branchlets pubescent, puberulent, glabrescent, or glabrous; leaf blade elliptic or ovate-elliptic.
- 12a. Fruit 7-8 mm in diam., persistent stigma discoid; fruiting pedicel 13-15 mm ..... 48. *I. sugerokii*
- 12b. Fruit 4-5 mm in diam., persistent stigma mammilliform; fruiting pedicel 7-12 mm.
- 13a. Leaf blade thickly leathery, elliptic, 5-5.7 × 3-3.3 cm, apex acute or shortly acuminate; fruiting pedicel ca. 7 mm, fruit ca. 5 mm in diam. .... 46. *I. reticulata*
- 13b. Leaf blade subleathery, elliptic or ovate-elliptic, 3-3.5 × 2-3 cm, apex acuminate or caudate-acuminate; fruiting pedicel 8-12 mm, fruit 4-5 mm in diam. .... 47. *I. subcoriacea*
- 11b. Branchlets densely tomentose, densely villous, or densely pubescent; leaf blade ovate, ovate-lanceolate, ovate-elliptic, elliptic, oblong, oblong-lanceolate, or obovate-oblong.
- 14a. Leaf blade obovate-oblong or oblong, 1-3 × 0.6-1.4 cm, apex rounded or obtuse, lower half of margin entire, upper half of margin crenulate-serrate; old branchlets gray-brown or smoky pubescent; fruiting pedicel ca. 6 mm ..... 49. *I. rockii*
- 14b. Leaf blade ovate, ovate-elliptic, ovate-lanceolate, elliptic, oblong, or oblong-lanceolate, 2-4.5 × 1-2.5 cm, apex shortly acuminate or acute and mucronate, margin crenulate-serrate, crenate-serrate, entire, or spinulose-serrate; branchlets densely tomentose, or densely golden yellow villous, older branchlets densely ferruginous tomentose; fruiting pedicel 5-15 mm.
- 15a. Branchlets, leaf blades, petioles, and fruiting pedicels densely tomentose; leaf blade ovate or ovate-elliptic, apex shortly acuminate, lateral veins 7 or 8 pairs, evident on both surfaces; fruiting pedicel 12-15 mm, nodose at middle; fruit 7-8 mm in diam.; pyrenes 5 ..... 50. *I. ludianensis*
- 15b. Branchlets, petioles, and leaf midvein adaxially densely pubescent, villous, or tomentose; leaf blade ovate, ovate-lanceolate, oblong, oblong-lanceolate, or elliptic, apex acute and mucronate, lateral veins obscure on both surfaces; fruiting pedicel 5-15 mm, without node; fruit 5-6 mm in diam.; pyrenes 4 ..... 51. *I. yunnanensis*

**Key 3** (*Ilex* sect. *Ilex*)

- 1a. Margin of leaf blade usually spinose, if not, then with 1 spine at apex.

- 2a. Pyrenes 4, abaxially sulcate or ridged, irregularly rugose and pitted, endocarp bony, rarely stony, or woody.
- 3a. Leaf blade thickly leathery, quadrangular-oblong, margin with 1 or 2 spines per side, apex with 1 strong spine; fruiting pedicel 1.3–1.4 cm ..... 54. *I. cornuta*
- 3b. Leaf blade thinly to thickly leathery, not quadrangular, margin 3–10 spines per side; fruiting pedicel 2–8 mm.
- 4a. Leaf blade thinly to thickly leathery, elliptic or oblong-elliptic, lanceolate, oblanceolate, or ovate-lanceolate, 6–12.5 cm, margin sharply serrate; male cymes 3-flowered; fruit 8–12 mm in diam., persistent stigma thickly discoid or nearly mammilliform ..... 55. *I. hylonoma*
- 4b. Leaf blade leathery, ovate-elliptic, elliptic, or elliptic-lanceolate, 3–9 cm, margin spinose-dentate or spinulose-serrate in 3–10 pairs; male cymes 1-flowered; fruit 6–8 mm in diam., persistent stigma navel-shaped or thinly discoid.
- 5a. Leaf blade elliptic-lanceolate, 4–9 × 1.5–2.8 cm, apex acuminate, spinose, margin spinose-dentate in 3–10 pairs; fruiting pedicel ca. 2 mm, fruit globose, 6–7 mm in diam., persistent stigma thinly discoid; pyrenes abaxially longitudinally 1-ridged ..... 56. *I. centrochinensis*
- 5b. Leaf blade ovate-elliptic or elliptic, 3–6 × 1.5–3 cm, apex acute, without spine, margin sparsely spinulose-serrate in 4–7 pairs; fruiting pedicel 4–8 mm, fruit globose, 7–8 mm in diam., persistent stigma navel-shaped or discoid; pyrenes abaxially not longitudinally 1-ridged ..... 57. *I. zhejiangensis*
- 2b. Pyrenes 2 or 4, rarely 1 or 3, abaxially striate and sulcate, rarely only striate, endocarp woody, rarely stony or leathery.
- 6a. Prostrate shrubs, 20–30 cm tall; leaf blade hexangular-subrhombic, 1–3.2 × 0.7–1.5 cm, shiny, rugose adaxially; pyrene 1, abaxially palmately striate, not sulcate ..... 58. *I. perryana*
- 6b. Erect shrubs or trees; leaf blade not hexangular-subrhombic, not rugose adaxially; pyrenes 2 or 4, rarely 1 or 3, abaxially striate and sulcate, rarely only striate.
- 7a. Trees, rarely shrubs.
- 8a. Pyrenes (1 or)2(–4), oblong-ellipsoidal or subglobose; leaf blade elliptic-oblong, elliptic, or ovate-elliptic, 4–10 cm, margin with 3–14 pairs of spines ..... 68. *I. dipyrena*
- 8b. Pyrenes 3 or 4, ovoid-ellipsoidal, oblong, or ovoid; leaf blade oblong, ovate-oblong, ovate, or elliptic, 3.5–8 cm, margin with 2–8 pairs of spines.
- 9a. Pyrenes 3, ovoid-ellipsoidal, ca. 5 mm, ca. 3 mm in diam.; leaf blade ovate-oblong, ovate, or elliptic, 5.5–8 cm, base subrounded or obtuse, margin with 4–8 pairs of spines, petiole 5–8 mm ... 69. *I. dabieshanensis*
- 9b. Pyrenes 4, oblong or ovoid, 6–8 mm, 4–5 mm in diam.; leaf blade oblong or ovate-oblong, 3.5–7 cm, base truncate or subcordate, margin with 2–5 pairs of large spines, petiole ca. 2 mm .... 70. *I. chengkouensis*
- 7b. Shrubs or small trees.
- 10a. Pyrenes 1 or 2.
- 11a. Leaf blade oblong-elliptic, 7–8 × 2–2.5 cm, margin entire; fruit globose, 8–12 mm in diam., pyrenes 1 or 2, oblong, ca. 8 mm, ca. 5.5 mm in diam., striate and sulcate ..... 64. *I. synpyrena*
- 11b. Leaf blade lanceolate, ovate-lanceolate, or ovate to rhombic, elliptic, or ovate-elliptic, 1.8–5.5 × 0.7–2.5 cm, apex and margin spinose-serrate; fruit obovoid-ellipsoidal or ellipsoidal, 3–7 mm in diam., pyrenes often 2, abaxially palmately striate and sulcate.
- 12a. Leaf blade lanceolate or ovate-lanceolate; fruit obovoid-ellipsoidal ..... 65. *I. georgei*
- 12b. Leaf blade ovate to rhombic, or elliptic or ovate-elliptic; fruit ellipsoidal.
- 13a. Leaf blade ovate to rhombic, apex acuminate, with spine ca. 3 mm, margin with 3 or 4 pairs of strong spines; pyrenes 2, ovoid or subglobose, 5–6 mm, 4–5 mm in diam. .... 66. *I. bioritsensis*
- 13b. Leaf blade elliptic or ovate-elliptic, apex shortly acuminate or acute, with a weak spine, margin with 4–6 pairs of thin spines; pyrenes (1 or)2(or 3), obovoid, ca. 5 mm, ca. 3.5 mm in diam. ... 67. *I. ciliospinosa*
- 10b. Pyrenes 4.
- 14a. Leaf blade thinly leathery, oblong-lanceolate, oblong-ovate, or narrowly oblong, 4.5–6 × 2–2.5 cm, petiole 3–9 mm; endocarp stony ..... 59. *I. wugongshanensis*
- 14b. Leaf blade leathery, elliptic, ovate, or ovate-lanceolate, 1.5–6.5 × 0.5–3 cm, petiole 1–4 mm; endocarp woody.
- 15a. Leaf blade elliptic, 1.5–3 × 0.7–1.5 cm, base acute, lateral veins adaxially impressed; branchlets and petioles glabrous; pyrenes abaxially palmately striate, not sulcate ..... 60. *I. miguensis*
- 15b. Leaf blade ovate or ovate-lanceolate, base truncate, rounded, or obtuse, lateral veins adaxially not impressed; branchlets and petioles pubescent; pyrenes abaxially striate and sulcate, or striate but not sulcate.
- 16a. Leaf blade basally obtuse, lateral veins 6 or 7 pairs, adaxially obscure, petiole 3–4 mm; fruit globose, 5–5.5 mm in diam., persistent stigma mammilliform ..... 61. *I. euryoides*
- 16b. Leaf blade basally truncate or rounded, lateral veins 1–5 pairs, adaxially evident or obscure, petiole 1–2 mm; fruit depressed globose or globose, 7–8 mm in diam., persistent stigma discoid or navel-shaped.

- 17a. Leaf blade ovate or ovate-lanceolate, 1.5–3 cm, margin with 1–3 pairs of spines, lateral veins 1–3 pairs, adaxially obscure; pyrenes obovoid or oblong, abaxially palmately striate and sulcate ... 62. *I. pernyi*
- 17b. Leaf blade ovate, 3–6.5 cm, margin with 3–7 pairs of spines, lateral veins 4 or 5 pairs, adaxially evident; pyrenes subglobose, abaxially palmately striate, not sulcate ..... 63. *I. wenchowensis*
- 1b. Margin of mature leaf blade never spinose.
- 18a. Fruit (3–)6–12(–26) mm in diam., persistent stigma thinly discoid or discoid, rarely thickly discoid, sometimes navel-shaped; pyrenes irregularly rugose and/or pitted, rarely not rugose or pitted, usually abaxially striate and sulcate, rarely only striate or only sulcate, endocarp stony or woody, rarely bony, leathery or subwoody.
- 19a. Ovary and/or fruit pubescent.
- 20a. Fruit ovoid-globose, ca. 10 mm, ca. 8 mm in diam., persistent stigma thickly discoid; leaf blade obovate-oblong or oblong-lanceolate, 7.5–10 cm, apex abruptly acuminate, base cuneate ..... 71. *I. trichocarpa*
- 20b. Fruit globose or depressed globose, 5–11 mm, 7–12 mm in diam., persistent stigma navel-shaped or thinly discoid; leaf blade oblong to oblong-elliptic or elliptic, apex acute or shortly acuminate, base cuneate, obtuse, or rounded.
- 21a. Fruit globose, 9–12 mm in diam., persistent stigma navel-shaped; leaf blade oblong to oblong-elliptic, 10–18 × 4.5–7.5 cm, lateral veins 14 or 15 pairs, and reticulate veins evident on both surfaces, petiole 2–2.2 cm ..... 72. *I. kaushue*
- 21b. Fruit depressed globose, 7–8 mm in diam., persistent stigma thinly discoid; leaf blade elliptic, rarely ovate-elliptic or lanceolate, 3–7 × 1.5–2.5 cm, lateral veins 6–8 pairs, and reticulate veins indistinct on both surfaces, petiole 3–6 mm ..... 73. *I. pubilimba*
- 19b. Ovary and/or fruit glabrous.
- 22a. Leaf blade 8–36 × 4.5–13 cm.
- 23a. Large trees, to 20 m tall; leaf blade oblong or ovate-oblong, 8–19(–28) × 4.5–7.5(–9) cm, apex obtuse or shortly acuminate, base rounded or broadly cuneate; flowers yellowish green; fruit globose, ca. 7 mm in diam., pyrenes oblong-ellipsoidal, ca. 5 mm, abaxially longitudinally ridged ..... 74. *I. latifolia*
- 23b. Shrub or small trees; leaf blade elliptic or oblong, (20–)30–36 × (8–)9–13 cm, apex acuminate or falcate-acuminate, base obtuse or broadly cuneate; flowers purple-red; fruit subglobose, ca. 8 mm in diam., pyrenes ellipsoidal, ca. 6 mm, abaxially longitudinally deeply sulcate ..... 75. *I. perlata*
- 22b. Leaf blade usually shorter than 11 cm, sometimes longer than 11 cm, usually less than 5 cm wide, rarely to 7.5 cm wide.
- 24a. Branchlets, petioles, and fruiting pedicels glabrous, rarely fruiting pedicels puberulent, pubescent, or glabrescent or petioles puberulent (*I. chingiana* var. *puberula*).
- 25a. Fruit 11–26 mm in diam.; leaf blade thickly leathery, oblong, elliptic, oblong-elliptic, or oblanceolate, 11–15 × 4–5.2 cm ..... 76. *I. chingiana*
- 25b. Fruit rarely more than 12 mm in diam.; leaf blade usually leathery, rarely thickly leathery, or subleathery, ovate, obovate, ovate-elliptic, elliptic, or oblong-, obovate-, or lanceolate-elliptic, usually shorter than 11 cm and less than 4 cm wide.
- 26a. Shrub or small trees.
- 27a. Shrubs; leaf blade oblong-elliptic, 7–8.5 × 2–2.5 cm, margin sparsely crenate-serrate ..... 77. *I. yangchunensis*
- 27b. Small trees; leaf blade elliptic, obovate, or obovate-elliptic, margin entire.
- 28a. Leaf blade elliptic, apex shortly acuminate or obtuse, lateral veins 5 or 6 pairs, petiole 4–7 mm; fruit ca. 5 mm in diam., pyrenes oblong-obovoid, ca. 3 mm, ca. 2 mm in diam., abaxially palmately striate, not sulcate ..... 78. *I. suzukii*
- 28b. Leaf blade obovate or obovate-elliptic, rarely oblanceolate, apex obtuse-rounded, lateral veins 6–9 pairs, petiole 10–15 mm; fruit 10–12 mm in diam., pyrenes broadly ellipsoidal, ca. 7 mm, ca. 4 mm in diam., abaxially irregularly rugose, pitted and striate ..... 79. *I. integra*
- 26b. Medium-sized trees, 7–20 m tall.
- 29a. Fruit globose, 10–15 mm in diam., densely tuberculate, or glandular punctate.
- 30a. Leaf blade lanceolate-elliptic, base acute to attenuate, lateral veins 7–9 pairs; fruit 1.2–1.5 cm in diam., pyrenes 6 ..... 82. *I. chengbuensis*
- 30b. Leaf blade ovate or obovate to elliptic, base obtuse or cuneate, rarely rounded, lateral veins 6–8, 10, or 11 pairs; fruit 1–1.2 cm in diam., pyrenes 4.
- 31a. Leaf blade obovate-elliptic or elliptic, abaxially brown glandular punctate; fruit glandular punctate, pyrenes oblong, abaxially broadly sulcate, irregularly rugose and pitted ..... 80. *I. tenuis*
- 31b. Leaf blade ovate or oblong-elliptic, abaxially not glandular punctate; fruit densely tuberculate, pyrenes ovoid-ellipsoidal, irregularly rugose and pitted, not sulcate abaxially ..... 81. *I. subficoidea*
- 29b. Fruit oblong, obovoid-oblong, depressed globose, or globose, less than 9 mm in diam., not tuberculate or punctate.

- 32a. Fruit oblong or obovoid-oblong, 4–4.5 mm, ca. 3 mm in diam., pyrenes oblong-ellipsoid, ca. 3.5 mm, ca. 2 mm in diam. .... 83. *I. oblonga*
- 32b. Fruit globose or depressed globose, 3–8 mm in diam., pyrenes ellipsoid, ovoid-globose, oblong, obovoid, or oblong-ellipsoid, 3–6 mm.
- 33a. Fruit globose or depressed globose, 6–7 mm in diam., persistent stigma navel-shaped, pyrenes oblong or ellipsoid ..... 84. *I. denticulata*
- 33b. Fruit globose, persistent stigma discoid, pyrenes oblong-ellipsoid, ovoid-globose, or obovoid.
- 34a. Fruit 6–8 mm in diam., pyrenes oblong-ellipsoid or ovoid-globose, 5–6 mm, abaxially striate and sulcate; current year's branchlets stout, longitudinally sharply angular; leaf blade narrowly elliptic or elliptic, 7.5–20 × 3–7.5 cm ..... 85. *I. pentagona*
- 34b. Fruit 3–6 mm in diam., pyrenes obovoid, 3–4 mm, throughout striate and irregularly rugose and sulcate, or abaxially 1-sulcate, nearly smooth and laterally striate-rugose; branchlets slender, longitudinally ridged; leaf blade ovate-elliptic or elliptic, 2.5–8 × 1–3 cm ..... 86. *I. tsangii*
- 24b. Current year's branchlets pubescent to glabrescent, not glabrous; petiole rarely glabrous; female flowers or fruit pedicel pubescent to glabrescent.
- 35a. Shrubs, ca. 2 m tall; leaf blade abaxially glandular punctate, lateral veins obscure on both surfaces ..... 87. *I. occulta*
- 35b. Trees, 6–25 m tall; leaf blade abaxially usually not glandular punctate, lateral veins abaxially evident.
- 36a. Trees, 20–25 m tall; leaf blade elliptic or obovate-elliptic; male inflorescences 1-flowered cymes, fasciculate.
- 37a. Branchlets densely pubescent; leaf blade elliptic, rarely lanceolate or ovate-elliptic, apex shortly acuminate, lateral veins 7 or 8 pairs and reticulate veins obscure adaxially; fruit subglobose, persistent stigma discoid, endocarp woody ..... 88. *I. nanningensis*
- 37b. Young branchlets puberulent or glabrescent; leaf blade elliptic or obovate-elliptic, apex abruptly shortly acuminate, lateral veins 8 or 9 pairs and reticulate veins raised on both surfaces; fruit globose, persistent stigma navel-shaped, endocarp stony ..... 89. *I. uraiensis*
- 36b. Small trees, 6–9 m tall; leaf blade obovate-elliptic, elliptic, obovate, obovate-lanceolate, oblong-elliptic, lanceolate, oblanceolate, or narrowly elliptic; male inflorescences 3-flowered cymes, fasciculate.
- 38a. Branchlets and petioles densely puberulent, leaf midvein puberulent adaxially ..... 90. *I. ningdeensis*
- 38b. Young branchlets pubescent to glabrescent, leaf midvein adaxially slightly pubescent or glabrous, petioles glabrous or minutely or sparsely puberulent.
- 39a. Fruit ca. 10 mm in diam., persistent stigma navel-shaped, pyrenes broadly ellipsoid, 6–7 mm, abaxially palmately striate and sulcate; leaf blade 8–13.5 × 3–4.5 cm, apex shortly acuminate, margin undulate-crenulate ..... 91. *I. muculicava*
- 39b. Fruit 5–6 mm in diam., persistent stigma thinly discoid, flat, pyrenes subglobose, ca. 4 mm, rugose and irregularly striate and sulcate; leaf blade 2–7.5 × 1.5–3.5 cm, apex retuse, margin subentire or sparsely minutely serrate ..... 92. *I. graciliflora*
- 18b. Fruit (3–)4–6(–8) mm in diam., persistent stigma thinly to thickly discoid, rarely capitate, navel-shaped, or mammilliform; pyrenes sometimes irregularly rugose and/or pitted, usually not rugose or pitted, usually abaxially striate and sulcate, sometimes only striate, endocarp usually stony, sometimes woody, rarely bony or leathery.
- 40a. Leaf blade usually subleathery, rarely thinly or thickly leathery, leathery, or papery, lateral veins adaxially usually impressed, rarely raised or flat; fruiting pedicel (2–)4–7(–10) mm.
- 41a. Branchlets verrucose, verruculose, corky verruculose, or tuberculate; leaf blade 0.5–5 cm, rarely 7.5–9 cm.
- 42a. Prostrate shrubs; leaf blade obovate-elliptic, 0.5–2 × 0.3–0.9 cm, petiole 1–2 mm ..... 93. *I. intricata*
- 42b. Erect shrubs or trees; leaf blade usually broadly elliptic, oblong-ovate, or ovate, rarely elliptic-lanceolate, obovate-elliptic, linear-lanceolate, elliptic, oblong, or oblong-elliptic, petiole 4–20 mm.
- 43a. Fruit 3–3.5 mm in diam.; leaf blade papery, broadly elliptic, rarely broadly obovate or broadly ovate, 0.5–1.7 × 0.5–1.2 cm, lateral veins 3 or 4 pairs, petiole 4–5 mm ..... 94. *I. nothofagifolia*
- 43b. Fruit 4–5 mm in diam.; leaf blade leathery or subleathery, ovate-oblong, ovate, elliptic-lanceolate, obovate-elliptic, linear-lanceolate, elliptic, oblong, or oblong-elliptic, (2–)4–9 × (0.7–)1–5.5 cm, lateral veins 5–18 pairs, petiole (0.5–)1–2 cm.
- 44a. Pyrenes puberulent, fruit ca. 4 mm in diam.; leaf blade leathery, ovate-oblong or ovate, 7.5–9 × 4–5.5 cm, lateral veins 17 or 18 pairs, petiole 1.5–2 cm ..... 95. *I. liana*
- 44b. Pyrenes glabrous, fruit ca. 5 mm in diam.; leaf blade subleathery, elliptic-lanceolate, obovate-elliptic, linear-lanceolate, elliptic, oblong, or oblong-elliptic, (2–)4–5(–8) × (0.7–)1–2(–2.5) cm, lateral veins 5–7 pairs, petiole (0.5–)1–1.5 cm ..... 96. *I. delavayi*
- 41b. Branchlets not tuberculate; leaf blade 5–15.5 cm, rarely only 2–3 cm.

- 45a. Small shrubs, ca. 1 m tall; leaf blade 2–3 × 0.7–1 cm, lateral veins 4 pairs, petiole 2–3 mm ..... 97. *I. xizangensis*
- 45b. Trees, rarely shrubs, (2–)5–18 m tall; leaf blade 5–15.5 × 1.5–5.5 cm, lateral veins 8–15 pairs, petiole 0.8–5 cm.
- 46a. Terminal buds 1.5–2.5 cm; leaf blade elliptic, obovate-elliptic, or oblanceolate.
- 47a. Terminal buds ellipsoidal-conical, ca. 1.5 cm, bud scales glabrous, margin serrate; leaf blade narrowly elliptic or obovate-elliptic, 5–14 × 2–4.5 cm; male inflorescences 1–3-flowered cymes, fasciculate; pyrenes pilose ..... 98. *I. hookeri*
- 47b. Terminal buds ovoid, 1.5–2.5 cm, bud scales abaxially densely puberulent, margin entire; leaf blade elliptic, obovate-elliptic, or oblanceolate, 10–15.5 × 3–5.5 cm; male inflorescences 3–7-flowered cymes, fasciculate; pyrenes glabrous or sparsely pubescent ..... 99. *I. sikkimensis*
- 46b. Terminal buds shorter than 1 cm; leaf blade oblanceolate, linear-oblanceolate, oblong-elliptic, or oblong-lanceolate, rarely obovate, linear-lanceolate, linear, or elliptic to elliptic-lanceolate.
- 48a. Inflorescence a 1-fruited cyme, pseudoracemose, fruiting pedicel equaling diam. of fruit, puberulent ..... 100. *I. melanotricha*
- 48b. Inflorescence a 1-fruited cyme, fasciculate, fruiting pedicel shorter to longer than diam. of fruit, glabrous.
- 49a. Male flowers: petals oblong, not ciliate; leaf blade usually oblong-lanceolate or oblanceolate, 6–12.5 × 2–4.2 cm, margin serrulate ..... 101. *I. franchetiana*
- 49b. Male flowers: petals obovate-oblong, ciliate; leaf blade usually oblanceolate or linear-oblanceolate, 5–13 × 1.5–2.5 cm, margin proximally entire, distally sparsely serrulate ..... 102. *I. fargesii*
- 40b. Leaf blade usually leathery, sometimes thinly leathery or papery, rarely thickly leathery, or subleathery, lateral veins adaxially obscure, flat (including evident ones), or slightly raised to raised, rarely slightly impressed; fruiting pedicel (1–)2–4(–8) mm.
- 50a. Young branchlets and petioles pubescent or puberulent, rarely young branchlets glabrescent or glabrous.
- 51a. Ovary and fruit pubescent or puberulent.
- 52a. Small trees; leaf blade elliptic or oblong-elliptic, apex abruptly caudate-acuminate, acumen 1–1.5 cm ..... 103. *I. gracilis*
- 52b. Shrubs; leaf blade oblong, oblong-elliptic, or ovate-elliptic, apex acuminate or shortly acuminate.
- 53a. Inflorescences: 1-fruited cymes, pseudoracemose, axillary on current year's branchlets, axis 2–5 mm; fruiting pedicels ca. 2 mm; bracteoles ovate; leaf blade papery, oblong or oblong-elliptic, 5–9 cm ..... 104. *I. dasyclada*
- 53b. Inflorescences: 1-fruited cymes, fasciculate, axillary on second year's branchlets; fruiting pedicels 2–3 mm; bracteoles lanceolate; leaf blade leathery, ovate-elliptic, 4–7 cm ..... 105. *I. wangiana*
- 51b. Ovary and fruit glabrous, rarely puberulent.
- 54a. Leaf blade papery, rarely thinly leathery.
- 55a. Leaf blade papery or thinly leathery, apex abruptly acuminate, lateral veins 7 or 8 pairs, petiole 10–15 mm ..... 108. *I. chartaceifolia*
- 55b. Leaf blade papery, apex shortly to long acuminate, lateral veins 9 or 10 pairs, petiole 6–10 mm.
- 56a. Leaf blade oblong or elliptic, 8–10 × 3–4 cm, abaxially minutely glandular punctate, margin minutely crenulate-serrate ..... 106. *I. dicarpa*
- 56b. Leaf blade broadly lanceolate, narrowly elliptic, or oblong, 7–9 × 2–3.2 cm, abaxially not glandular punctate, margin sparsely undulate-serrulate ..... 107. *I. nubicola*
- 54b. Leaf blade leathery, rarely thinly leathery or subleathery.
- 57a. Ovary or fruit tuberculate.
- 58a. Fruiting pedicel ca. 2.5 mm, fruit globose or subglobose, persistent stigma discoid; leaf blade ovate, ovate-lanceolate, or oblong, 4–8 cm, margin irregularly sparsely and shallowly serrate ..... 109. *I. buergeri*
- 58b. Fruiting pedicel 3–6 mm, fruit ellipsoidal or subglobose-ellipsoidal, persistent stigma thickly discoid; leaf blade oblong, oblong-elliptic, ovate-elliptic, or lanceolate, margin sparsely crenulate, coarsely sharply serrate, sparsely serrulate, or subentire.
- 59a. Male inflorescences 1(–3)-flowered cymes, fasciculate; leaf blade oblong-elliptic or lanceolate, midvein impressed adaxially, lateral veins 5–8 pairs, margin sparsely crenulate or coarsely sharply serrate ..... 110. *I. subrugosa*
- 59b. Male inflorescences 1–3-flowered cymes, fasciculate; leaf blade oblong, elliptic-oblong, or ovate-elliptic, midvein raised or subflat adaxially, lateral veins 7–9 pairs, margin sparsely serrulate or subentire ..... 111. *I. austrosinensis*
- 57b. Ovary and fruit not tuberculate.
- 60a. Leaf blade usually lanceolate, 9–15 mm wide, margin bluntly crenulate-serrate; pyrenes abaxially palmately striate, endocarp woody ..... 112. *I. chuniana*



- 60b. Leaf blade oblong or oblong-elliptic, 1.3–3.2 cm wide, margin entire or inconspicuously serrulate or crenulate-serrate; pyrenes stony or woody.
- 61a. Fruit globose, ca. 6 mm in diam., pyrenes oblong, 4–4.5 mm, 2–2.5 mm in diam., abaxially longitudinally 1-sulcate, palmately striate and sulcate, laterally rugose and pitted, endocarp stony ..... 113. *I. pingnanensis*
- 61b. Fruit subglobose, ca. 4 mm, ca. 3 mm in diam., pyrenes ellipsoidal, ca. 3 mm, ca. 1.5 mm in diam., abaxially and laterally striate and sulcate, endocarp woody ..... 114. *I. fengqingensis*
- 50b. Young branchlets glabrous, rarely puberulent or glabrescent, petiole glabrous, rarely puberulent or pubescent.
- 62a. Shrubs or trees.
- 63a. Shrubs, 1–3(–4) m tall.
- 64a. Leaf blade obovate-oblong or obovate-lanceolate, rarely elliptic, 4.5–7.5 cm; pyrenes ovoid, ca. 2 mm, ca. 1.5 mm in diam., abaxially smooth, nearly not or inconspicuously striate and sulcate ..... 115. *I. kunmingensis*
- 64b. Leaf blade lanceolate, oblong-lanceolate, elliptic-lanceolate, or oblong-elliptic; pyrenes subglobose or ellipsoidal, abaxially striate and sulcate.
- 65a. Leaf blade lanceolate, abaxially punctate ..... 116. *I. peiradena*
- 65b. Leaf blade oblong-lanceolate, oblong-elliptic, or elliptic-lanceolate, abaxially not punctate.
- 66a. Infructescences: cymes pseudoracemose; leaf blade 7–12 × 2.2–4 cm, lateral veins 8–10 pairs, adaxially evident, slightly raised or ± flat, petiole 8–13 mm ..... 117. *I. micropyrena*
- 66b. Female inflorescences: cymes fasciculate; leaf blade 3.5–8.5 × 1.5–2.5 cm, lateral veins 5–9 pairs, petiole 4–8 mm.
- 67a. Ovary oblong, stigma discoid; leaf blade thickly leathery, margin slightly or deeply undulate, sparsely black serrulate, lateral veins 5–7 pairs, abaxially evident ..... 118. *I. pingheensis*
- 67b. Ovary ovoid, stigma trapezoid-conical; leaf blade thinly leathery, margin not undulate, sparsely and shallowly serrate, lateral veins 8 or 9 pairs, raised on both surfaces, or adaxially flat ..... 119. *I. macrostigma*
- 63b. Shrubs or trees, (2–)3–5(–15) m tall.
- 68a. Apex of leaf blade usually abruptly acuminate.
- 69a. Leaf blade elliptic or obovate-elliptic, 4–6 × 1.5–2.5 cm, base attenuate and decurrent, lateral veins slightly raised on both surfaces, reticulate veins evident ..... 120. *I. dianguiensis*
- 69b. Leaf blade oblong-ovate, oblanceolate, oblong, elliptic, or obovate-oblong, base rounded or obtuse, lateral veins slightly impressed or obscure adaxially, reticulate veins indistinct or slightly evident.
- 70a. Male inflorescences 1(–3)-flowered cymes, fasciculate; rudimentary ovary globose, ca. 1 mm in diam., apex densely puberulent; leaf blade oblong-ovate, abaxially not punctate ..... 121. *I. brachyphylla*
- 70b. Male inflorescences 3-flowered cymes, fasciculate; rudimentary ovary subglobose, ca. 0.5 mm in diam., glabrous; leaf blade oblanceolate, elliptic, oblong, or obovate-oblong, abaxially sparsely glandular punctate ..... 122. *I. confertiflora*
- 68b. Apex of leaf blade acute or acuminate, not abruptly acuminate.
- 71a. Male inflorescence: cyme pseudopaniculate, rachis stout, inflated, purple-black; leaf blade oblong-lanceolate, 6–9.5 × 2.5–3 cm, abaxially minutely glandular punctate ..... 123. *I. punctatilimba*
- 71b. Male inflorescence: cyme fasciculate, not pseudopaniculate; leaf blade oblong-oblanceolate, ovate-oblong, or oblong, 7–15 × 2–7 cm, abaxially glandular punctate or not.
- 72a. Male inflorescences 1–3-flowered cymes, fasciculate; leaf blade ovate-oblong or oblong, 11–14 × 5–7 cm, abaxially minutely punctate, petiole 10–15 mm ..... 124. *I. robustinervosa*
- 72b. Male inflorescences 3–9-flowered cymes, fasciculate; leaf blade oblong-oblanceolate, 7–15 × 2–4 cm, abaxially not punctate, petiole 2–4 mm ..... 125. *I. cinerea*
- 62b. Trees, rarely shrubs.
- 73a. Female inflorescence and infructescence: cymes pseudoracemose, sometimes fasciculate.
- 74a. Branchlets conspicuously lenticellate.
- 75a. Fruit subglobose, ca. 9 mm, ca. 8 mm in diam.; pyrenes trigonous-ellipsoid, 6–7 mm, ca. 3 mm in diam., abaxially longitudinally striate and sulcate; leaf blade papery, margin sparsely and shallowly crenulate ..... 126. *I. venosa*
- 75b. Fruit depressed globose, 4–5 mm in diam., tuberculate; pyrenes ovoid-trigonous, ca. 2.5 mm, ca. 2 mm in diam., abaxially irregularly reticulate-striate, rugose; leaf blade thickly leathery, margin densely and sharply serrate ..... 127. *I. dumniiana*
- 74b. Branchlets not lenticellate.

- 76a. Fruit tuberculate (under lens), persistent stigma thickly discoid, endocarp stony; apex of leaf blade obtuse, acute, shortly acuminate, or nearly caudate-acuminate ..... 128. *I. intermedia*
- 76b. Fruit not tuberculate, persistent stigma navel-shaped, mammilliform, capitate, thinly discoid, or thickly discoid, endocarp leathery or stony; apex of leaf blade acuminate to caudate-acuminate, rarely abruptly acute.
- 77a. Fruiting pedicel densely puberulent, ca. 1 mm, persistent stigma mammilliform or thickly discoid, endocarp leathery; petiole (8–)10–15 mm ..... 129. *I. medogensis*
- 77b. Fruiting pedicel puberulent or sparsely puberulent, 2–5.5 mm, persistent stigma navel-shaped, thinly discoid, or capitate, endocarp stony; petiole 4–13 mm.
- 78a. Male flower: corolla ca. 10 mm in diam.; pyrenes palmately striate and sulcate throughout; leaf blade papery ..... 130. *I. gantungensis*
- 78b. Male flower: corolla 5–6 mm in diam.; pyrenes abaxially palmately striate and sulcate, laterally longitudinally striate and sulcate; leaf blade leathery or thickly papery.
- 79a. Persistent stigma capitate; pyrenes ovoid-oblong or oblong, 3–4 mm; male flower: calyx puberulent, petals oblong, ca. 3 mm, ciliate; leaf blade margin usually crenulate-serrate, petiole 5–13 mm ..... 131. *I. formosana*
- 79b. Persistent stigma navel-shaped; pyrenes oblong, ca. 4 mm; male flower: calyx glabrous and ciliate, petals obovate-oblong, ca. 2 mm, not ciliate; leaf blade margin subentire or minutely crenulate, petiole 4–7 mm ..... 132. *I. tetramera*
- 73b. Female inflorescence and infructescence 1-flowered or 1-fruited cymes, fasciculate, not pseudoracemose.
- 80a. Pyrenes abaxially longitudinally striate and sulcate; fruiting pedicel 1–2 mm; third year's and older branchlets with raised elliptic lenticels ..... 133. *I. cupreonitens*
- 80b. Pyrenes abaxially usually striate and sulcate, rarely only striate; fruiting pedicel (1–)2–3(–6) mm; third year's and older branchlets not lenticellate, rarely minutely or sparsely lenticellate.
- 81a. Leaf blade ovate, ovate-elliptic, oblong, or ovate-lanceolate, apex acuminate or acute, margin undulate crenate-serrate; fruit 3–5 mm in diam., pyrenes 2–2.5(–5) mm, ca. 1.5(–2) mm in diam., ellipsoidal-trigonus ..... 134. *I. corallina*
- 81b. Leaf blade usually not above-mentioned shapes, but sometimes oblong and rarely ovate, margin rarely undulate; fruit (3–)5–7(–8) mm in diam., pyrenes 3–4.5(–7) mm, (1.5–)2–3(–5) mm in diam., ellipsoidal or subglobose, rarely obovoid, obovoid-oblong, ovoid, or oblong.
- 82a. Fruiting pedicel equaling or longer than diam. of fruit.
- 83a. Fruit globose, ca. 6 mm in diam., fruiting pedicel 5–6 mm ..... 137. *I. cyrtura*
- 83b. Fruit ellipsoidal or globose, 3–5 mm in diam., fruiting pedicel 3–3.5 mm.
- 84a. Fruit globose, 3–5 mm in diam., fruiting pedicel ca. 3.5 mm, pyrenes obovoid; leaf blade papery, lanceolate or narrowly elliptic, 5–8 × 1.5–2.5 cm, acumen 1.8–2 cm ..... 135. *I. arisanensis*
- 84b. Fruit ellipsoidal, 3.5–4 mm in diam., fruiting pedicel ca. 3 mm, pyrenes ellipsoidal; leaf blade thinly leathery, usually oblong-elliptic, 6.5–11.5 × 3.5–4 cm, acumen 1–1.5 cm ..... 136. *I. marlipoensis*
- 82b. Fruiting pedicel much shorter than diam. of fruit, ca. less than 1/2 in diam.
- 85a. Peduncles of male cymes very short to nearly absent; pyrenes laterally striate and sulcate or inconspicuously striate, not rugose or pitted.
- 86a. Fruit subglobose, persistent stigma discoid or navel-shaped, pyrenes obovoid-oblong; leaf blade papery to thinly leathery, elliptic, oblong, or oblong-elliptic, 6–12 cm, reticulate veins slightly raised on both surfaces ..... 138. *I. wattii*
- 86b. Fruit globose, persistent stigma thickly discoid, pyrenes ellipsoidal; leaf blade leathery, oblong-elliptic or obovate-elliptic, 4–8 cm, reticulate veins evident only abaxially ... 139. *I. guanganensis*
- 85b. Peduncles of male cymes 1–2 mm; pyrenes laterally rugose and/or pitted.
- 87a. Stamens longer than petals; petals ovate-oblong, apically ciliate; fruit tuberculate (under lens) ..... 140. *I. ficoidea*
- 87b. Stamens equaling or shorter than petals; petals oblong, not ciliate; fruit not tuberculate.
- 88a. Fruit globose, 7–8 mm in diam., pyrenes oblong or subglobose, 5.5–7 mm, 4–5 mm in diam.; leaf blade subleathery, oblong or oblong-elliptic, 6–12 × 2–4 cm, margin serrate ..... 141. *I. glomerata*
- 88b. Fruit depressed globose, ca. 4 mm, ca. 5 mm in diam., pyrenes subglobose, ca. 3 mm, ca. 2.5 mm in diam.; leaf blade leathery, elliptic-lanceolate or oblanceolate, 6–9 × 2–3 cm, margin strongly serrate, teeth black and apiculate ..... 142. *I. subodorata*

**Key 4** (*Ilex* sect. *Lauroilex* S. Y. Hu)

- 1a. Leaf blade elliptic, 7–10 cm, midvein adaxially proximally slightly raised, flattened or subimpressed toward distal half; male inflorescence: cyme fasciculate; fruit ca. 5 mm in diam., pyrenes 5, ca. 3 mm, ca. 2 mm in diam. .... 143. *I. syzygiophylla*
- 1b. Leaf blade broadly elliptic, oblong-elliptic, or ovate, 8–20 cm, midvein impressed adaxially; male inflorescence: cyme fasciculate or pseudopaniculate, or compound cyme pseudopaniculate; fruit 3–4 mm in diam., pyrenes 5–7, ca. 2 mm, ca. 1 mm in diam.
- 2a. Leaf blade thickly leathery, broadly elliptic or oblong-elliptic, apex shortly acuminate, lateral veins 6–8 pairs, slightly raised on both surfaces; male inflorescence: cyme of order 3, fasciculate; persistent stigma thickly discoid ..... 144. *I. omeiensis*
- 2b. Leaf blade leathery, oblong-elliptic, or ovate, apex caudate-acuminate, lateral veins 15–22 pairs, raised on both surfaces; male inflorescence: cyme of order 4, or compound cyme with cymules of order 3, pseudopaniculate; persistent stigma navel-shaped or thinly discoid ..... 145. *I. venulosa*

**Key 5** (*I.* sect. *Pseudoaquifolium* S. Y. Hu)

- 1a. Pyrenes abaxially 3-striate and sulcate or not, or rarely sulcate only, endocarp leathery, rarely woody, or subwoody; branchlets usually subquadrangular, rarely angular, subterete, or terete.
- 2a. Female inflorescence: 1–5-flowered cyme, fasciculate or pseudopaniculate ..... 146. *I. stewardii*
- 2b. Female inflorescence: 1(–3)-flowered cyme, fasciculate, rarely solitary, or pseudopaniculate.
- 3a. Leaf blade papery or thinly leathery, rarely membranous; persistent stigma capitate or thickly discoid.
- 4a. Branchlets, leaf blades, petioles, and inflorescences densely hirsute; leaf blade thickly papery, papery, or membranous, elliptic, oblong, obovate, or narrowly ovate, margin sparsely and sharply serrulate or subentire ..... 147. *I. pubescens*
- 4b. Branchlets, petioles, and inflorescences sparsely puberulent; leaf blade thinly leathery or papery, elliptic, or obovate-oblong to ovate-oblong, margin entire or undulate and shallowly serrate distally ..... 148. *I. hainanensis*
- 3b. Leaf blade leathery; persistent stigma mammilliform, cylindrical, or discoid.
- 5a. Persistent stigma mammilliform or cylindrical.
- 6a. Branchlets densely lenticellate; leaf blade margin entire, abaxially inconspicuously minutely glandular punctate; persistent calyx 4- or 5-lobed; pyrenes 5 ..... 149. *I. mamillata*
- 6b. Branchlets not lenticellate; leaf blade margin entire or inconspicuously serrate apically, not glandular punctate abaxially; persistent calyx 6-lobed; pyrenes 6 ..... 150. *I. wuana*
- 5b. Persistent stigma discoid.
- 7a. Shrubs, 1–2 m tall; leaf blade leathery, linear or narrowly lanceolate, 6–9 × ca. 0.8 cm, margin minutely obtusely serrate, lateral veins obscure; fruit 1 or 2 per fascicle ..... 151. *I. xiaojinensis*
- 7b. Trees, ca. 18 m tall; leaf blade thickly leathery, broadly ovate or ovate-elliptic, 5–10 × 2.5–5 cm, margin entire, lateral veins 10–13 pairs, adaxially obscure, abaxially conspicuous; fruit 4–6 per fascicle ..... 152. *I. qingyuanensis*
- 1b. Pyrenes abaxially usually striate and not sulcate, rarely striate and sulcate, or not striate or sulcate and smooth, or ridged, endocarp usually leathery, rarely woody; current year's branchlets usually longitudinally angular and sulcate, or angular and ridged, second to third year's terete.
- 8a. Fruiting pedicel 1–2.5 mm and shorter than diam. of fruit, or 6–9 mm and longer than diam. of fruit; female inflorescence: cyme solitary or few fascicled.
- 9a. Fruiting pedicel 6–9 mm, fruit compressed globose, ca. 3 mm in diam. .... 192. *I. lihuaensis*
- 9b. Fruiting pedicel 1–2.5 mm, shorter than diam. of fruit.
- 10a. Leaf blade papery or thinly leathery, oblong or elliptic, rarely obovate or rhomboid, 1–2.5 cm, base cuneate; branchlets, leaves adaxially on midvein, and petioles densely pubescent ..... 187. *I. lohfauiensis*
- 10b. Leaf blade leathery or thickly leathery, obovate, obovate-oblong, or ovate, base obtuse or broadly cuneate; branchlets, leaves adaxially on midvein, and petioles puberulent.
- 11a. Leaf blade apically truncate-rounded, retuse, or emarginate, with triangular acumen, margin entire except for 1(or 2) pair of teeth at apex ..... 188. *I. bidens*
- 11b. Leaf blade apically cordate, emarginate, retuse, rounded, obtuse, or shortly acuminate, margin entire.
- 12a. Leaf blade 1–1.8 × 0.6–1.2 cm, apex cordate, retuse; peduncles of male inflorescence longer than pedicels; rudimentary ovary globose, apex flat ..... 189. *I. chamaebuxus*
- 12b. Leaf blade 2–4 × 1–2.5 cm, apex shortly acuminate, rounded, obtuse, retuse, or emarginate; peduncles of male inflorescence nearly equaling pedicels; rudimentary ovary apically rostellate or depressed.
- 13a. Leaf blade abaxially deeply colored punctate; rudimentary ovary pulvinate, rostellate; fruit compressed globose, 3–4 mm in diam., persistent stigma discoid, convex ..... 190. *I. championii*
- 13b. Leaf blade abaxially not punctate; rudimentary ovary conical, center depressed; fruit globose, ca. 5 mm in diam., persistent stigma thinly discoid, shallowly 4- or 5-lobed ..... 191. *I. hanceana*

- 8b. Fruiting pedicel (2–)3–8(–20) mm, usually longer than or equaling diam. of fruit, rarely shorter; female inflorescence: cyme usually fasciculate, rarely solitary, or few fascicled.
- 14a. Fruit 4–6(–8) mm in diam., persistent stigma capitate or mammilliform, rarely columnar, style usually evident.
- 15a. Leaf blade not punctate, apex usually acuminate, sometimes acute, or obtuse, never retuse.
- 16a. Shrubs or trees.
- 17a. Leaf blade subleathery, lanceolate or oblanceolate, 3–6 × 0.5–1.4 cm, margin subentire, usually 1- or 2-serrulate near apex; male inflorescences: 3-flowered cymes, fasciculate, flowers 5- or 6-merous, calyx cupular, rudimentary ovary pulvinate or subglobose; pyrenes abaxially and laterally longitudinally striate and sulcate ..... 153. *I. metabaptista*
- 17b. Leaf blade thickly leathery, elliptic or oblong-elliptic, 5–9 × 2–3.5 cm, margin entire; male inflorescences: 1-flowered cymes, fasciculate, flowers 5–8-merous, calyx patelliform, rudimentary ovary conical; pyrenes smooth, with a single slender ridge abaxially ..... 154. *I. elmerrilliana*
- 16b. Trees.
- 18a. Branchlets, petioles, and fruiting pedicels glabrous, puberulent, or glabrescent.
- 19a. Leaf blade thickly leathery, oblong or obovate-oblong, 15–25 × 5–7 cm, lateral veins 12–15 pairs; fruit densely yellow punctate, pyrenes 5 or 6, ellipsoidal ..... 155. *I. dolichopoda*
- 19b. Leaf blade leathery, elliptic or broadly elliptic, 7.5–10 × 3.5–5.5 cm, lateral veins 6–8 pairs; fruit not punctate, pyrenes 4 or 5, lanceolate ..... 156. *I. shimeica*
- 18b. Branchlets, petioles, and pedicels puberulent or pubescent.
- 20a. Ovary densely pubescent; leaf blade narrowly elliptic or elliptic-lanceolate, 4.5–6 × 1.4–2.1 cm ..... 157. *I. jiaolingensis*
- 20b. Ovary glabrous; leaf blade oblong, oblong-elliptic, ovate-oblong, or obovate.
- 21a. Leaf blade leathery to thickly leathery, ovate-oblong or obovate, 4–8.5 × 1.2–3.3 cm, lateral veins 5 or 6 pairs, indistinct on both surfaces; pyrenes 4 or 5 ..... 158. *I. memecylifolia*
- 21b. Leaf blade leathery, oblong or oblong-elliptic, 5–11 × 2.3–4 cm, lateral veins 10–14 pairs, obscure on both surfaces; pyrenes 6 ..... 159. *I. sinica*
- 15b. Leaf blade abaxially punctate, apex usually acuminate, sometimes rounded or retuse.
- 22a. Leaf blade obcordate or obovate, apex rounded and/or retuse.
- 23a. Pyrenes 5 or 6(or 7), persistent stigma capitate; fruiting pedicel 8–10 mm, puberulent; leaf blade thickly leathery, lateral veins and reticulate veins indistinct on both surfaces ..... 160. *I. tutcheri*
- 23b. Pyrenes 4, persistent stigma papillate; fruiting pedicel ca. 5 mm, glabrous; leaf blade leathery, lateral veins adaxially evident, abaxially slightly raised, reticulate veins obscure ..... 161. *I. tamii*
- 22b. Leaf blade not obcordate or obovate, apex shortly to long acuminate, rarely retuse.
- 24a. Leaf blade linear-lanceolate, 0.8–2.2 cm wide; style ca. 1 mm, stigma pubescent ..... 162. *I. salicina*
- 24b. Leaf blade not linear-lanceolate, 1.5–4.5 cm wide; persistent stigma glabrous.
- 25a. Fruiting pedicel 12–17 mm, fruit ca. 5 mm in diam., minutely punctate, persistent stigma mammilliform or capitate; pyrenes 6, abaxially feathery striate and sulcate ..... 163. *I. verisimilis*
- 25b. Fruiting pedicel 4–13 mm, fruit 4–7 mm in diam., not punctate, persistent stigma navel-shaped or mammilliform; pyrenes 4–6, smooth or striate and not sulcate, but not feathery (fruit and pyrenes not seen in *I. retusifolia*).
- 26a. Peduncles of male flowers 6–10 mm; persistent stigma mammilliform; leaf blade elliptic, oblong-elliptic, oblong-lanceolate, or oblanceolate, acumen not retuse ..... 164. *I. cochinchinensis*
- 26b. Peduncles of male flowers 1.5–3 mm; stigma discoid or persistent stigma navel-shaped; leaf blade broadly elliptic, elliptic, ovate, or oblong, acumen usually retuse.
- 27a. Branchlets puberulent; female flowers 4-merous; leaf blade broadly elliptic, 5–7 × 2–3 cm ... 165. *I. retusifolia*
- 27b. Branchlets glabrous; female flowers 6–8-merous; leaf blade ovate, elliptic, or oblong, 6–9 × 1.5–4.5 cm ..... 166. *I. kobuskiana*
- 14b. Fruit (1.5–)3–5 mm in diam., style usually absent, persistent stigma usually thinly to thickly discoid, sometimes capitate, rarely mammilliform, or crested.
- 28a. Margin of leaf blade serrate, serrulate, or crenulate, rarely entire; pyrenes 4–6, rarely 7.
- 29a. Infructescence a 1(or 3)-fruited cyme, pseudoracemose, or fasciculate.
- 30a. Infructescence a 1(or 3)-fruited cyme, pseudoracemose, rarely pseudopaniculate, axis 5–8 mm; pyrenes 5–7, ellipsoidal, smooth, neither striate nor sulcate abaxially; leaf blade leathery, oblong, oblong-oblanceolate, elliptic, or obovate-elliptic, margin serrulate or serrate on distal 1/2–2/3 ..... 182. *I. forrestii*
- 30b. Infructescence a 1-fruited cyme, fasciculate, axis ca. 2 mm; pyrenes 4, 4- or 5-striate, not sulcate abaxially; leaf blade thinly leathery or thickly papery, elliptic or oblong-elliptic, margin crenulate .. 183. *I. cauliflora*
- 29b. Infructescence a 1-fruited cyme, fasciculate.
- 31a. Apex of leaf blade shortly acuminate; pyrenes ellipsoidal-oblong ..... 186. *I. tsiangiana*

- 31b. Apex of leaf blade caudate-acuminate, acumen 1–1.5 cm; pyrenes oblong.
- 32a. Persistent stigma mammilliform; pyrenes 5 or 6, smooth, abaxially and laterally longitudinally 1-striate; leaf blade leathery ..... 184. *I. wardii*
- 32b. Persistent stigma thickly discoid or discoid; pyrenes 4, abaxially smooth, not striate or sulcate; leaf blade papery ..... 185. *I. estriata*
- 28b. Margin of leaf blade usually entire, rarely subentire, or with 1 or 2 bristly teeth at distal end, or serrulate; pyrenes 4, rarely 2 or 5.
- 33a. Leaf blade abaxially glandular punctate.
- 34a. Terminal buds, branchlets, petioles, and fruit densely gray-white puberulent-strigose ..... 167. *I. strigillosa*
- 34b. Terminal buds, branchlets, and petioles puberulent, rarely pubescent or glabrous; fruit glabrous, rarely pubescent.
- 35a. Leaf blade elliptic or ovate-elliptic, apex long acuminate or caudate-acuminate, not retuse.
- 36a. Female inflorescences: 1-flowered cymes, fasciculate or pseudoracemose, flowers 4- or 5(or 6)-merous; pyrenes 4 or 5, abaxially 3-striate; leaf blade leathery or thickly leathery, apex caudate-acuminate ..... 168. *I. longecaudata*
- 36b. Female inflorescences: 1–5-flowered cymes, fasciculate, flowers 4-merous; pyrenes 4, abaxially 5- or 6-striate; leaf blade thinly leathery, apex long acuminate ..... 169. *I. kengii*
- 35b. Leaf blade broadly elliptic, elliptic, subrhombic-elliptic, oblong-elliptic, elliptic-lanceolate, or obovate-elliptic, apex obtuse, rounded, or shortly acuminate, rarely retuse, acumen retuse.
- 37a. Male inflorescences 3–7-flowered cymes, fasciculate; leaf blade broadly elliptic or subrhombic-elliptic, 3–5 × 1.5–2.5 cm, apex abruptly shortly acuminate, acumen retuse ..... 170. *I. goshiensis*
- 37b. Male inflorescences usually 3-flowered cymes, fasciculate; leaf blade elliptic, obovate-elliptic, subrhombic, oblong-elliptic, or elliptic-lanceolate, apex obtuse, rounded, or shortly acuminate, rarely retuse, acumen retuse.
- 38a. Branchlets, terminal buds, and petioles pubescent; leaf blade elliptic, obovate-elliptic, or subrhombic, 2–4.5 × 1–2 cm; pyrenes oblong, reticulately striate, striae easily detached from endocarp ..... 171. *I. buxoides*
- 38b. Branchlets, terminal buds, and petioles glabrous; leaf blade oblong-elliptic or elliptic-lanceolate, 4–5.5 × 1.5–2.5 cm; pyrenes broadly ellipsoidal, abaxially 3- or 4-striate, striae adhering to endocarp ..... 172. *I. liangii*
- 33b. Leaf blade abaxially not punctate.
- 39a. Leaf blade broadly elliptic, apex obtuse or rounded; pyrenes abaxially palmately striate and sulcate ..... 173. *I. saxicola*
- 39b. Leaf blade not broadly elliptic, apex acuminate; pyrenes abaxially longitudinally 3- or 4-striate, rarely reticulately striate, palmately striate, or not striate.
- 40a. Fruiting pedicel 2–3 mm, shorter than diam. of fruit; pyrenes abaxially palmately striate and slightly sulcate; leaf blade papery ..... 174. *I. guizhouensis*
- 40b. Fruiting pedicel equaling or longer than diam. of fruit; pyrenes abaxially longitudinally 3- or 4-striate, rarely reticulately striate, or not striate; leaf blade leathery, rarely thickly leathery.
- 41a. Margin of leaf blade subentire, or entire, or with 1 or 2 bristly teeth at distal end, or serrulate.
- 42a. Shrubs, 1–3(–5) m tall ..... 175. *I. oligodonta*
- 42b. Trees, ca. 6 m tall.
- 43a. Pyrenes ovoid, abaxially not striate or sulcate; leaf blade elliptic or oblong-elliptic, 5.5–9 × 2.7–4 cm, margin subentire, sometimes sparsely and inconspicuously serrulate .... 176. *I. nitidissima*
- 43b. Pyrenes oblong, abaxially 3-striate; leaf blade oblong or obovate-elliptic, 6–12 × 3–4.5 cm, margin entire on proximal half, serrulate with 1 or 2 pairs of teeth on distal half ..... 177. *I. jinyunensis*
- 41b. Margin of leaf blade entire.
- 44a. Current year's branchlets and terminal buds puberulent, petioles pubescent or glabrous; leaf blade elliptic, oblong-elliptic, or ovate-elliptic.
- 45a. Shrubs, ca. 2 m tall; persistent stigma thickly discoid; pyrenes 4 or 5, oblong-ellipsoidal, ca. 3.5 mm, abaxially 3- or 4-striate, not sulcate or shallowly sulcate ..... 178. *I. sublongecaudata*
- 45b. Trees, to 12 m tall; persistent stigma capitate; pyrenes 4, ellipsoidal, ca. 4 mm, abaxially 3-striate, laterally smooth ..... 179. *I. hayatana*
- 44b. Branchlets, terminal buds, and petioles glabrous, current year's branchlets sometimes puberulent; leaf blade ovate, obovate-oblong, ovate-oblong, elliptic-lanceolate, or ovate-elliptic.
- 46a. Leaf blade thickly leathery, base obtuse, rarely rounded, midvein slightly raised abaxially, flat adaxially, lateral veins 7 or 8 pairs ..... 180. *I. wilsonii*

- 46b. Leaf blade leathery, base rounded, rarely obtuse, adaxially opaque, midvein deeply impressed adaxially, lateral veins 9 or 10 pairs ..... 181. *I. fukienensis*

**Key 6** (*Ilex* subg. *Prinos* (Linnaeus) A. Gray)

- 1a. Fruit usually red, rarely yellow (*I. micrococca*); pyrenes 4–8(–13), striate or sulcate, or not striate or sulcate abaxially, endocarp leathery, rarely woody.
- 2a. Fruit depressed globose; style present, stigma capitate or crested; pyrenes 6–8(–13), abaxially longitudinally striate, endocarp woody ..... 193. *I. fragilis*
- 2b. Fruit globose; style absent, stigma discoid; pyrenes 4–8, abaxially longitudinally 1-sulcate, or not striate or sulcate, endocarp leathery.
- 3a. Female inflorescences: cymes 1–3-flowered, solitary, rarely fasciculate, axillary ..... 196. *I. serrata*
- 3b. Female inflorescences: cymes umbelliform or compound cymes, more than 3-flowered, solitary, axillary.
- 4a. Inflorescences: compound cymes, secondary axis usually longer than pedicels; lateral veins of leaf blade 5–8 pairs ..... 194. *I. micrococca*
- 4b. Inflorescences: cymes umbelliform, secondary axis usually absent, or shorter than pedicels; lateral veins of leaf blade 10–20 pairs ..... 195. *I. polyneura*
- 1b. Fruit usually black, rarely red (*I. macropoda*) or green (*I. chapaensis*) or purple-black (*I. tsoi*); pyrenes 4–6(–9), striate and sulcate abaxially, endocarp stony or bony, rarely woody (*I. kusanoi*).
- 5a. Fruit more than 10 mm in diam., persistent stigma columnar; style present.
- 6a. Fruit 10–14 mm in diam., pyrenes 7–9; rudimentary ovary pulvinate, apex slightly retuse; leaf blade papery ..... 197. *I. macrocarpa*
- 6b. Fruit 12–20 mm in diam., pyrenes 6 or 7; rudimentary ovary conical, rostellate, apex shallowly lobed; leaf blade thinly leathery or papery ..... 198. *I. chapaensis*
- 5b. Fruit less than 10 mm in diam., persistent stigma usually discoid or capitate; style usually absent.
- 7a. Pedicels of female flowers and fruit 10–30 mm.
- 8a. Endocarp stony; leaf blade ovate or ovate-elliptic, adaxially puberulent, apex caudate-acuminate, acumen usually 6–10 mm ..... 199. *I. asprella*
- 8b. Endocarp woody; leaf blade ovate, glabrous throughout, apex obtuse or shortly and broadly acuminate ..... 200. *I. kusanoi*
- 7b. Pedicels of female flowers and fruit shorter than 10 mm.
- 9a. Leaf blade obovate, obovate-elliptic, or elliptic, base cuneate or attenuate; pyrenes 4 or 5.
- 10a. Leaf blade obovate, usually 2–5 × 1–3 cm; branchlets pubescent at base; fruit globose, ca. 7 mm in diam. .... 201. *I. aculeolata*
- 10b. Leaf blade obovate-elliptic or elliptic, 5–8 × 1.8–3.3 cm; branchlets sparsely puberulent or glabrescent; fruit ellipsoidal, 10–15 mm, 6–8 mm in diam. .... 202. *I. kiangsiensis*
- 9b. Leaf blade ovate, ovate-elliptic, or broadly elliptic, base usually obtuse, rarely rounded or cuneate; pyrenes 5 or 6.
- 11a. Fruit ca. 5 mm in diam., red, fruiting pedicel 6–7 mm, pyrenes 5; calyx of male flowers ca. 2.5 mm in diam., shallowly 5-lobed, margin erose; rudimentary ovary pulvinate, depressed at center ..... 203. *I. macropoda*
- 11b. Fruit 6–8 mm in diam., purple-black, fruiting pedicel 1–3 mm, pyrenes 6; calyx of male flowers ca. 4 mm in diam., 6-lobed, margin entire; rudimentary ovary pulvinate, flat at center ..... 204. *I. tsoi*

**1. *Ilex polypyrena*** C. J. Tseng & B. W. Liu, Bull. Bot. Res., Harbin 1(1–2): 2. 1981.

多核冬青 duo he dong qing

Trees evergreen, ca. 6 m tall. Bark whitish; current year's branchlets brown, second year's branchlets whitish. Petiole 1–1.8 cm, glabrous; leaf blade abaxially green, adaxially olivaceous, shiny, obovate-elliptic or oblong-elliptic, 6–8.5 × 2.5–4.3 cm, leathery, both surfaces glabrous, midvein slightly impressed adaxially, lateral veins 6 or 7 pairs, anastomosing near margin, reticulate veins obscure on both surfaces, base obtuse or cuneate, margin entire, apex rounded. Flowers not known. Inflorescences: cymes, 6-fruited, solitary, axillary; fruiting pedicels ca. 3 mm, glabrous. Fruit purple-black, globose or ovoid-globose, ca. 7 mm in diam.; persistent calyx 5-lobed; persistent stigma discoid; pyrenes 14 or 15, ellipsoidal, laterally compressed, 2–3 mm, only ca. 1 mm in diam., abaxially longitudinally 1-sulcate, endocarp leathery. Fl. unknown, fr. Jul.

• Forests; ca. 1000 m. S Guangxi (Shiwan Dashan).

**2. *Ilex maclurei*** Merrill, Lingnan Sci. J. 13: 35. 1934.

长圆叶冬青 chang yuan ye dong qing

Shrubs or trees, evergreen, 3–4 m tall. Branchlets castaneous, strong, angular, sulcate, glabrous; leaf scars obovate or deltoid, slightly raised; lenticels obscure, elliptic, minute. Petiole subterete, 1.5–2 cm, strong, glabrous; leaf blade oblong or oblong-elliptic, 9–19 × 3.5–8.5 cm, thickly leathery, midvein flat adaxially, lateral veins 10–12 pairs, evident abaxially, obscure adaxially, reticulate veins obscure on both surfaces, base rounded or obtuse, margin entire, slightly recurved, apex very obtuse, rounded, or rarely with short broad acumen. Flowers not known. Inflorescences: compound cymes, 7–9-fruited, solitary, axillary on current year's branchlets; peduncles 8–17 mm, glabrous or glabrescent, compressed, apex thick; cymules of order 2 or 3, secondary axis 2–8 mm; bracts triangular to lanceolate, margin entire, glabrous; fruiting pedicel 3–6 mm; bracteoles 2, basal. Fruit black, shiny when dry, globose, 6–7 mm in diam.; persistent calyx patelliform, explanate, ca. 4 mm in

diam., 4- or 5-lobed, lobes orbicular, very shortly ciliate; persistent stigma mammilliform; pyrenes 4, oblong, ca. 4.5 mm, ca. 3 mm in diam., abaxially deeply 1-sulcate, transverse section U-shaped, endocarp leathery. Fl. unknown, fr. Jan.

Steep wastelands; low to middle elevations. Guangdong (Lianjiang) [N Vietnam].

**3. *Ilex jiuwanshanensis*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1-2): 5. 1981.

九万山冬青 *jiu wan shan dong qing*

Shrubs evergreen, ca. 4 m tall. Current year's branchlets purple-black, longitudinally sulcate, glabrous; second year's branchlets gray-yellow, longitudinally fissured; terminal buds puberulent. Petiole terete, ca. 1 cm, distally narrowly winged; leaf blade linear-lanceolate, 11-13 × 1.1-2.3 cm, leathery, both surfaces glabrous, midvein raised on both surfaces, lateral veins 9 or 10 pairs, abaxially slightly evident, adaxially obscure, reticulate veins obscure on both surfaces, base attenuate and decurrent, margin entire, apex acuminate, acumen ca. 1 cm. Flowers not known. Infructescences: cymes, 1-3-fruited, solitary, axillary; peduncles ca. 7 mm, puberulent; fruiting pedicels ca. 2 mm, or pedicel of single fruit 5-6 mm, puberulent; bracteoles opposite, deltoid, attached to median part of pedicel. Fruit globose (not yet mature), ca. 7 mm in diam.; persistent calyx ca. 3 mm in diam., puberulent, 5-lobed, lobes ovate-triangular; persistent stigma thinly discoid, ca. 1.5 mm in diam.; pyrenes 5, ellipsoidal, ca. 5.5 mm, ca. 2.5 mm in diam., abaxially flat or slightly broadly sulcate. Fl. and fr. unknown.

• Dense evergreen broad-leaved forests in mountainous areas; middle elevations (to 1500 m). N Guangxi (Jiuwan Dashan, Rongshui).

**4. *Ilex lancilimba*** Merrill, Lingnan Sci. J. 7: 312. 1931.

剑叶冬青 *jian ye dong qing*

Shrubs or trees, evergreen, 3-10 m tall, trunk to ca. 20 cm d.b.h. Bark gray-white, smooth; young branchlets longitudinally angular and sulcate, sulfur-colored curved pubescent; old branchlets gray, longitudinally rugose; leaf scars subcircular, raised, glabrescent; terminal buds ovoid-conical, apex acuminate; bud scales densely yellowish pubescent. Stipules caducous; petiole 1.5-2.5 cm, sparsely puberulent, distal half narrowly winged by decurrent leaf base; leaf blade abaxially greenish, opaque, adaxially dark green, shiny or opaque, lanceolate or narrowly oblong, 9-16 × 2-5 cm, leathery, midvein raised and pubescent when young abaxially, raised, flat, or impressed and glabrescent adaxially, lateral veins 10-16 pairs, slightly raised on both surfaces, anastomosing near margin, reticulate veins evident on both surfaces, base cuneate or obtuse, margin entire, slightly recurved, apex acuminate. Inflorescences: cymes or compound cymes, solitary, axillary, on leaves or scales of current year's branchlets, yellowish pubescent; flowers 4-merous. Male inflorescences: compound cymes; peduncles 5-14 mm; cymules of order 3 or 4, secondary axis often well developed; pedicels 1.5-2 mm; calyx patelliform, ca. 3 mm in diam., 4-lobed, lobes broadly deltoid, ca. 1 mm, ca. 2 mm wide at base; petals ovate-oblong, 2.5-3 mm, basally slightly connate; stamens shorter than petals, anthers oblong; rudimentary ovary conical, minute. Female inflorescences:

cymes of order 2 or 3, 3-7-flowered; peduncles ca. 2 mm; pedicels 1-2 mm; calyx and corolla as in male flowers, greenish white, 4- or 5-merous; staminodes ca. 1/2 as long as petals, sterile anthers cordate; ovary ovoid, ca. 2 mm in diam., stigma thickly discoid. Infructescences: cymes 1-fruited, sometimes 3-6-fruited, yellowish pubescent. Fruit red, globose, 1-1.2 cm in diam.; persistent calyx explanate, quadrangular; persistent stigma discoid, 4-lobed; pyrenes 4, oblong, ca. 9 mm, ca. 4 mm in diam., cross section broadly U-shaped, abaxially broadly sulcate, smooth, not striate, endocarp woody. Fl. Mar-May, fr. Sep-Nov.

• Forests or thickets in valleys; 300-1800 m. Fujian (Taining), Guangdong, Guangxi, Hainan.

**5. *Ilex tugitakayamensis*** Sasaki, Trans. Nat. Hist. Soc. Formosa 21: 153. 1931.

雪山冬青 *xue shan dong qing*

Trees evergreen. Branches robust, glabrous; branchlets brown when dry, angular-plicate, lenticels absent; leaf scars deltoid. Petiole 2-2.5 cm, adaxially shallowly and broadly sulcate, glabrous; leaf blade yellowish brown or brown when dry, elliptic or oblong-elliptic, 10-14 × 3-5 cm, thickly leathery, both surfaces glabrous, midvein raised on both surfaces, lateral veins 12-14 pairs, raised on both surfaces, furcate and anastomosing near margin, reticulate veins inconspicuous on both surfaces, base cuneate, margin entire, apex shortly acuminate. Flowers not known. Infructescences: cymes, 5-7-fruited, solitary, axillary on current year's branchlets; peduncles 8-9 mm, compressed, puberulent; bracts linear, sparsely puberulent; fruiting pedicels very short, 0.5-1 mm. Fruit ellipsoidal-globose, 5-7 mm, ca. 5 mm in diam.; persistent calyx explanate, ca. 4 mm in diam., shallowly 5-lobed, lobes deltoid, densely pubescent and ciliate; persistent stigma navel-like, inconspicuously 5- or 6-lobed; pyrenes 4-6, ellipsoidal, ca. 4 mm, ca. 2.5 mm in diam., abaxially flat or slightly sulcate, endocarp leathery, smooth. Fl. unknown, fr. Oct.

• Mountain forests; 1500-2500 m. Taiwan (?Taidong, Taizhong, Xinzhu).

**6. *Ilex dasyphylla*** Merrill, Lingnan Sci. J. 7: 311. 1931.

黄毛冬青 *huang mao dong qing*

*Ilex flaveomollissima* F. P. Metcalf.

Shrubs or trees, evergreen, 2.5-9 m tall. Branchlets, petioles, leaf blades, pedicels, and calyx ferruginous hispidulous, hairs with tuberculate bases; branchlets zigzag, gray, subterete; leaf scars triangular or suborbicular, small, slightly raised; lenticels absent, scabrous-punctate, hairs deciduous. Stipules subulate, pubescent; petiole 3-5 mm; leaf blade green, shiny or not, ovate, ovate-elliptic, oblong-elliptic, or ovate-lanceolate, (2-)3-11 × 1-3.2 cm, leathery, both surfaces hispidulous or glabrescent, midvein impressed adaxially, lateral veins 7-9 pairs, slightly impressed or flat adaxially, reticulate veins indistinct adaxially, base obtuse or rounded, margin entire or upper half sparsely serrulate, recurved, ciliate, apex acuminate. Inflorescences: cymes, solitary, axillary on current year's branchlets; flowers red, 4- or 5-merous. Male inflorescences: cymes of order

2 or 3, umbelliform, 3–5-flowered; peduncles 4–5 mm, slender; bracts deltoid, densely ferruginous hispidulous; pedicels ca. 2 mm; bracteoles basal, densely ferruginous pubescent; calyx patelliform, ca. 3 mm in diam., lobes orbicular or deltoid, ciliate; corolla rotate, petals reflexed at anthesis, oblong, ca. 3 × 2 mm, base slightly connate; stamens ca. as long as petals, anthers oblong; rudimentary ovary pyramidal. Female inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles 5–8 mm; bracts linear-lanceolate, ca. 1.5 mm; pedicels 3–8 mm; bracteoles basal, minute, densely ferruginous hispidulous; calyx and corolla as in male flowers; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid-conical, ca. 1.5 mm, glabrous, stigma mammilliform. Fruit red, globose, 5–7 mm in diam.; exocarp thick, smooth; persistent calyx explanate, pentagonal, 3.5–4 mm in diam., shallowly 5-lobed; persistent stigma thickly discoid, convex; pyrenes 4 or 5, oblong-ellipsoidal, 4–6 mm, ca. 2.5 mm in diam., abaxially broadly and deeply 1-sulcate, smooth, not striate, endocarp leathery. Fl. May, fr. Aug–Dec.

• Sparse forests or shrub forests on mountains, roadsides; 300–700 m. Fujian, Guangdong, Guangxi (Guinan), Hunan, Jiangxi.

**7. *Ilex lonicerifolia*** Hayata, Icon. Pl. Formos. 3: 54. 1913.

忍冬叶冬青 ren dong ye dong qing

Trees evergreen, small to middle-sized, to 17 m tall. Young branchlets castaneous when dry, terete or ridged, longitudinally sulcate, densely pubescent or glabrous; older branchlets sparsely fissured; leaf scars subcircular-deltoid, sparsely lenticellate; terminal buds conical, densely ferruginous pubescent. Stipules triangular, minute; petiole 4–15 mm, pubescent or slightly hirsute, adaxially shallowly sulcate; leaf blade castaneous when dry, opaque on both surfaces, oblong or oblong-elliptic, rarely ovate-elliptic, 4–11 × 2–4.5 cm, thinly leathery, midvein flat or slightly impressed, hirsute adaxially, lateral veins 10–12 pairs, raised on both surfaces, anastomosing near margin, reticulate veins obscure abaxially, evident adaxially, base obtuse, rarely rounded, margin entire, recurved, apex shortly acuminate, acute, or obtuse. Male flowers not known. Female inflorescences: cymes of order 2–4, umbelliform, 3–11-flowered, solitary, axillary on current year's branchlets, hirsute; peduncles 1–2 cm, bracts below umbel, bristlelike, ca. 1 mm, pubescent; pedicels 4–6 mm; bracteoles basal, 1 or 2, or absent; flowers 5- or 6-merous; calyx patelliform, ca. 3.5 mm in diam., pubescent, lobes deltoid, apex obtuse, ciliate; corolla rotate, ca. 7 mm in diam., petals ovate-oblong, 2.5–3 mm, basally slightly connate; staminodes ca. 3/4 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm, stigma thickly discoid or mammilliform, shallowly 5- or 6-lobed. Fruit red, ovoid-globose and 5–7 mm in diam., or ellipsoidal and 8–10 × 6–8 mm; persistent stigma mammilliform; pyrenes 4–6, ellipsoidal, ca. 5 mm, ca. 2 mm in diam., abaxially shallowly concave, smooth, endocarp leathery. Fl. Apr–Jul, fr. Jul.

• Mountain and evergreen forests; low to middle elevations. Taiwan.

- 1a. Fruit ovoid-globose, 5–7 mm in diam.;  
pyrenes 5 or 6 ..... 7a. var. *lonicerifolia*  
1b. Fruit ellipsoidal, 6–8 mm in diam.;  
pyrenes 4 or 5 ..... 7b. var. *matsudae*

**7a. *Ilex lonicerifolia* var. *lonicerifolia***

忍冬叶冬青(原变种) ren dong ye dong qing (yuan bian zhong)

*Ilex hakkuensis* Yamamoto; *I. lonicerifolia* var. *hakkuensis* (Yamamoto) S. Y. Hu.

Trees small to medium-sized. Branchlets terete, densely pubescent. Petiole 4–8 mm; leaf blade oblong or oblong-elliptic, 8–11 × 2–4.5 cm, subleathery, apex shortly acuminate, rarely acute. Fruit ovoid-globose, 5–7 mm in diam.; pyrenes 5 or 6. Fl. Jul.

• Mountain forests; low to middle elevations. Taiwan (Nantou, Taizhong).

**7b. *Ilex lonicerifolia* var. *matsudae*** (Yamamoto) Yamamoto, J. Soc. Trop. Agric. 5: 55. 1933 [*"matsudai"*].

松田氏冬青 song tian shi dong qing

*Ilex matsudae* Yamamoto, Icon. Pl. Formos., Suppl. 1: 37. 1925 [*"matsudai"*].

Trees small. Branchlets ridged, glabrous. Petiole 8–15 mm; leaf blade oblong-elliptic, 4–9.5 × 2.5–4 cm, leathery, apex acute or obtuse. Fruit ellipsoidal, 6–8 mm in diam.; pyrenes 4 or 5.

• Evergreen forests; ca. 100–300 m. S Taiwan (Hengchun peninsula).

**8. *Ilex sterrophylla*** Merrill & Chun, Sunyatsenia 5: 110. 1940.

华南冬青 hua nan dong qing

*Ilex suaveolens* (H. Léveillé) Loesener var. *sterrophylla* (Merrill & Chun) H. T. Chang.

Trees evergreen, ca. 15 m tall; trunk to 70 cm d.b.h. Branchlets subterete, plicate; lenticels numerous, circular or deltoid; terminal buds ovoid, scales densely ciliate. Petiole 1.5–2.5 cm, adaxially flat, upper half evidently winged by decurrent leaf base; leaf blade olivaceous or brown when dry, ovate or elliptic, 5–8 × 2–4 cm, leathery, midvein raised adaxially, lateral veins 8–10 pairs, obscure on both surfaces, base cuneate or sub-rounded, margin entire, very rarely with 1 or 2 obscure teeth, apex acuminate, acumen 5–10 mm. Inflorescences: cymes, solitary, axillary on current year's branchlets, glabrous. Male inflorescences: cymes of order 3 or 4, 5–13-flowered; peduncles 1.5–3 cm; secondary axis 1–2 mm; bracts subulate, ca. 1.2 mm; pedicels 3–5 mm; calyx patelliform, 4- or 5-lobed, lobes rounded or deltoid, glabrous, ciliate; corolla white, petals oblong-ovate, basally slightly connate; stamens 4 or 5, shorter than petals, anthers oblong, ca. 1 mm; rudimentary ovary ovoid, ca. 1 mm, rostellate, apex shallowly 4-lobed. Female inflorescences: cymes of order 2, 3-flowered; peduncles 1.2–3.3 cm; pedicels 5–8 mm; calyx and corolla as in male flowers; staminodes ca. 3/4 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm in diam., stigma thickly discoid. Fruit red, oblong, 7–9 mm; persistent calyx explanate, ca. 3 mm in diam., rounded, ciliate; persistent stigma thickly discoid; pyrenes 4, oblong, 5–6 mm, ca. 3 mm in diam., abaxially shallowly concave, smooth, not striate, endocarp leathery. Fl. Apr–May, fr. Sep–Oct.

Dense mountain forests; 500–1600 m. Guangdong (Yaoshan), S Guangxi (Shangsi), Hainan [Vietnam].



**9. *Ilex editicostata*** Hu & T. Tang, Bull. Fan Mem. Inst. Biol. 9: 248. 1940.

显脉冬青 xian mai dong qing

*Ilex chowii* S. Y. Hu; *I. editicostata* var. *chowii* (S. Y. Hu) S. Y. Hu.

Shrubs to small trees, evergreen, 6–15 m tall. Young branchlets brown-black, robust, angular; older branchlets castaneous-gray to black; lenticels sparse, circular, indistinct; leaf scars semicircular, large, slightly raised; terminal buds conical, ca. 5 mm, yellow-white ciliate. Petiole robust, 1–3 cm; leaf blade green, lanceolate or oblong, 10–17 × 3–8.5 cm, leathery, glabrous, midvein conspicuously raised adaxially, lateral veins 10–12 pairs, often obscure on both surfaces, reticulate veins sometimes evident, base cuneate, margin entire, recurved, apex acuminate, acumen 5–15 mm. Inflorescences: cymes solitary, axillary on current year's branchlets. Male inflorescences: cymes of order 2 or 3; peduncles 1.2–1.8 cm, glabrous; pedicels 3–8 mm, glabrous; bracteoles 1 or 2, basal, ovate-deltoid, or deciduous; flowers white, 4- or 5-merous; calyx shallowly cup-shaped, 2–3 mm in diam., shallowly 4- or 5-lobed, lobes broadly deltoid, ca. 1 mm, ciliate; corolla rotate, ca. 5 mm in diam., petals reflexed at anthesis, broadly ovate, ca. 3 × 2 mm, basally slightly connate; stamens shorter than petals, anthers ovoid-oblong; rudimentary ovary pulvinate. Female flowers not known. Infructescences: cymes of order 1 or 2, 1–3-fruited. Fruit red, subglobose or narrowly globose, (6–)9–10(–12) mm in diam.; persistent calyx explanate, ca. 4 mm in diam., shallow lobes broadly deltoid, ciliate; persistent stigma thinly discoid, shallowly 5-lobed; pyrenes 4–6, oblong, 7–8 mm, ca. 2.5 mm in diam., abaxially shallowly 1-sulcate, endocarp subwoody. Fl. May–Jul, fr. Aug–Dec.

• Evergreen broad-leaved forests, forest margins on mountain slopes; 500–1700 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Zhejiang.

**10. *Ilex robusta*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 6. 1981.

粗枝冬青 cu zhi dong qing

Shrubs evergreen. Branchlets brown-purple, robust, subterete, plicate, ca. 5 mm in diam., glabrous throughout; terminal buds glabrous or thinly ciliate. Petiole 1–1.5 cm, ca. 3 mm in diam., flat adaxially, broadly winged, glabrous; leaf blade purple-brown, shiny when dry, oblong or oblong-elliptic, 6.5–8 × 3–4 cm, thickly leathery, both surfaces glabrous, midvein raised on both surfaces, lateral veins 10–14 pairs, and reticulate veins raised abaxially, impressed adaxially, base obtuse or cuneate and decurrent, margin entire, slightly recurved, apex shortly acuminate. Flowers not known. Infructescences: cymes, 3-fruited, solitary, axillary; peduncles 1–1.2 mm, glabrous; fruiting pedicels 4–6 mm, compressed, glabrous. Fruit red, globose, ca. 6 mm in diam.; persistent calyx ca. 3 mm in diam., glabrous, 6-lobed, lobes suborbicular, not ciliate; persistent stigma thickly discoid or mammilliform; pyrenes 6, oblong, ca. 6 mm, ca. 2.5 mm in diam., abaxially flat or slightly broadly sulcate, endocarp stony. Fl. and fr. unknown.

• Mixed forests; 400–1000 m. Guangxi (Pingnan).

**11. *Ilex litseifolia*** Hu & T. Tang, Bull. Fan Mem. Inst. Biol. 9: 247. 1939.

木姜冬青 mu jiang dong qing

*Ilex editicostata* Hu & T. Tang var. *litseifolia* (Hu & T. Tang) S. Y. Hu.

Shrubs to small trees, evergreen, 3–6 m tall. Current year's young branchlets purple-black when dry, thinly angular; old branches gray-brown; lenticels sparse, obtuse; leaf scars subcircular, convex; terminal buds conical, ca. 5 mm, brown-yellow pilose. Petiole 1–2 cm, compressed, pilose, hairs deciduous; leaf blade abaxially greenish, adaxially green, elliptic-lanceolate or ovate-lanceolate, 5–8 × 2–4 cm, leathery, both surfaces glabrous, midvein raised adaxially, brown-yellow pilose, glabrescent, lateral veins 7–9 pairs, raised on both surfaces, pilose, base cuneate to broadly cuneate, margin entire, slightly recurved, apex acuminate. Inflorescences: cymes, solitary, axillary on current year's branchlets. Male inflorescences: cymes of order (2 or)3, (3–)5–7-flowered; peduncles 7–12 mm, brown-yellow pilose, glabrescent; bracteoles 1, basal, linear, ca. 2 mm, or absent; flowers white, 4-merous; calyx cup-shaped, ca. 1 mm in diam., shallowly 4-lobed, lobes orbicular, puberulent, ciliate; corolla rotate, ca. 4 mm in diam., petals obovate, ca. 3 × 1.5 mm, basally slightly connate; stamens ca. 1/2 as long as petals, anthers oblong. Female flowers not known. Infructescences: cymes of order 2, 1–3-fruited. Fruit red, globose, 5–7 mm in diam.; persistent calyx explanate, ca. 3 mm in diam., shallow lobes broadly orbicular, ciliate; persistent stigma thinly discoid, shallowly 4- or 5-lobed; pyrenes 5, ca. 5 mm, ca. 1.8 mm in diam., abaxially shallowly sulcate, laterally smooth, endocarp subleathery. Fl. May–Jul, fr. Aug–Nov.

• Evergreen broad-leaved forests, forest margins on mountain slopes; 700–1100(–2100) m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Zhejiang.

**12. *Ilex linii*** C. J. Tseng, Acta Sci. Nat. Univ. Amoiensis 9: 305. 1962 [*"limii"*].

汝昌冬青 ru chang dong qing

Trees evergreen, ca. 10 m tall. Young branchlets purple-black, glabrous, longitudinally plicate; old branchlets brown, with sparse inconspicuous lenticels; terminal buds ovoid, hirsute. Petiole terete, 1–1.3 cm, abaxially carinate, adaxially flat, glabrous; leaf blade oblong or elliptic-oblong, 7–13 × 3–4 cm, leathery, glabrous, midvein raised on both surfaces, lateral veins 10–14 pairs, and dense reticulate veins slightly raised on both surfaces, base cuneate or obtuse, margin entire, recurved, apex acuminate. Flowers not known. Infructescences: cymes, 1–3-fruited, solitary, axillary; peduncles 5–7 mm, densely pubescent; fruiting pedicels 5–7 mm, densely pubescent or glabrescent. Fruit ellipsoidal, ca. 10 mm, 5–7 mm in diam.; persistent calyx ca. 5 mm in diam., 5-lobed; persistent stigma thinly discoid; pyrenes 5, oblong, ca. 7 mm, ca. 4 mm in diam., abaxially longitudinally and deeply 1-sulcate, rugose when dry, endocarp leathery. Fl. unknown, fr. Aug–Nov.

• Evergreen broad-leaved forests, *Pinus massoniana* forests; 500–1200 m. Fujian, Guangdong, Jiangxi, Zhejiang (Taishun).

**13. *Ilex atrata*** W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 40. 1917.

黑果冬青 *hei guo dong qing*

Trees evergreen, ca. 10 m tall. Young branchlets black-brown, robust, angular, sulcate, glabrous; leaf scars subcircular, slightly convex; older branchlets subterete; lenticels elliptic, convex; terminal buds large, scales ovate-elliptic, 8–12 × 5–6 mm, densely long ciliate. Petiole 1.5–3 cm, stout, glabrous; leaf blade elliptic, 12–16 × 4–6 cm, papery to leathery, midvein abaxially densely yellow tomentose or glabrous, adaxially flat on distal half to impressed on proximal half, lateral veins 14–18 pairs, and reticulate veins evident on both surfaces, base rounded, obtuse, or broadly cuneate, margin serrate or crenate-serrate, rarely subentire, apex acuminate. Flowers not known. Infructescences: cymes, 1–3-fruited, solitary, axillary on current year's branchlets; peduncles 3–6(–10) mm, compressed, apically thickening, glabrous; fruiting pedicels 5–8 mm, glabrous. Fruit red, globose, 6–7 mm in diam.; persistent calyx explanate, 5- or 6-lobed, lobes deltoid-ovate, ciliate; persistent stigma thickly discoid, shallowly 4–6-lobed; pyrenes 5 or 7, oblong, ca. 5.5 mm, ca. 2.5 mm in diam., abaxially slightly concave at base, not sulcate, sometimes flat or sulcate, endocarp leathery. Fl. unknown, fr. Jun–Jul.

Forests; 2000–2900 m. SE Xizang, Yunnan [N Myanmar].

1a. Peduncles shorter than pedicels ..... 13a. var. *atrata*  
1b. Peduncles longer than pedicels ..... 13b. var. *wangii*

**13a. *Ilex atrata* var. *atrata***

黑果冬青(原变种) *hei guo dong qing* (*yuan bian zhong*)

*Ilex atrata* var. *glabra* C. Y. Wu ex Y. R. Li.

Leaf blade 12–16 × 4–6 cm, papery to leathery. Peduncles 3–6 mm; fruiting pedicels 5–7 mm. Pyrenes 5, abaxially slightly concave at base, not sulcate. Fr. Jun–Jul.

Evergreen broad-leaved forests; ca. 2500 m. Yunnan [N Myanmar].

**13b. *Ilex atrata* var. *wangii*** S. Y. Hu, J. Arnold Arbor. 30: 305. 1949.

长梗黑果冬青 *chang geng hei guo dong qing*

Leaf blade ca. 15 × 4.5–5.5 cm, papery. Peduncles ca. 1 cm; fruiting pedicels ca. 5 mm. Pyrenes 7, abaxially flat or sulcate.

• Broad-leaved forests on slopes; 2000–2800 m. SE Xizang (Mé-dog), Yunnan (Gongshan, Luquan, Tengchong).

**14. *Ilex machilifolia*** H. W. Li ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 2. 1985.

楠叶冬青 *nan ye dong qing*

Trees evergreen, ca. 20 m tall. Branchlets brown-yellow, robust, longitudinally angular and sulcate; leaf scars subcircular, raised; lenticels raised, elliptic, glabrous; terminal buds ovoid; bud scales thick, ciliate. Petiole 1.5–2 cm, thick, flat to shallowly sulcate, abaxially longitudinally striate, adaxially puberulent, narrowly winged on lateral sides; leaf blade oblong-elliptic, rarely oblong or elliptic, 10–16 × 4–6 cm, papery to thinly

leathery, midvein raised, puberulent adaxially, lateral veins 15–18 pairs, very evident on both surfaces, anastomosing near margin, glabrous or abaxially sometimes slightly minutely puberulent, reticulate veins very evident on both surfaces, base broadly cuneate to cuneate, margin entire, apex acuminate. Flowers not known. Infructescences: cymes, solitary, axillary; peduncles 5–9 mm, very compressed, longitudinally striate, glabrous; fruiting pedicels 3–10 mm, striate, glabrous. Fruit red, globose, ca. 1 cm in diam.; persistent calyx patelliform, explanate, deeply 5- or 6-lobed, lobes orbicular, membranous at margin, ciliate; persistent stigma discoid; pyrenes 5, oblong, abaxially deeply 1-sulcate, cross section U-shaped. Fl. unknown, fr. Nov–Dec.

• Mountain forests; 1700–2000 m. SE Yunnan (Malipo).

**15. *Ilex pseudomachilifolia*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 3. 1985.

假楠叶冬青 *jia nan ye dong qing*

Trees evergreen, ca. 10 m tall, glabrous throughout. Young branchlets purple-black, shiny, rugose, angular, sulcate; older branchlets with subcircular, convex leaf scars and sparse, elliptic lenticels; terminal buds conical, smooth, apex acuminate. Petiole 1.8–2 cm, robust, sulcate adaxially, rounded, thinly striate abaxially, narrowly winged in upper half by decurrent leaf base; leaf blade orbicular to obovate-elliptic, 15–18 × 5–7 cm, papery, midvein impressed adaxially, lateral veins 18–20 pairs, raised on both surfaces, anastomosing near margin, reticulate veins very evident on both surfaces, base broadly cuneate to rounded, margin undulate, sparsely and shallowly serrulate, apex acuminate. Flowers not known. Infructescences: cymes, solitary, axillary on current year's branchlets; peduncles 7–12 mm; fruiting pedicels 3–7 mm. Fruit (immature) ovoid-globose or globose; persistent calyx shallowly 5- or 6-lobed, lobes ciliate; persistent stigma capitate. Fl. unknown, fr. Jul–Aug.

• Woods on mountains; ca. 1500 m. SE Yunnan (Pingbian).

**16. *Ilex huana*** C. J. Tseng ex S. K. Chen & Y. X. Feng, Acta Phytotax. Sin. 37: 143. 1999 [*"huiana"*].

秀英冬青 *xiu ying dong qing*

*Ilex angulata* Merrill & Chun var. *longipedunculata* S. Y. Hu.

Shrubs evergreen, 2–3 m tall. Branchlets terete, longitudinally ridged, puberulent or glabrescent. Petiole ca. 5 mm, puberulent, narrowly winged by decurrent leaf base; leaf blade abaxially greenish, adaxially green, elliptic, rarely obovate, 2.5–5 × 1–2 cm, papery, glabrous except on midvein adaxially, midvein impressed, puberulent adaxially, lateral veins 5–7 pairs, evident on both surfaces, anastomosing near margin, reticulate veins slightly distinct, base cuneate, margin entire or serrate apically, apex acuminate or acute. Inflorescences: cymes, solitary, axillary. Male inflorescences: cymes of order 2 or 3, 3–7-flowered, umbelliform; peduncles 6–10 mm, slender, glabrescent; pedicels ca. as long as peduncles; calyx 5-lobed, lobes ovate or suborbicular, margin entire or erose; petals ovate-oblong, ca. 3 mm, basally slightly connate; stamens shorter than petals, anthers oblong; rudimentary ovary ovoid. Female

inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles ca. 5 mm; pedicels nearly as long as peduncles; 1-flowered pedicels 9–12 mm, glabrous; calyx and corolla as in male flowers; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid, stigma discoid or cristate. Infructescences: 1-fruited pedicels 1.5–1.8 cm, glabrous or glabrescent. Fruit ellipsoidal, 9–10 mm, 5–6 mm in diam., longitudinally striate when dry; persistent stigma discoid; pyrenes 5, ellipsoidal, abaxially broadly 1-sulcate, not striate, endocarp subwoody. Fl. Apr, fr. Jul–Nov.

• Mountain forests; low to middle elevations. Hainan (Baoting, Ledong, Wanning).

**17. *Ilex suaveolens*** (H. Léveillé) Loesener, Ber. Deutsch. Bot. Ges. 32: 541. 1914.

香冬青 xiang dong qing

*Celastrus suaveolens* H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 263. 1914; *Ilex debaoensis* C. J. Tseng.

Trees evergreen, 7–15 m tall. Young branchlets brown, angular, glabrous throughout; older branchlets subterete; lenticels raised, elliptic. Petiole 1.5–2 cm, winged; leaf blade olivaceous when dry, ovate or elliptic, 5–6.5(–10) × 2–2.5(–4) cm, leathery, both surfaces glabrous, midvein raised on both surfaces, lateral veins 8–10 pairs, slightly raised on both surfaces, reticulate veins ± evident on both surfaces, base broadly cuneate, decurrent, margin sparsely and minutely crenate, slightly incurved, apex acuminate, acumen triangular. Flowers not known. Infructescences: cymes of order 2 or 3, solitary, axillary, 3–7-fruited, sometimes umbelliform; peduncles (1–)1.5–2 cm, angular, glabrous; fruiting pedicels 5–8 mm, glabrous. Fruit red, narrowly globose, ca. 9 mm, ca. 6 mm in diam.; persistent calyx ca. 2 mm in diam., 5-lobed, lobes broadly triangular, not ciliate; persistent stigma mammilliform; pyrenes 4, oblong, ca. 8 mm, ca. 3 mm in diam., endocarp stony. Fl. Jun, fr. unknown.

• Evergreen broad-leaved forests; 600–1600 m. S Anhui (Huang Shan), Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

**18. *Ilex pyrifolia*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 3. 1981.

梨叶冬青 li ye dong qing

Trees evergreen, small, ca. 2 m tall. Young branchlets castaneous, longitudinally ridged and sulcate, glabrous; older branchlets gray, longitudinally fissured, with circular or elliptic convex lenticels. Stipules triangular, minute; petiole 7–8 mm, sulcate adaxially, glabrous; leaf blade castaneous, shiny when dry, broadly elliptic, 4–6.5 × 3–4 cm, subleathery, both surfaces glabrous, midvein flat adaxially, lateral veins 7 or 8 pairs, raised abaxially, slightly impressed adaxially, anastomosing near margin, reticulate veins obscure adaxially, distinct abaxially, base rounded or obtuse, rarely cuneate, margin finely serrate (serrulate), teeth black, apex acuminate. Flowers not known. Infructescences: cymes of order 2, solitary, axillary, 2-fruited; peduncles ca. 4 mm; fruiting pedicels ca. 3 mm; persistent bracteoles 2, subbasal. Fruit deep red, globose, ca. 7 mm in diam.; persistent calyx patelliform, ca. 3 mm in diam., 4-lobed, lobes suborbicular; persistent stigma discoid, 4-lobed; pyrenes 4, oblong, ca.

4.5 mm, ca. 3 mm in diam., abaxially longitudinally broadly 1-sulcate, endocarp stony. Fl. unknown, fr. Nov.

• Forests; 1100–3000 m. Sichuan (Yingjing).

**19. *Ilex chinensis*** Sims, Bot. Mag. t. 2043. 1819.

冬青 dong qing

*Callicarpa cavaleriei* H. Léveillé; *Celastrus bodinieri* H. Léveillé; *Embelia rubroviolacea* H. Léveillé; *Ilex jinggangshanensis* C. J. Tseng; *I. myriadenia* Hance; *I. oldhamii* Miquel; *I. purpurea* Hasskarl; *I. purpurea* var. *myriadenia* (Hance) Loesener; *I. purpurea* f. *oldhamii* (Miquel) Loesener; *I. purpurea* var. *oldhamii* (Miquel) Loesener.

Trees evergreen, to 15 m tall; bark gray-black. Current year's branchlets gray, terete, thinly angular; older branchlets glabrous, with crescent-shaped, convex leaf scars; lenticels obscure, small. Plants glabrous, or sometimes villous on terminal buds, petioles, and adaxial midvein of young leaves of male plant. Petiole 8–10 mm, flat or narrowly sulcate adaxially; leaf blade deep brown, shiny when dry adaxially, elliptic or lanceolate, rarely ovate, 5–11 × 2–4 cm, thinly leathery to leathery, glabrous, rarely adaxially pilose on midvein when young, midvein flat adaxially, lateral veins 6–9 pairs, distinct abaxially, obscure adaxially, base cuneate or obtuse, margin crenate, or sometimes young leaf serrate, apex acuminate, acumen 5–10 mm. Inflorescences: cymes, solitary, axillary on current year's branchlets, glabrous. Male inflorescences: cymes of order 3–5, 7–24-flowered; peduncles 7–14 mm; secondary axis 2–5 mm; pedicels ca. 2 mm, glabrous; flowers purplish or purple-red, 4- or 5-merous; calyx shallowly cup-shaped, lobes broadly deltoid, ciliate; corolla rotate, ca. 5 mm in diam., petals reflexed at anthesis, ca. 2.5 × 2 mm, basally slightly connate; stamens shorter than petals, anthers elliptic; rudimentary ovary conical, inferior to 1 mm. Female inflorescences: cymes of order 2 or 3, 3–7-flowered; peduncles 3–10 mm, compressed; secondary axis poorly developed; pedicels 6–10 mm; calyx and corolla as in male flowers; staminodes ca. 1/2 as long as petals, sterile anthers cordate; ovary ovoid, stigma thickly discoid, inconspicuously 4- or 5-lobed. Fruit red, narrowly globose, 1–1.2 cm, 6–8 mm in diam.; pyrenes 4 or 5, narrowly lanceolate, 9–10 mm, ca. 2.5 mm in diam., abaxially smooth, concave, trigonous in cross section, endocarp thickly leathery. Fl. Apr–Jul, fr. Jul–Dec.

Evergreen broad-leaved forests, forest margins on mountain slopes; sea level to 2000 m. Anhui, Fujian, Guangdong, Guangxi, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Taiwan, Yunnan, Zhejiang [Japan].

**20. *Ilex pubigera*** (C. Y. Wu ex Y. R. Li) S. K. Chen & Y. X. Feng, Fl. Reipubl. Popularis Sin. 45(2): 34. 1999.

有毛冬青 you mao dong qing

*Ilex purpurea* Hasskarl var. *pubigera* C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 5. 1985.

Trees evergreen, 8–15 m tall. Young branchlets terete, thinly angular; older branchlets lenticellate. Buds, petioles, young leaves, midvein adaxially and mature leaves puberulent. Petiole 8–12 mm, narrowly sulcate adaxially; leaf blade deep brown when dry, elliptic or oblong, 8–11 × 4–5.5 cm, leathery, midvein raised on both surfaces, lateral veins 6–10 pairs, evident

abaxially, obscure adaxially, base cuneate, margin crenate, apex acuminate. Flowers not known. Infructescences: cymes of order 1 or 2, 1–3-fruited; peduncles and fruiting pedicels puberulent. Fruit red, subglobose, ca. 1 cm, 6–8 mm in diam.; persistent stigma thinly discoid, 4-lobed; pyrenes 4 or 5, ellipsoidal, 8–9 mm, ca. 2.5 mm in diam., abaxially smooth, shallowly sulcate, trigonous in cross section, endocarp thickly leathery. Fl. unknown, fr. Sep.

- Forests; ca. 2100 m. SE Yunnan (Wenshan).

**21. *Ilex melanophylla*** H. T. Chang, Acta Sci. Nat. Univ. Sunyatseni 1959(2): 39. 1959.

黑叶冬青 hei ye dong qing

Shrubs evergreen, ca. 5 m tall. Branchlets brown-purple, subterete, stout, ca. 5 mm in diam., plicate, glabrous throughout; terminal buds glabrous or ciliate. Petiole 1–1.5 cm, flat adaxially, broadly winged, glabrous; leaf blade purple-brown when dry, shiny, elliptic or oblong-elliptic, (6–)6.5–8(–11.5) × 3–4(–6) cm, thickly leathery, both surfaces glabrous, midvein raised on both surfaces, lateral veins 10–14 pairs, and reticulate veins slightly raised abaxially, impressed adaxially, base obtuse or cuneate and decurrent, margin entire, slightly recurved, apex shortly acuminate. Flowers not known. Infructescences: cymes of order 2, 3-fruited, solitary, axillary; peduncles 1–1.2 mm; fruiting pedicels 4–5 mm, compressed, glabrous. Fruit red, globose, ca. 6 mm in diam.; persistent calyx patelliform, ca. 3 mm in diam., glabrous, 6-lobed, lobes suborbicular, not ciliate; persistent stigma thickly discoid or mammilliform; pyrenes 6, oblong, ca. 6 mm, ca. 2.5 mm in diam., abaxially flat or slightly broadly sulcate, endocarp substony. Fl. unknown, fr. Nov.

- Dense mixed forests; 300–1200 m. Guangdong (Lechang), Guangxi (Pingnan), Hunan.

**22. *Ilex ficifolia*** C. J. Tseng ex S. K. Chen & Y. X. Feng, Acta Phytotax. Sin. 37: 143. 1999.

硬叶冬青 ying ye dong qing

*Ilex ficifolia* f. *daiyunshanensis* C. J. Tseng; *I. suaveolens* (H. Léveillé) Loesener var. *brevipetiola* W. S. Wu & Y. X. Luo.

Shrubs or trees, evergreen, 8–10 m tall. Young branchlets black or dark red, glabrous; older branchlets gray. Petiole 5–10 mm, glabrous; leaf blade purple-brown or yellowish brown, shiny adaxially when dry, elliptic or oblong-elliptic, 4–11.7 × 1.5–4.3 cm, leathery, both surfaces glabrous, midvein flat or slightly raised adaxially, lateral veins 7 or 8 pairs, indistinct, reticulate veins obscure on both surfaces, base obtuse or broadly cuneate, margin sparsely and inconspicuously serrulate, apex acute, shortly acuminate, or obtuse. Inflorescences: cymes, solitary, axillary. Male inflorescences: cymes of order 3, 7-flowered; flowers 4- or 5-merous; calyx shallowly 5-lobed, lobes obtuse-rounded; corolla rotate; stamens 5, shorter than petals; rudimentary ovary glabrous. Female inflorescences: cymes of order 2, 3-flowered; flowers 4- or 5-merous; calyx ciliate. Infructescences: 1–3-fruited; peduncles slightly compressed, 9–20 mm, thinly striate, glabrous; fruiting pedicels 0.7–1.5 mm, glabrous. Fruit black when dry, globose, 6–8 mm in diam.; persistent calyx 5-lobed, ciliate; persistent stigma thickly discoid;

pyrenes 5, oblong, ca. 4 mm, ca. 2.5 mm in diam., abaxially longitudinally 1-sulcate, endocarp leathery. Fl. May–Jun, fr. Sep–Nov.

- Thin forests on hills; 400–1200 m. Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang.

**23. *Ilex kwangtungensis*** Merrill, J. Arnold Arbor. 8: 8. 1927.

广东冬青 guang dong dong qing

*Ilex kwangtungensis* var. *pilosior* Handel-Mazzetti; *I. phanerophlebia* Merrill; *I. shweliensis* H. F. Comber.

Shrubs or trees, evergreen, 6–14 m tall. Bark gray-brown, smooth, with light-colored, small, rounded, slightly convex lenticels. Young branchlets black when dry, longitudinally ridged, ferruginous pubescent, puberulent, or nearly glabrous; old branchlets dark gray-brown, terete, pubescent or glabrescent; leaf scars semicircular, slightly raised; terminal buds lanceolate, ca. 6 mm, densely ferruginous pubescent. Stipules caducous; petiole 7–17 mm, adaxially longitudinally sulcate, minutely puberulent; leaf blade brown or deep olivaceous when dry, ovate-elliptic, oblong, or lanceolate, 7–16 × 3–7 cm, subleathery, both surfaces very minutely puberulent (curly villous) when young, densely so on midvein and abaxially, glabrescent or nearly glabrous, midvein impressed adaxially, lateral veins 9–11 pairs, impressed adaxially, raised abaxially, furcating and anastomosing near margin, reticulate veins evident abaxially, indistinct adaxially, base obtuse to rounded, margin minutely serrate or subentire, slightly recurved, apex acuminate. Inflorescences: cymes, solitary, axillary on current year's branchlets. Male inflorescences: cymes of order 4 or 5, 12–20-flowered, minutely puberulent; peduncles 9–12 mm; secondary axis 3–5 mm; tertiary axis to 2 mm; bracts linear-lanceolate, 5–7 mm; bracteoles basal, ovate-deltoid, densely puberulent; flowers purple or pink, 4- or 5-merous; calyx patelliform, 2.5–3 mm in diam., lobes orbicular, ca. 0.75 mm, puberulent, ciliate; corolla rotate, 7–8 mm in diam., petals oblong, ca. 1.5 mm; rudimentary ovary conical, ca. 1.5 mm, rostellate. Female inflorescences: cymes of order 2 or 3, 3–7-flowered, puberulent; secondary axis 3–4 mm; bracts lanceolate, submedian on secondary axis; pedicels 4–7 mm; flowers light purple or pink; calyx as in male flowers; petals ovate, ca. 2.5 mm; staminodes ca. 3/4 as long as petals, sterile anthers cordate; ovary ovoid, ca. 2 mm in diam., stigma mammilliform, shallowly 4-lobed. Fruit red, black when dry, ellipsoidal, 7–9 mm in diam., smooth, shiny; persistent calyx explanate, pubescent, ciliate; persistent stigma convex, 4-lobed; pyrenes 4, ellipsoidal, ca. 6 mm, ca. 3 mm in diam., abaxially broadly and deeply U-sulcate, laterally smooth, endocarp leathery. Fl. May–Aug, fr. Sep–Dec.

- Evergreen broad-leaved forests, shrub forests on mountain slopes; 300–1200 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Yunnan, Zhejiang.

**24. *Ilex latifrons*** Chun, Sunyatsenia 2: 69. 1934.

阔叶冬青 kuo ye dong qing

*Ilex kwangtungensis* Merrill var. *pilosissima* Handel-Mazzetti; *I. latifrons* var. *pilosissima* (Handel-Mazzetti) Chun.

Trees evergreen, 4–27 m tall. Branchlets tetragonous, stout,

longitudinally striate, densely ferruginous or dirty yellow villous; lenticels indistinct; leaf scars semicircular, slightly raised; terminal buds conical, densely dirty yellow villous. Petiole 1–1.3 cm, stout, densely villous, rounded abaxially, narrowly sulcate adaxially; leaf blade oblong or obovate, 9–22 × 3.5–10 cm, leathery to subleathery, abaxially crispate-villous or glabrescent, adaxially sparsely pubescent or glabrous, midvein raised and villous abaxially, densely dirty yellow pubescent adaxially, base rounded or subrounded, margin shallowly serrulate or subentire, apex acuminate. Inflorescences: cymes or compound cymes, solitary, axillary on current year's branchlets. Male inflorescences: cymes of order 2–4; peduncles 1.5–2.8 cm, compressed, sparsely crispate-villous; secondary axis unequal, longer than pedicels; pedicels 1–2 mm, pubescent; flowers purple-red; calyx deeply 4-lobed, lobes ovate, outside sparsely puberulent; petals 4, oblong, ca. 1.5 × 1 mm, basally slightly connate, apex rounded; stamens 4, ca. 2/3 as long as petals, anthers elliptic; rudimentary ovary conical, minute, stigma distinct, slightly lobed. Female flowers not known. Infructescences: compound cymes; peduncles 1–2 cm, compressed, pubescent; fruiting pedicels 5–7 mm, pubescent. Fruit ellipsoidal-globose, 9–10 mm, 6–8 mm in diam., striate, sulcate; persistent calyx deeply 4- or 5-lobed, lobes deltoid, pilose, ciliate; persistent stigma discoid, flat, shallowly 4-lobed; pyrenes 4–6, ellipsoidal, abaxially deeply 1-sulcate, smooth. Fl. Jun, fr. Aug–Dec.

• Evergreen broad-leaved forests; 1200–1800 m. Guangdong, Guangxi, Hainan, SE Yunnan.

**25. *Ilex dehongensis*** S. K. Chen & Y. X. Feng, Bot. Bull. Acad. Sin. 40: 173. 1999.

德宏冬青 *de hong dong qing*

Trees evergreen, 10–15 m tall. Young branchlets, leaves, inflorescences, and persistent calyx yellow-white curved villous throughout. Young branchlets slender, ca. 2 mm in diam. Petiole 0.4–1.3 cm, villous; leaf blade oblong or obovate, 5–13.5 × 3.5–5 cm, thinly leathery, midvein flat adaxially, lateral veins 10–14 pairs, raised on both surfaces, base cuneate or obtuse, margin slightly serrate in upper part, apex shortly acuminate or truncate. Flowers not known. Infructescences: cymes of order 3, umbelliform, solitary, axillary, 5-fruited; peduncles (0.5–)0.9–2 cm; fruiting pedicels 5–7 mm. Fruit red, castaneous when dry, globose, 7–10 mm in diam., smooth when dry; persistent stigma thinly discoid; pyrenes 4, ellipsoidal, ca. 7 mm, ca. 4 mm in diam., smooth, abaxially longitudinally and broadly U-sulcate, endocarp bony. Fl. unknown, fr. Oct–Dec.

• Moist forests; 900–1000 m. SW Yunnan (Longchuan).

**26. *Ilex cheniana*** T. R. Dudley, Holly Soc. J. 6(4): 15. 1988.

龙陵冬青 *long ling dong qing*

*Ilex congesta* H. W. Li ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 4. 1985, not Reissek (1861).

Trees evergreen, small, ca. 5 m tall. Current year's branchlets black-brown, striate; leaf scars subcircular, conspicuously convex; lenticels elliptic, sparsely pubescent; second year's branchlets brown-gray, longitudinally striate, leaf scars and lenticels very conspicuous; terminal buds ovoid, densely yellow

villous. Petiole 6–10 mm, stout, yellow pubescent, sulcate adaxially; leaf blade elliptic, 9–11 × 4–5 cm, thinly leathery, midvein raised and glabrous abaxially, slightly impressed and minutely puberulent adaxially, lateral veins 9 or 10 pairs, slightly distinct abaxially, slightly impressed adaxially, base subrounded, margin sparsely serrate, apex acuminate. Flowers not known. Infructescences: cymes of order 2, 3-fruited, solitary, axillary on current year's branchlets; peduncles 5–6 mm, compressed, pubescent; fruiting pedicels ca. 5 mm, puberulent. Fruit red, globose, ca. 1 cm in diam.; persistent calyx slightly 6-lobed or undulate, ciliate; persistent stigma thinly discoid, shallowly 4-lobed; pyrenes 4, abaxially broadly 1-sulcate, cross section V-shaped. Fl. unknown, fr. Nov.

• Mountain forests; ca. 1500 m. W Yunnan (Longling).

**27. *Ilex qianlingshanensis*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 10. 1981.

黔灵山冬青 *qian ling shan dong qing*

Trees evergreen, ca. 5 m tall. Young branchlets slender, longitudinally angular, puberulent; older branchlets longitudinally striate, nearly glabrous; terminal buds lanceolate, bud scales pubescent or puberulent above. Petiole ca. 5 mm, alate, adaxially pubescent or puberulent; leaf blade abaxially brownish, adaxially brown when dry, elliptic or oblong-elliptic, 5–9 × 2.5–3.5(–7.5) cm, papery or subleathery, glabrous except on midvein, puberulent adaxially, lateral veins 7 or 8 pairs, raised abaxially, flat adaxially, anastomosing near margin, reticulate veins evident only abaxially, base cuneate, margin undulate, indistinctly serrulate, apex shortly acuminate. Flowers not known. Infructescences: cymes often of order 1, 1-fruited, solitary, axillary; fruiting pedicels 1.7–2 cm, angular, sparsely puberulent; bracteoles 2, deltoid-ovate, puberulent. Fruit black when dry, ellipsoidal, ca. 1 cm, ca. 7 mm in diam., sometimes longitudinally angular and sulcate; persistent calyx ca. 6 mm in diam., 4-lobed, lobes suborbicular, ciliate; persistent stigma mammilliform; pyrenes 4, ellipsoidal, ca. 9 mm, ca. 3 mm in diam., abaxially broadly 1-sulcate, endocarp subwoody. Fl. unknown, fr. Oct.

• Dense forests on mountains; 1100–1300 m. Guizhou.

**28. *Ilex ferruginea*** Handel-Mazzetti, Symb. Sin. 7: 657. 1933.

锈毛冬青 *xiu mao dong qing*

Shrubs or trees, evergreen, 2.5–10 m tall. Branchlets terete, young branchlets ferruginous-yellow villous. Petiole 2–4 mm, adaxially flat or slightly impressed, ferruginous villous; leaf blade ovate or ovate-elliptic, 2–7 × 1.5–3.5 cm, leathery, midvein flat adaxially, ferruginous villous on both surfaces, lateral veins 8–10 pairs, distinct on both surfaces, base rounded, rarely shallowly cordate to obtuse, margin sparsely crenate-serrate, teeth black, apex acuminate. Inflorescences: cymes, solitary, axillary at scales or leaves of current year's branchlets. Male inflorescences: cymes of order 1–3, 1–6-flowered; peduncles 3–6 mm; pedicels 1–3 mm; flowers 5–7-merous; calyx subcampanulate, pubescent, deeply lobed; lobes ovate-deltoid, ca. 1 mm, ciliate; petals ovate-oblong, basally slightly connate, margin erose; stamens 5–7, ca. as long as petals, anthers oblong; rudimentary ovary subglobose, rostellate. Female flowers not

known. Infructescences: cymes of order 1 or 2, 1–3-fruited; peduncles 6–10 mm; fruiting pedicels 6–9 mm, villous; bracteoles 2, linear, villous. Fruit brown, shiny, subglobose, 5–7 mm in diam., rugose when dry; persistent calyx patelliform, explanate, villous, ciliate, (4 or)5-lobed; persistent stigma capitate; pyrenes 4–6, abaxially 1-sulcate. Fl. Apr–Jun, fr. Sep–Oct.

• Dense forests on mountain slopes; 1000–1900 m. Guangxi, Guizhou, Yunnan.

**29. *Ilex mannei* S. Y. Hu, J. Arnold Arbor. 30: 298. 1949.**

红河冬青 hong he dong qing

*Ilex mannei* var. *glabra* C. Y. Wu ex Y. R. Li.

Shrubs or trees, evergreen, (2–)5–8(–20) m tall. Branches deep brown, stout, rugose; young branchlets yellow villous; terminal buds large, 5–8 mm, bud scales densely long ciliate. Petiole 1.5–2 cm, yellowish pubescent when young, then glabrescent or pubescent along groove; leaf blade elliptic, 8–12 × 2.5–4 cm, thinly leathery, midvein abaxially raised and densely and deciduously yellowish tomentose, adaxially flat or slightly raised, and pubescent, lateral veins 15–17 pairs, subparallel, raised on both surfaces, anastomosing near margin, reticulate veins evident abaxially, indistinct adaxially, base rounded to cuneate, margin entire, apex acuminate. Inflorescences: cymes, solitary, axillary on current year's branchlets. Male inflorescences: cymes of order 2 or 3, 3(–5)-flowered; peduncles 5–12 mm, very compressed; pedicels 2–4 mm; calyx connate at base, ciliate; stamens ca. 3/4 as long as petals, anthers oblong; rudimentary ovary ovoid-globose, apex shallowly 4-lobed. Female inflorescences: cymes of order 2, 3-flowered, pubescent; peduncle, pedicels, calyx, and corolla as in male flowers; staminodes slightly shorter than petals, sterile anthers sagittate-ovoid; ovary conical-globose, style conspicuous, stigma shallowly 4-lobed. Fruit black, globose, 6–8 mm in diam.; persistent calyx explanate; persistent stigma discoid; pyrenes 4–6, oblong, trigonous in cross section, ca. 8 mm, ca. 2.5 mm in diam., abaxially smooth, shallowly and broadly 1-sulcate, endocarp woody. Fl. unknown, fr. Oct–Nov.

• Forests; 2400–3200 m. Yunnan.

**30. *Ilex hirsuta* C. J. Tseng ex S. K. Chen & Y. X. Feng, Acta Phytotax. Sin. 37: 143. 1999.**

硬毛冬青 ying mao dong qing

*Ilex dasyphylla* Merrill var. *lichuanensis* S. Y. Hu.

Trees evergreen, 3–6 m tall. Current year's branchlets subterete, densely ferruginous hirsute; second year's branchlets black, hirsute. Petiole ca. 1.5 cm, hirsute; leaf blade olivaceous, shiny when dry, elliptic or oblong-elliptic, 6–7 × 2.5–4 cm, leathery, both surfaces densely hirsute, midvein adaxially flat or slightly raised, lateral veins 7 or 8 pairs, slightly raised on both surfaces, base obtuse, margin sparsely crenate-serrate, rarely recurved, apex acute or shortly acuminate, rarely obtuse. Inflorescences: cymes, solitary, axillary on current year's branchlets. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles 2–3.5 cm, pedicels 0.9–1.7 cm, both ferruginous hirsute, 1-flowered pedicels ca. 2.5 cm; flowers 5-merous, yellow-green; calyx cup-shaped, lobes deltoid-ovate or broadly

ovate, ciliate; petals oblong, ca. 2 mm; stamens ca. as long as petals. Female flowers not known. Infructescences: cymes of order 2, 1–3-fruited; peduncles ca. 1.5 cm, hirsute; fruiting pedicels 0.7–1.5 cm, hirsute. Fruit globose or ellipsoidal-globose, ca. 6 mm in diam.; persistent calyx 4- or 5-lobed, lobes semicircular or deltoid, ciliate; persistent stigma discoid, 4- or 5-lobed; pyrenes 4 or 5, oblong-ellipsoidal, ca. 7 mm, ca. 3 mm in diam., abaxially longitudinally and broadly 1-sulcate, endocarp subwoody. Fl. May, fr. Sep.

• Evergreen broad-leaved forests; 200–2000 m. W Hubei (Lichuan), Hunan (Xuefeng Shan, Yongshun), Jiangxi (Shangyou, Suichuan).

**31. *Ilex longzhouensis* C. J. Tseng, Acta Phytotax. Sin. 22: 413. 1984.**

龙州冬青 long zhou dong qing

*Ilex xylosmifolia* C. Y. Wu ex Y. R. Li [“*xylosmaefolia*”].

Trees evergreen, small, 4–6 m tall. Young branchlets slender, densely yellow tomentose; older branchlets sparsely tomentose, longitudinally striate and sulcate, with leaf scars and lenticels; terminal buds small. Petiole 3–5 mm, rounded abaxially, sulcate adaxially, densely yellow tomentose; leaf blade elliptic-lanceolate or oblong-elliptic, 7–9 × 2–3.2 cm, papery, yellow tomentose, midvein raised abaxially, tomentose only at base, adaxially subraised or flat, lateral veins 8 or 9 pairs, raised on both surfaces or slightly impressed adaxially, reticulate veins slightly evident on both surfaces, glabrous throughout, base obtuse or rounded, margin undulate-crenulate, apex acuminate. Inflorescences: cymes, solitary, axillary on current year's branchlets; peduncles and pedicels densely yellow tomentose. Male inflorescences: cymes of order 3 or 4, with 6 or more flowers; flowers 4-merous; calyx deeply lobed, lobes triangular, outside yellow tomentose, ciliate; petals oblong; stamens ca. as long as or slightly shorter than petals, filaments shorter than anthers, anthers oblong; rudimentary ovary globose, stigma shallowly 4-lobed. Female inflorescences: cymes of order 2 or 3, 3–6-flowered; flowers 4-merous; calyx and corolla as in male flowers; staminodes shorter than petals, sterile anthers sagittate; ovary globose. Infructescences: 1–3-fruited; peduncles 3–5 mm; fruiting pedicels 2–3 mm, densely yellow tomentose throughout; bracteoles caducous. Fruit red, globose, ca. 6 mm in diam.; persistent calyx quadrangular, explanate, densely pubescent, lobes deltoid, ciliate; persistent stigma mammilliform; pyrenes 5, oblong, ca. 5 mm, ca. 3 mm in diam., abaxially 1-sulcate, endocarp stony. Fl. May–Jun, fr. Oct.

• Thin forests on limestone hills; 500–1200 m. SW Guangxi (Longzhou), SE Yunnan (Funing).

**32. *Ilex excelsa* (Wallich) Wallich, Numer. List, no. 4328. 1831 [“*exsulca*”].**

高冬青 gao dong qing

Trees evergreen, ca. 10 m tall; bark gray-brown, smooth. Current year's branchlets glabrous or puberulent, longitudinally ridged; older branchlets gray, rugose, angular, scabrous, with raised, elliptic lenticels and raised leaf scars; terminal buds poorly developed, with loose glabrous scales. Stipules lanceo-

late, 1–1.5 mm; petiole 1–2 cm, slender, glabrous, narrowly sulcate adaxially; leaf blade brown-olivaceous when dry, elliptic, oblong, or ovate-elliptic, 5–10 × 2–4(–5) cm, papery or subleathery, midvein impressed adaxially, lateral veins 7 or 8 pairs, raised abaxially, distinct adaxially, furcate and anastomosing near margin, reticulate veins obscure adaxially, evident abaxially, base cuneate or obtuse, margin entire, apex acuminate. Inflorescences: cymes of order 2 or 3(or 4), 3–5(–15)-flowered, solitary, axillary on current year's branchlets; flowers 4–6-merous. Male inflorescences: peduncles 4–8 mm, hirsute, base with deltoid, acute bracts; pedicels 2–5 mm, puberulent; bracteoles 1 or 2, basal; calyx patelliform, glabrous, shallowly 4- or 5-lobed, lobes orbicular, not ciliate; corolla rotate, ca. 5 mm in diam., petals oblong, ca. 2 mm, not ciliate, basally slightly connate; stamens equal or slightly longer than petals, anthers oblong; rudimentary ovary pulvinate, rostellate, apex 5-lobed. Female inflorescences: peduncles 5–12 mm; pedicels 3–4 mm, puberulent throughout; bracteoles ovate-deltoid, glabrous; calyx ca. 2.5 mm in diam., 5- or 6-lobed, lobes deltoid, not ciliate; corolla ca. 5 mm in diam., petals broadly ovate, ca. 2 mm; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 1.5 mm in diam., stigma discoid. Fruit red, ovoid-ellipsoidal, ca. 5 mm, 4–4.5 mm in diam., longitudinally angular and sulcate when dry; persistent calyx explanate, 2–2.5 mm in diam., shallowly 6-lobed, lobes suborbicular; persistent stigma thickly discoid, convex; pyrenes (4 or 5)(or 6), ellipsoidal, ca. 2.7 mm, ca. 1.5 mm in diam., abaxially smooth, or 2- or 3-striate, not sulcate, endocarp leathery. Fl. Apr–Jun, fr. Aug–Nov.

Sparse forests in mountain valleys, thickets; 800–2800 m. SE Guangxi, Yunnan [Bangladesh, Bhutan, N and NE India, Nepal].

- 1a. Branchlets and both surfaces of leaves  
glabrous ..... 32a. var. *excelsa*  
1b. Branchlets and abaxial surface of leaves  
puberulent at least on midvein ..... 32b. var. *hypotricha*

### 32a. *Ilex excelsa* var. *excelsa*

高冬青(原变种) gao dong qing (yuan bian zhong)

*Cassine excelsa* Wallich in Roxburgh, Fl. Ind. 2: 376. 1824; *Ilex doniana* Candolle; *I. elliptica* D. Don (1825), not Kunth (1824); *I. nepalensis* Sprengel.

Branchlets glabrous. Leaf blade papery or subleathery, both surfaces glabrous. Fl. Apr–May, fr. Oct.

Thickets; 1800–1900 m. SE Guangxi (Rongxian), Yunnan [Bhutan, NE India, Nepal].

**32b. *Ilex excelsa* var. *hypotricha*** (Loesener) S. Y. Hu, J. Arnold Arbor. 30: 308. 1949.

毛背高冬青 mao bei gao dong qing

*Ilex hypotricha* Loesener, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 103. 1901.

Branchlets puberulent. Leaf papery, abaxially puberulent or only on midvein. Fl. May–Jun, fr. Aug–Nov.

Sparse forests in mountain valleys; 800–2800 m. Yunnan [Bangladesh, Bhutan, N India, Nepal].

**33. *Ilex rotunda*** Thunberg in Murray, Syst. Veg., ed. 14, 168. 1784.

铁冬青 tie dong qing

*Ilex koshunensis* Yamamoto; *I. microcarpa* Lindley & Paxton; *I. rotunda* var. *microcarpa* (Lindley & Paxton) S. Y. Hu; *I. rotunda* var. *sinensis* Masamune; *I. sasakii* Yamamoto; *I. unicanaliculata* C. J. Tseng.

Shrubs or trees, evergreen, to 20 m tall; trunk to 1 m d.b.h.; bark gray to gray-black. Young branchlets longitudinally angular, glabrous, rarely puberulent; older branchlets terete, straight, rough, longitudinally fissured, with slightly raised obovate or deltoid leaf scars, lenticels inconspicuous; terminal buds conical, small. Stipules subulate-lanceolate, 1–1.5 mm, caducous; petiole 8–18 mm, glabrous, rarely slightly puberulent, narrowly sulcate adaxially; leaf blade ovate, obovate, or elliptic, 4–9 × 1.8–4 cm, thinly leathery or papery, both surfaces glabrous, midvein impressed adaxially, lateral veins 6–9 pairs, evident on both surfaces, anastomosing near margin, reticulate veins obscure, base obtuse or cuneate, margin entire, slightly recurved, apex shortly acuminate. Inflorescences: cymes of order (2 or)3 or 4, (2–)4–13-flowered, umbelliform, solitary, axillary on current year's branchlets. Male inflorescences: peduncles 3–11 mm, glabrous; pedicels 3–5 mm, glabrous or puberulent; bracteoles 1 or 2, or absent, basal, ovate-deltoid; flowers white, 4-merous; calyx patelliform, ca. 2 mm in diam., puberulent, shallowly 4-lobed, lobes broadly ovate-deltoid, glabrous, not ciliate; corolla rotate, ca. 5 mm in diam., petals reflexed at anthesis, oblong, ca. 2.5 × 1.5 mm, basally slightly connate; stamens longer than petals, anthers ovoid-ellipsoidal; rudimentary ovary pulvinate, rostellate, apex 5- or 6-lobed. Female inflorescences: cymes of order 2 or 3, 3–7-flowered; peduncles 5–13 mm, glabrous; pedicels (3–)4–8 mm, glabrous or puberulent; flowers white, 5(–7)-merous; calyx shallowly cup-shaped, ca. 2 mm in diam., glabrous, shallowly 5-lobed, lobes deltoid, margin erose; corolla rotate, ca. 4 mm in diam., petals obovate-oblong, ca. 2 mm, basally slightly connate; staminodes ca. 1/2 as long as petals, sterile anthers ovoid; ovary ovoid, ca. 1.5 mm, stigma capitate. Fruit red, subglobose, rarely ellipsoid, 4–6 mm in diam.; persistent calyx explanate, ca. 3 mm in diam., shallow lobes deltoid, not ciliate; persistent stigma thickly discoid, convex, shallowly 5- or 6-lobed; pyrenes 5–7, ellipsoidal, ca. 5 mm, ca. 2.5 mm in diam., abaxially 3-striate and 2-sulcate, rarely 2-striate and 1-sulcate, laterally smooth, endocarp subwoody. Fl. Apr–Jun, fr. Aug–Dec.

Evergreen broad-leaved forests, forest margins on mountain slopes; 400–1100(–1700) m. Anhui (Sixian), Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Taiwan, Yunnan, Zhejiang [Japan, Korea, Vietnam].

**34. *Ilex angulata*** Merrill & Chun, Sunyatsenia 2: 266. 1935.

棱枝冬青 leng zhi dong qing

Shrubs or trees, evergreen, 4–10 m tall; bark gray-white. Branchlets zigzag, slender, ridged, narrowly sulcate, puberulent; older branchlets angular-ridged, fissured, with semicircular, slightly raised leaf scars; lenticels absent; terminal buds absent.

Petiole 4–6 mm, adaxially sulcate; leaf blade brown-olivaceous when dry, elliptic or broadly elliptic, 3.5–5 × 1.5–2 cm, papery or membranous when young, both surfaces glabrous, midvein glabrous abaxially, impressed and glabrous or puberulent adaxially, lateral veins 5–7 pairs, slightly raised on both surfaces, furcate and anastomosing near margin, reticulate veins indistinct on both surfaces, base cuneate or acute, margin entire, slightly recurved, rarely apically sparsely serrulate, apex acuminate. Inflorescences: cymes of order 1 or 2, 1–3-flowered, solitary, axillary on current year's branchlets; peduncles 3–5 mm, puberulent; bracts deltoid, sparsely puberulent; pedicels 3–5 mm; bracteoles 2, basal; 1-flowered pedicels ca. 1 cm; flowers pink, 5-merous. Male inflorescences often 3-flowered; calyx patelliform, 3–5 mm in diam., membranous, shallowly 5-lobed, lobes ovate, 1–1.5 mm, not ciliate, apex rounded; corolla rotate, 6–8 mm in diam., petals ovate, ca. 3 mm, basally slightly connate; stamens ca. 3/4 as long as petals, anthers oblong; rudimentary ovary globose, ca. 1 mm in diam. Female inflorescences: calyx and corolla as in male flowers; staminodes ca. 1/3 as long as petals, sterile anthers sagittate; ovary ovoid, stigma mammilliform. Fruit red, ellipsoidal, 6–8 mm, 5–6 mm in diam., longitudinally angular; persistent calyx explanate, ca. 3.5 mm in diam., lobes orbicular-ovate, not ciliate; persistent stigma capitate; pyrenes 5 or 6, ca. 5 mm, ca. 1.5 mm in diam., abaxially 3-striate and sulcate, middle ridge often deeply impressed, endocarp woody. Fl. Apr, fr. Jul–Oct.

• Thickets, sparse forests on mountains; 400–500 m. Guangxi, Hainan.

**35. *Ilex umbellulata*** (Wallich) Loesener in Engler & Prantl, Nat. Pflanzenfam. 1: 218. 1897.

伞序冬青 *san xu dong qing*

*Ehretia umbellulata* Wallich in Roxburgh, Fl. Ind. 2: 344. 1824; *Ilex godajam* (Colebrooke) J. D. Hooker var. *sulcata* (Wallich ex J. D. Hooker) Kurz; *I. sulcata* Wallich ex J. D. Hooker; *I. umbellulata* var. *megalophylla* Loesener; *Pseudehretia umbellulata* (Wallich) Turczaninow.

Shrubs or trees, evergreen, 4–15(–18) m tall; trunk to 40 cm d.b.h. Young branchlets brown or castaneous, glabrous, plicate, angular; older branchlets gray, terete, with raised leaf scars; terminal buds conical, small, glabrous. Stipules subulate-triangular, minute; petiole 1–1.2 cm, adaxially sulcate, glabrous; leaf blade olivaceous, opaque on both surfaces, oblong or ovate-oblong, 7–15 × (3.5–)5–6 cm, papery, membranous when young, midvein impressed adaxially, lateral veins 9–12 pairs, slightly raised abaxially, evident adaxially, anastomosing near margin, reticulate veins distinct on both surfaces, base rounded or obtuse, margin entire, narrowly recurved, apex abruptly acuminate or obtuse. Inflorescences: cymes of order 3–5, umbelliform, solitary, axillary on basal parts of current year's branchlets, appearing panicate when branchlets fail to develop. Male inflorescences: 6–20(–30)-flowered; peduncles 1.8–2.5 cm, puberulent; pedicels 3–5 mm, puberulent; bracteoles basal, deltoid, puberulent, apex acute; flowers white, 4- or 5-merous; calyx patelliform, ca. 2 mm in diam., puberulent, deeply 4- or 5-lobed, lobes ovate, ciliate; corolla rotate, ca. 5 mm in diam., petals oblong, ca. 2 × 1.5 mm, basally slightly connate; stamens equaling

or slightly longer than petals, anthers ovoid-oblong; rudimentary ovary shorter than petals. Female flowers: sterile anthers sagittate; ovary ovoid, style present, stigma 4- or 5-lobed. Fruit red, globose, 5–7 mm in diam.; peduncles 1–2 cm, slightly stout, longitudinally angular and sulcate, puberulent; fruiting pedicel 3–5 mm, puberulent; persistent calyx explanate, ca. 4 mm in diam., puberulent, lobes semicircular, ciliate; persistent stigma thickly discoid, center depressed, rotate-lobed; pyrenes 6–10, oblong, ca. 4 mm, 1–1.5 mm in diam., abaxially longitudinally 2- or 3-striate and 1- or 2-sulcate, laterally smooth, endocarp woody. Fl. May–Sep, fr. Jul–Nov.

Evergreen broad-leaved forests, sparse forests on slopes; 500–1700 m. Yunnan [Bangladesh, India, Myanmar, Thailand, Vietnam].

**36. *Ilex suichangensis*** C. Z. Zheng, Bull. Bot. Res., Harbin 8(4): 81. 1988.

遂昌冬青 *sui chang dong qing*

Trees evergreen, ca. 10 m tall. Current year's branchlets castaneous, stout, longitudinally ridged, glabrous; second year's branchlets gray-brown, terete, with elliptic, raised lenticels; terminal buds ovoid, glabrous. Petiole 3–3.5 cm, thick, elevated adaxially, glabrous; leaf blade castaneous-black when dry, narrowly elliptic, 14–22 × 5–8 cm, leathery, both surfaces glabrous, midvein raised on both surfaces, lateral veins 13–16 pairs, anastomosing near margin, reticulate veins evident on both surfaces, base cuneate, margin entire, apex long acuminate. Flowers not known. Infructescences: cymes of order 3, 5–7-fruited, umbelliform, solitary, axillary; peduncles 1.2–2 cm, angular, glabrous; fruiting pedicels 8–10 mm, glabrous. Fruit ellipsoidal, ca. 1 cm in diam.; persistent calyx ca. 5 mm in diam., 5- or 6-lobed, lobes suborbicular, margin entire or minutely erose, ciliate; persistent stigma thickly discoid; pyrenes 5 or 6, narrowly ellipsoidal, 9–10 mm, abaxially 1-sulcate, endocarp subwoody. Fl. unknown, fr. Aug.

• Forest margins; ca. 1200 m. Zhejiang (Suichang).

**37. *Ilex godajam*** (Colebrooke) J. D. Hooker, Fl. Brit. India 1: 604. 1875.

伞花冬青 *san hua dong qing*

*Prinos godajam* Colebrooke in Wallich, Pl. Asiat. Rar. 3: 38. 1832; *Ilex capitellata* Pierre; *I. godajam* f. *capitellata* (Pierre) Loesener; *I. rotunda* Thunberg var. *piligera* Loesener.

Shrubs or trees, evergreen, 5–13 m tall; bark gray-white. Branchlets gray, zigzag, subterete, with rounded, raised lenticels and subcircular, raised leaf scars, glabrescent; current year's young branchlets longitudinally striate, densely puberulent; terminal buds ovoid, small, poorly developed, densely puberulent or glabrous. Stipules subulate-deltoid, minute, puberulent; petiole 1–1.5 cm, puberulent, longitudinally sulcate adaxially; leaf blade abaxially greenish, adaxially green to deep green, shiny, ovate or oblong, 4.5–8 × 2.5–4 cm, thinly leathery, when young thinly papery, and puberulent on midvein and near base, glabrescent, midvein impressed adaxially, lateral veins 7–9 pairs, raised abaxially, distinct adaxially, anastomosing near margin, reticulate veins evident abaxially, indistinct adaxially, base rounded, margin entire, apex obtuse-rounded or shortly deltoid-acuminate. Inflorescences: cymes of order 2–5, umbelliform,



solitary, axillary on current year's branchlets, often appearing paniculate when shoot fails to develop; peduncles and pedicels densely puberulent; flowers white-yellow, 4-6-merous. Male inflorescences: cymes of order 4 or 5, 8-23-flowered; peduncles (1-)1.4-1.8 cm; pedicels 2-4 mm; bracteoles subulate, basal, puberulent; calyx patelliform, ca. 2.5 mm in diam., puberulent, deeply 4- or 5-lobed, lobes ovate, margin erose, ciliate; corolla rotate, petals 4, oblong, ca. 2 mm, basally slightly connate; stamens ca. as long as petals, anthers ovoid; rudimentary ovary globose, rostellate. Female inflorescences: cymes of order 2-4, 3-13-flowered; peduncles 1-1.4 cm; bracts basal, deltoid, densely puberulent; pedicels 2-5 mm; bracteoles basal, deltoid; calyx as in male flowers; petals elliptic, ca. 2 mm; staminodes not seen; ovary ovoid, stigma capitate. Fruit red, globose, ca. 4 mm in diam.; persistent calyx explanate, ca. 2.5 mm in diam., ciliate; persistent stigma discoid, convex; pyrenes 5 or 6, ellipsoidal, 2-2.5 mm, ca. 1.5 mm in diam., abaxially 3-striate and 2-sulcate, endocarp woody. Fl. Jan, Apr-May, fr. May, Aug-Sep.  $2n = 40^*$ .

Sparse forests, thickets on mountain slopes; 300-1000 m. Guangxi, Hainan, Hunan, Yunnan [Bhutan, NE India, Laos, Myanmar, Nepal, N Vietnam].

**38. *Ilex triflora*** Blume, Bijdr. 1150. 1826-1827.

三花冬青 san hua dong qing

Shrubs or trees, evergreen, 2-10 m tall. Branchlets zigzag, subquadrangular, ridged, rarely subterete, densely pubescent; leaf scars subcircular, slightly raised; lenticels absent; terminal buds poorly or not developed. Petiole 3-5 mm, densely pubescent, narrowly winged by decurrent leaf base; leaf blade brown or olivaceous when dry, elliptic, oblong, ovate-elliptic, obovate, or oblong-elliptic, 2.5-10 × 1.5-4 cm, subleathery, abaxially sparsely puberulent, punctate, adaxially puberulent or glabrescent, midvein impressed adaxially, densely pubescent on both surfaces, lateral veins 7-10 pairs, slightly distinct or indistinct on both surfaces, reticulate veins obscure, base rounded or obtuse, margin ± undulate, serrate, apex acute to acuminate, acumen 3-4 mm, or apex rounded. Inflorescences: cymes, fasciculate, axillary on current, second, or third year's branchlets, pubescent; flowers white, 4-merous. Male inflorescences: cymes of order 1 or 2, 1-3-flowered; peduncles ca. 2 mm; pedicels 2-3 mm; bracteoles 2, basal; calyx patelliform, ca. 3 mm in diam., puberulent, deeply 4-lobed, lobes suborbicular, ciliate; corolla ca. 5 mm in diam., petals broadly ovate, basally slightly connate; stamens shorter than petals, anthers yellow, ellipsoidal; rudimentary ovary pyramidal, rostellate, apex cleft. Female inflorescences: 1-flowered cymes; peduncles nearly absent; pedicels 4-14(-18) mm, robust, puberulent; bracteoles 2, median or submedian, ovate; calyx as in male flowers; petals broadly ovate or suborbicular, basally slightly connate; staminodes ca. 1/2 as long as petals, sterile anthers cordate-sagittate; ovary ovoid, ca. 1.5 mm in diam., stigma thickly discoid, shallowly 4-lobed. Fruit black, globose, 4-7 mm in diam.; fruiting pedicel 4-18 mm, puberulent or glabrescent; persistent calyx explanate, ca. 4 mm in diam., sparsely ciliate; persistent stigma thickly discoid; pyrenes 4, ovoid-ellipsoidal, ca. 6 mm, ca. 4 mm in diam., abaxially smooth, 3-striate, not sulcate, endocarp leathery. Fl. May-Jul, fr. Aug-Nov.

Forests, forest margins, thickets, shrub forests on mountain slopes and in valleys, forest margins; (100-)200-1800(-2200) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bangladesh, India, Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

- 1a. Leaf blade elliptic, oblong, or ovate-elliptic, apex acute to acuminate, acumen 3-4 mm ..... 38a. var. *triflora*  
 1b. Leaf blade obovate or oblong-elliptic, apex rounded, never acuminate ..... 38b. var. *kanehirae*

**38a. *Ilex triflora* var. *triflora***

三花冬青(原变种) san hua dong qing (yuan bian zhong)

*Ilex fleuryana* Tardieu; *I. griffithii* J. D. Hooker; *I. horsfieldii* Miquel; *I. leptophylla* W. P. Fang & Z. M. Tan; *I. lobbiana* Rolfe; *I. szechwanensis* Loesener f. *villosa* W. P. Fang & Z. M. Tan; *I. theicarpa* Handel-Mazzetti; *I. triflora* var. *horsfieldii* (Miquel) Loesener; *I. triflora* var. *kurziana* Loesener; *I. triflora* var. *lobbiana* (Rolfe) Loesener; *I. triflora* var. *sampsoniana* Loesener; *I. viridis* Champion ex Benth. var. *brevipedicellata* Z. M. Tan.

Shrubs or small trees. Leaf blade elliptic, oblong, or ovate-elliptic, 2.5-10 × 1.5-4 cm, apex acute to acuminate, acumen 3-4 mm.

Broad-leaved forests, thickets, shrub forests on mountain slopes; (100-)200-1800(-2200) m. Anhui (Hongyuan), Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang [Bangladesh, India, Indonesia, Malaysia, Myanmar, Thailand, N Vietnam].

**38b. *Ilex triflora* var. *kanehirae*** (Yamamoto) S. Y. Hu, J. Arnold Arbor. 30: 332. 1949 ["*kanehirai*"].

钝头冬青 dun tou dong qing

*Ilex crenata* Thunberg var. *kanehirae* Yamamoto, Icon. Pl. Formos., Suppl. 1: 31. 1925 ["*kanehirai*"]; *I. kanehirae* (Yamamoto) Koidzumi; *I. kanehirae* var. *glabra* Kanehira; *I. maximowicziana* Loesener var. *kanehirae* (Yamamoto) T. Yamazaki; *I. mutchagara* Makino var. *kanehirae* (Yamamoto) Masamune.

Shrubs. Leaf blade oblong, obovate, or oblong-elliptic, apex rounded, obtuse, or rarely acute, never acuminate.

• Forests, forest margins, shrub forests in valleys; 200-1100 m. Fujian, Guangdong, Hunan, Jiangxi, Taiwan, Zhejiang.

**39. *Ilex szechwanensis*** Loesener, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 347. 1901.

四川冬青 si chuan dong qing

Shrubs or small trees, evergreen, 1-10 m tall. Young branchlets subquadrangular, longitudinally angular and sulcate, puberulent or densely pubescent; older branchlets with raised, lunate leaf scars, lenticels absent; terminal buds conical, pubescent. Stipules persistent, ovate-deltoid, 1-2.5 mm, apically acute; petiole (2-)4-7 mm, adaxially shallowly sulcate, pubescent; leaf blade olivaceous when dry, ovate, ovate-lanceolate, ovate-elliptic, ovate-oblong, or elliptic, rarely sublanceolate, (2-)3-8 × (1-)2-4 cm, leathery, abaxially opaquely yellow-brown punctate, glabrous to densely pubescent, midvein adaxi-

ally flat or slightly impressed, densely pubescent, lateral veins 6 or 7 pairs, evident or not on both surfaces, reticulate veins indistinct, base cuneate to obtuse, margin serrate, rarely minutely crenate on distal half, apex acuminate or shortly acuminate to acute. Inflorescences: cymes, solitary, axillary at scales on current year's branchlets, rarely fasciculate; flowers white or pink, 4- or 5-merous. Male inflorescences: cymes of order 1-3, 1-7-flowered; peduncles 4-12 mm; bract 1, basal, deltoid; pedicels 2-3 mm, 1-flowered pedicels 3-5 mm, bracteoles 2, basal or submedian; calyx patelliform, 2-2.5 mm in diam., glabrous or sparsely puberulent, 4-7-lobed, lobes ovate-deltoid, margin erose or dentate, sparsely ciliate; corolla rotate, petals 4 or 5, ovate, ca. 2.5 × 2 mm, basally slightly connate; stamens shorter than petals, anthers ovoid-oblong; rudimentary ovary compressed globose, rostellate. Female inflorescences: 1-flowered cymes; pedicels 8-10 mm, bracteoles 2, median; flowers 4-merous; calyx patelliform, ca. 3 mm in diam., shallowly 4-lobed, lobes orbicular, margin erose; corolla erect, ca. 4 mm in diam., petals ovate, ca. 2.5 mm, basally slightly connate; staminodes ca. 1/5 as long as petals, sterile anthers sagittate; ovary subglobose, ca. 1.5 mm in diam., stigma thickly discoid, convex. Fruit black, rarely yellow, globose or depressed globose, (5-)6 mm, (5-)7-8 mm in diam.; persistent calyx explanate, 3-4 mm in diam.; persistent stigma thickly discoid, ca. 1 mm in diam., 4-lobed; pyrenes 4, oblong or subglobose, (3-)4.5-5 mm, (2-)3.5-4 mm in diam., abaxially smooth, inconspicuously thinly striate, not sulcate, endocarp leathery. Fl. May-Jun, fr. Aug-Oct.

• Evergreen broad-leaved forests, mountain forests, sparse forests, thickets, shrub forests, stream banks, roadsides on hills or mountains; (200-)400-2500 m. Chongqing, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, SE Xizang (Zayü), Yunnan.

- 1a. Flowers pink ..... 39b. var. *huana*  
 1b. Flowers white.  
 2a. Leaf blade ovate-elliptic, ovate-oblong, or elliptic, rarely sublanceolate, 3-8 × 2-4 cm; young branches puberulent; leaf midvein abaxially glabrous or puberulent ..... 39a. var. *szechwanensis*  
 2b. Leaf blade ovate or ovate-lanceolate, 2-5 × 1.5-2.5 cm; young branches and leaf midvein abaxially densely pubescent ..... 39c. var. *mollissima*

### 39a. *Ilex szechwanensis* var. *szechwanensis*

四川冬青(原变种) *si chuan dong qing* (yuan bian zhong)

*Ilex crenata* Thunberg var. *scoriarum* W. W. Smith; *I. szechwanensis* f. *angustata* Loesener; *I. szechwanensis* f. *calva* Loesener; *I. szechwanensis* var. *heterophylla* C. Y. Wu ex Y. R. Li; *I. szechwanensis* f. *puberula* Loesener; *I. szechwanensis* var. *scoriarum* (W. W. Smith) C. Y. Wu.

Branchlets puberulent. Leaf blade ovate-elliptic, ovate-oblong, or elliptic, rarely sublanceolate, 3-8 × 2-4 cm, midvein abaxially glabrous or puberulent. Flowers white. Fruit globose or depressed globose, ca. 6 mm, 7-8 mm in diam.; pyrenes oblong or subglobose, 4.5-5 mm, 3.5-4 mm in diam. Fl. May-Jun, fr. Aug-Oct.

• Evergreen broad-leaved forests, sparse forests, thickets, shrub forests, stream banks, roadsides on hills or mountains; (200-)400-2500 m. Chongqing, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, SE Xizang (Zayü), Yunnan.

39b. *Ilex szechwanensis* var. *huana* T. R. Dudley, Acta Bot. Yunnan. 6: 49. 1984 [*"huiana"*].

桂南四川冬青 *gui nan si chuan dong qing*

Stipules (1-)2-2.5 mm; petiole 2-5(-6) mm, densely pubescent; leaf blade 2-4.5 × 1-2(-2.5) cm, midvein adaxially sulcate, margin minutely crenate on distal half. Flowers pink. Fruit yellow, 5-6 mm, 5-6 mm in diam.; pyrenes 3-4 mm, 2-3.5 mm in diam. Fr. Oct.

• Mountain forests; 800-1200 m. S Guangxi (Shangsi).

39c. *Ilex szechwanensis* var. *mollissima* C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 6. 1985.

毛叶四川冬青 *mao ye si chuan dong qing*

Branchlets densely pubescent. Leaf blade ovate or ovate-lanceolate, 2-5 × 1.5-2.5 cm, midvein abaxially densely pubescent, apex acuminate. Flowers white.

• Evergreen broad-leaved forests, shrub forests in valleys; 1400-1800 m. SE Yunnan (Jinping, Pingbian).

40. *Ilex subcrenata* S. Y. Hu, J. Arnold Arbor. 32: 395. 1951.

拟钝齿冬青 *ni dun chi dong qing*

Shrubs evergreen. Branchlets slender, pubescent; current year's branchlets ca. 0.5 mm in diam. Stipules persistent, deltoid, ca. 0.5 mm, apex acute; petiole ca. 2 mm, pilose; leaf blade olivaceous when dry, broadly elliptic, 5-12 × 4-9 mm, leathery, pubescent, abaxially glandular punctate, midvein obscure adaxially, lateral veins 3 pairs, obscure, base obtuse or rounded, apex obtuse or acute. Male inflorescences: cymes of order 1 or 2, 1- or 3-flowered, subfasciculate, axillary; peduncles 3-4 mm; pedicels 1.5-4 mm, sparsely puberulent; flowers white, 4-merous; calyx patelliform, ca. 2 mm in diam., sparsely pubescent, 4-lobed, lobes deltoid, margin erose, ciliate; corolla subrotate, ca. 4 mm in diam., petals ovate, ca. 1.5 mm, basally slightly connate; stamens slightly longer than petals; rudimentary ovary subglobose. Female flowers and fruit not known. Fl. Jun-Jul, fr. unknown.

• Understories of dense forests; 700-1500 m. N Guangxi.

41. *Ilex yuana* S. Y. Hu, J. Arnold Arbor. 32: 396. 1951 [*"yuiana"*].

独龙冬青 *du long dong qing*

Shrubs evergreen, 0.5-4 m tall. Young branchlets terete, slender, longitudinally striate, densely pubescent. Stipules narrowly lanceolate, ca. 1.5 mm; petiole 2-4 mm, adaxially narrowly sulcate, densely pubescent; leaf blade abaxially greenish, adaxially green, elliptic, 1-3 × 0.8-1.5 cm, leathery or subleathery, abaxially glandular punctate, both surfaces sparsely pubescent or glabrescent, midvein adaxially impressed, puberulent, lateral veins indistinct on both surfaces, base obtuse or broadly cuneate, margin crenate-serrate, teeth aristate, recurved, apex

acute, cuspidate. Male flowers not known. Female inflorescences: cymes of order 1 or 2, 1–3-flowered, solitary, axillary on current year's branchlets; peduncles 7–8 mm; pedicels 1–2 mm; 1-flowered pedicels 7–9 mm, sparsely puberulent, subapically with 2 subulate bracteoles; flowers yellow-green; calyx 4-lobed, lobes broadly ovate, 1–1.5 mm, margin erose; petals 4, sub-orbicular, ca. 2.5 mm, basally slightly connate, apex obtusely rounded; staminodes 4, shorter than petals, sterile anthers ovoid-sagittate; ovary subglobose, ca. 1 mm in diam., stigma conspicuously 4-lobed. Fruit black, globose, 5–6 mm in diam.; fruiting pedicel 7–9 mm, upward gradually thickening, glabrous, longitudinally striate; bracteoles 2, median, linear-lanceolate; persistent calyx explanate; persistent stigma discoid, thin, flat; pyrenes 4, ellipsoidal, 4.5–5 mm, 3–3.5 mm in diam., abaxially smooth, not sulcate, endocarp leathery. Fl. May, fr. Jul–Nov.

• Evergreen broad-leaved forests, forest margins, thickets, roadsides in valleys; 1400–2300 m. NW and SW Yunnan (Dulong Jiang valley, Tengchong).

**42. *Ilex crenata*** Thunberg in Murray, Syst. Veg., ed. 14, 168. 1784.

齿叶冬青 *chi ye dong qing*

*Celastrus adenophyllus* Miquel; *Ilex crenata* var. *aureovariegata* Goldring; *Ilex crenata* f. *bullata* Rehder; *I. crenata* f. *helleri* (Craig) Rehder; *I. crenata* var. *helleri* (Craig) L. H. Bailey; *I. crenata* f. *kusnetzoffii* Loesener; *I. crenata* f. *latifolia* (Goldring) Rehder; *I. crenata* var. *latifolia* Goldring; *I. crenata* f. *longifolia* (Goldring) Rehder; *I. crenata* var. *longifolia* Goldring; *I. crenata* f. *longipedunculata* S. Y. Hu; *I. crenata* f. *luteovariegata* (Regel) Rehder; *I. crenata* var. *luteovariegata* Regel; *I. crenata* var. *major* G. Nicholson ex Dallimore; ?*I. crenata* var. *mariesii* Dallimore; *I. crenata* f. *microphylla* Rehder; *I. crenata* f. *multicrenata* (C. J. Tseng) S. K. Chen; *I. crenata* var. *multicrenata* C. J. Tseng; *I. crenata* f. *nummularia* (Yatabe) H. Hara; *I. crenata* var. *nummularia* Yatabe; ?*I. crenata* f. *variegata* G. Nicholson; ?*I. crenata* var. *variegata* (G. Nicholson) Dallimore; *I. euryifolia* K. Mori & Yamamoto; *I. helleri* Craig.

Shrubs evergreen, 5–10 m tall; bark gray-black. Young branchlets gray or black, longitudinally angular, densely pubescent; older branchlets with leaf scars raised lunate, lenticels sparsely elliptic or circular. Stipules subulate, minute; petiole 2–3 mm, sulcate, pubescent; leaf blade abaxially greenish, adaxially green, shiny, obovate, elliptic, or oblong-elliptic, 1–3.5 × 0.5–1.5 cm, leathery, abaxially glabrous, densely brown glandular punctate, adaxially glabrous except on midvein, rugose when dry, midvein adaxially flat or slightly impressed, pubescent, lateral veins 3–5 pairs, obscure, reticulate veins indistinct, base obtuse or cuneate, margin crenate-serrate, apex rounded, obtuse, or subacute. Male inflorescences: cymes of order 1–3, 1–7-flowered, solitary, axillary on scales or lower leaves of current year's branchlets, rarely pseudofasciculate on second year's branchlets; peduncles 4–9 mm; secondary axis ca. 1 mm; pedicels 2–3 mm, bracteoles 1 or 2, subbasal; 1-flowered pedicels 4–8 mm, bracteoles 1 or 2, submedian; flowers white, 4-merous; calyx patelliform, ca. 2 mm in diam., glabrous, 4-lobed, lobes broadly deltoid, margin erose; petals 4, broadly

elliptic, ca. 2 mm, basally slightly connate; stamens shorter than petals, anthers elliptic; rudimentary ovary conical, apex slightly apiculate or acute. Female inflorescences: cymes of order 1 (or 2), 1(–3)-flowered, solitary, axillary on current year's branchlets; pedicels 3.5–6(–12) mm, distal half slightly thickened, longitudinally ridged; bracteoles 1 or 2, submedian; flowers 4-merous; calyx ca. 3 mm in diam., 4-lobed, lobes rounded; corolla ca. 6 mm in diam., petals ovate, ca. 3 mm, basally slightly connate; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm, style sometimes distinct, stigma discoid, 4-lobed. Fruit black, globose, 6–8 mm in diam.; fruiting pedicel 4–6 mm; persistent calyx explanate, ca. 3 mm in diam.; persistent stigma thickly discoid, ca. 1 mm in diam., conspicuously 4-lobed; pyrenes 4, oblong-ellipsoidal, ca. 5 mm, 3–3.5 mm in diam., abaxially smooth, striate, not sulcate, endocarp leathery. Fl. May–Jun, fr. Aug–Oct.

Forests, thickets on hills or mountains; 700–2100 m. Anhui, Fujian, Guangdong, Guangxi, Hainan, Hubei, Hunan, Jiangxi, Taiwan, Shandong (Qingdao), Zhejiang [Japan, Korea].

**43. *Ilex viridis*** Champion ex Benth, Hooker's J. Bot. Kew Gard. Misc. 4: 329. 1852.

绿叶冬青 *lü ye dong qing*

*Ilex triflora* Blume var. *viridis* (Champion ex Benth) Loesener.

Shrubs or small trees, evergreen, 1–5 m tall. Young branchlets subquadrangular, longitudinally angular and sulcate, pubescent along groove, glabrous along angles; older branchlets subterete, with ridges and oblong or elliptic lenticels; terminal buds conical, glabrous, apically acute. Petiole 4–6 mm, shallowly sulcate, abaxially rugose, adaxially puberulent or glabrous, narrowly winged by decurrent leaf base; leaf blade abaxially greenish, adaxially green, shiny, obovate, obovate-elliptic, or broadly elliptic, 2.5–7 × 1.5–3 cm, leathery, abaxially conspicuously dark punctate, midvein deeply sulcate and sparsely pubescent adaxially, lateral veins 5–8 pairs, distinct on both surfaces, reticulate veins obscure abaxially, slightly raised adaxially, base obtuse or cuneate, margin slightly recurved, crenate-serrate, apex obtuse, acute, or shortly acuminate. Male inflorescences: cymes of order 1–3, 1–5-flowered, solitary, axillary on scales or lower leaves of current year's branchlets, or fasciculate on second year's branchlets; peduncles 3–5 mm; pedicels ca. 2 mm; bracteoles 1 or 2, basal or submedian, subulate; flowers white, 4-merous; calyx patelliform, 2–3 mm in diam., lobes broadly deltoid, margin erose, not ciliate; corolla rotate, ca. 7 mm in diam., petals obovate or orbicular, ca. 2.5 mm, basally slightly connate; stamens 4, ca. 2/3 as long as petals, anthers oblong; rudimentary ovary narrowly conical, rostellate. Female inflorescences: 1-flowered cymes, solitary, axillary on current year's branchlets; pedicels 1–1.5 cm, glabrous, gradually enlarged toward distal half; bracteoles 2, median, subulate; calyx 4–5 mm in diam., glabrous, 4-lobed, lobes suborbicular; petals 4, ovate, ca. 2.5 mm, basally slightly connate; staminodes ca. 1/3 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm in diam., stigma discoid, convex. Fruit black, globose or slightly depressed globose, 9–11 mm in diam.; fruiting pedicel 1–1.7 cm; persistent calyx explanate, ca. 5 mm in diam.; persistent stigma

discoid-mammilliform, 1.5–2 mm in diam.; pyrenes 4, ellipsoidal, cross section trigonous, 4–6 mm, 3–5 mm in diam., abaxially convex, striate, slightly rugose, laterally smooth, endocarp leathery. Fl. Apr–May, fr. Oct.

• Understories of evergreen broad-leaved forests, sparse forests and thickets on mountains; 300–1700(–2100) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Zhejiang.

**44. *Ilex maximowicziana*** Loesener, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 339. 1901.

倒卵叶冬青 *dao luan ye dong qing*

*Ilex lilongshanensis* H. E. Chiang.

Trees evergreen, small, 2.5–3 m tall; trunk to 4 cm d.b.h. Young branchlets subquadrangular, longitudinally angular and sulcate, puberulent; older branchlets gray-brown, terete, longitudinally ridged, puberulent, lenticels absent, leaf scars raised. Stipules linear-lanceolate, minute; petiole 5–10 mm, shallowly sulcate, slightly puberulent, narrowly winged by decurrent leaf base; leaf blade adaxially shiny, obovate, elliptic, or broadly elliptic, 2–6 × 1–2.5 cm, leathery, abaxially brown glandular punctate, adaxially glabrous except on midvein, midvein adaxially impressed, puberulent, lateral veins slightly evident or indistinct on both surfaces, base cuneate, margin crenate-serrate, apex obtuse or acute, rarely rounded. Male inflorescences: cymes of order 1 or 2, 1–3-flowered, fasciculate, axillary on current year's branchlets; peduncles 5–11 mm; terminal bracts 2; pedicels 1.5–2 mm, puberulent; bracteoles 2, basal, ovate; calyx patelliform, deeply 4-lobed, lobes broadly ovate, ca. 1.5 mm, apex rounded; corolla white, rotate, petals 4, ovate, ca. 3 × 2 mm, basally slightly connate; stamens shorter than petals, anthers oblong; rudimentary ovary subglobose, rostellate. Female flowers not known. Infructescences: cymes of order 1(or 2), 1(–3)-flowered, solitary, axillary on current year's branchlets. Fruit globose, 7–8 mm in diam., fruiting pedicel 8–12 mm, longitudinally angular, puberulent; bracteoles 2, median, subulate; persistent calyx explanate, quadrangular, ca. 4 mm in diam., deeply 4-lobed, lobes suborbicular, margin slightly erose; persistent stigma thinly discoid, ca. 2 mm in diam.; pyrenes 4, ovoid-ellipsoidal, ca. 5 mm, ca. 4 mm in diam., abaxially smooth, 5-striate, not sulcate, not rugose, endocarp leathery. Fl. Apr, fr. Aug–Nov.

Evergreen broad-leaved forests on mountains; 100–400 m. Taiwan (Pingdong, Taidong) [Japan].

**45. *Ilex pedunculosa*** Miquel, Verwantschap Fl. Japan Azie Noord-Amerika, 19. 1866.

具柄冬青 *ju bing dong qing*

*Ilex impressivena* Yamamoto; *I. morii* Yamamoto; *I. pedunculosa* f. *aurantiaca* (Koidzumi) Ohwi; *I. pedunculosa* var. *aurantiaca* Koidzumi; *I. pedunculosa* f. *continentalis* Loesener; *I. pedunculosa* var. *continentalis* (Loesener) Bean; *I. purpurea* Hasskarl var. *leveilleana* Loesener.

Shrubs or trees, evergreen, 2–10(–15) m tall. Young branchlets brownish or castaneous, subterete, longitudinally angular, glabrous or minutely puberulent on nodes. Petiole 1.5–2.5 cm, slender, abaxially rugose, adaxially longitudinally sulcate;

leaf blade adaxially castaneous-black, shiny when dry, ovate, oblong-elliptic, or elliptic, 4–12.5 × 2–3 cm, thinly leathery, both surfaces glabrous, midvein flat or slightly impressed adaxially, lateral veins obscure on both surfaces, base obtuse or rounded, margin entire or often obscurely serrate near apex, apex acuminate. Inflorescences: cymes solitary, axillary on current year's branchlets; flowers 4- or 5-merous, white or yellow-white. Male inflorescences: cymes of order 2 or 3, 3–9-flowered; peduncles ca. 2.5 cm; secondary axis ca. 3 mm; pedicels 2–4 mm; bracteoles lanceolate, 1–1.5 mm, puberulent; calyx patelliform, ca. 1.5 mm in diam., 4- or 5-lobed, lobes deltoid, glabrous, apex acute; petals 4 or 5, ovate, 1.5–1.8 mm, basally slightly connate; stamens shorter than petals, anthers ovoid; rudimentary ovary ovoid. Female inflorescences: cymes of order 1(or 2), 1(–3)-flowered; pedicels thinly elongated, 4–4.5 cm; bracteoles 2, median, subulate; calyx ca. 3 mm in diam., 4- or 5-lobed, lobes ciliate; corolla ca. 5 mm in diam., petals 4 or 5, ovate, ca. 2 mm; staminodes shorter than petals, sterile anthers ovoid; ovary broadly conical, ca. 2 mm in diam., stigma mammilliform. Fruit red or orange, globose, 7–8 mm in diam.; fruiting pedicel of 1-fruited cymes 2.5–4(–6) cm; peduncles of 1–3-fruited cymes ca. 4.5 cm, fruiting pedicels 1.5–2 cm; lobes of persistent calyx deltoid, ciliate; persistent stigma thickly discoid, convex; pyrenes 4–6, ellipsoidal, ca. 6 mm, ca. 2.5 mm in diam., abaxially smooth, longitudinally 1-striate, endocarp leathery. Fl. May–Jun, fr. Jul–Nov.  $2n = 120^*$ .

Broad-leaved woods, thickets, margins of woods on mountains; (900–)1200–1900(–3000) m. S Anhui, Fujian, Guangxi, Guizhou, S Henan, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, C and W Taiwan, Zhejiang [Japan].

**46. *Ilex reticulata*** C. J. Tseng, Acta Phytotax. Sin. 22: 414. 1984.

网脉冬青 *wang mai dong qing*

Shrubs evergreen, ca. 2 m tall, glabrous. Young branchlets brownish, striate; older branchlets terete, longitudinally fissured, lenticels sparse, elliptic; terminal buds ovoid. Petiole 4–5 mm; leaf blade dark brown adaxially, elliptic, 5–5.7 × 3–3.3 cm, thickly leathery, adaxially glabrous except on midvein when dry, midvein adaxially flat or proximal half raised and distal half gradually flat or impressed, lateral veins 6 or 7 pairs, reticulate veins often slightly raised, slightly evident abaxially, distinct adaxially, base cuneate-obtuse, margin sparsely serrate, apex acute or shortly acuminate. Flowers not known. Infructescences: 1-fruited cymes, solitary, axillary; fruiting pedicels ca. 7 mm; bracteoles deltoid, adnate at middle. Fruit red, globose, ca. 5 mm in diam.; persistent calyx glabrous, 5-lobed, lobes discoid, ciliate; persistent stigma mammilliform, shallowly 4-lobed. Fl. unknown, fr. Dec.

• Woods or thickets on slopes; 700–1500 m. Guangxi (Yangshuo).

**47. *Ilex subcoriacea*** Z. M. Tan, J. Sichuan Univ., Nat. Sci. Ed. 1983(2): 79. 1983.

薄革叶冬青 *bao ge ye dong qing*

Shrubs evergreen, 2–3 m tall. Branchlets longitudinally angular and sulcate, densely pubescent. Petiole 2–5 mm, sulcate, pubescent; leaf blade abaxially greenish, adaxially deep green,

elliptic or ovate-elliptic, 3–3.5 × 2–3 cm, subleathery, abaxially pubescent, adaxially sparsely pubescent or glabrescent, midvein subflat or slightly impressed adaxially, densely pubescent on both surfaces, lateral veins 8–12 pairs, slightly raised on both surfaces, reticulate veins obscure on both surfaces or distinct abaxially, base broadly cuneate or subrounded, margin serrate, teeth black, apex acuminate or caudate-acuminate. Flowers not known. Infructescences: 1-fruited cymes, solitary, axillary on second year's branchlets; fruiting pedicels 8–12 mm; bracteoles 2, caducous. Fruit (immature) globose, 4–5 mm in diam.; persistent calyx 4- or 5-lobed, pubescent, lobes deltoid, ciliate; persistent stigma mammilliform; pyrenes 4, oblong, 3–3.5 mm, 2–2.5 mm in diam., abaxially smooth, not striate, not sulcate. Fl. unknown, fr. Jul.

- Mountain thickets; 900–2000 m. W Sichuan (Butuo, Jinyang).

**48. *Ilex sugerokii*** Maximowicz, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 29(3): 35. 1881.

太平山冬青 tai ping shan dong qing

*Ilex pedunculosa* Miquel var. *taiwanensis* S. Y. Hu; *I. sugerokii* subsp. *brevipedunculata* (Maximowicz) Makino; *I. sugerokii* var. *brevipedunculata* (Maximowicz) S. Y. Hu; *I. taisanensis* Hayata; *I. taiwanensis* (S. Y. Hu) H. L. Li.

Shrubs or small trees, evergreen, ca. 5 m tall. Young branchlets longitudinally angular and sulcate, puberulent; old branchlets glabrescent, with suborbicular, convex leaf scars and elliptic lenticels. Petiole 4–7 mm, flat adaxially, puberulent; leaf blade abaxially greenish, adaxially green, shiny, elliptic or ovate-elliptic, 2–3.5 × 1–2.5 cm, thickly leathery, abaxially glabrous, adaxially glabrous except on midvein, midvein flat abaxially, raised adaxially, lateral veins 4 or 5 pairs, obscure on both surfaces, base obtuse or broadly cuneate, margin entire in lower half, sparsely serrate in upper half, apex obtuse or acute. Inflorescences: cymes, solitary, axillary on current year's branchlets. Male inflorescences: cymes of order 2, 3-flowered; peduncles ca. 1 cm; pedicels 2–5 mm; bracteoles 1, adnate apically on pedicels, puberulent; calyx patelliform, ca. 2.5 mm in diam., deeply 4–6-lobed, lobes deltoid, long ciliate; corolla white, rotate, 5–6 mm in diam., petals oblong, slightly connate; stamens shorter than petals; rudimentary ovary ovoid, rostellate. Female inflorescences: 1-flowered cymes; pedicels 1.2–1.5 cm; bracteoles 1 or 2, submedian; calyx deeply 4–6-lobed, lobes long ciliate; petals oblong; staminodes ca. 3/4 as long as petals, sterile anthers oblong-sagittate; ovary ovoid, stigma discoid. Fruit dark red, globose, 7–8 mm in diam.; fruiting pedicel 1.3–1.5 cm, glabrous; persistent calyx explanate, ca. 3 mm in diam., ciliate; persistent stigma discoid; pyrenes 4–6, oblong, ca. 3.5 mm, ca. 2 mm in diam., abaxially smooth, not striate, not sulcate, endocarp leathery. Fl. Jul, fr. Aug–Oct.

- Mountain forests; ca. 2200 m. Sichuan, C and N Taiwan [Japan].

*Ilex sugerokii* f. *longipedunculata* Maximowicz, with longer fruiting pedicels (2–3.5 cm), occurs in Japan.

**49. *Ilex rockii*** S. Y. Hu, J. Arnold Arbor. 30: 336. 1949.

高山冬青 gao shan dong qing

Shrubs evergreen, small, 1–2 m tall. Young branchlets

densely yellow hirsute-pubescent; old branchlets stout, gray-brown or smoky pubescent. Stipules persistent, triangular, minute; petiole 2–3 mm, sparsely pubescent; leaf blade abaxially greenish, adaxially deep green, shiny, obovate-oblong or oblong, 1–3 × 0.6–1.4 cm, leathery, glabrous except on midvein adaxially, rugose when dry, midvein raised on both surfaces, densely yellow hirsute adaxially, lateral veins 3 or 4 pairs, obscure on both surfaces, base cuneate, margin slightly recurved, entire in lower half, crenulate-serrate in upper half, apex rounded or obtuse. Male flowers not known. Female inflorescences: 1-flowered cymes, solitary, axillary on scales at base or at lower leaves of current year's branchlets; pedicels 2–5 mm, glabrous or sparsely puberulent; bracteoles absent; flowers red, (4 or)5(or 6)-merous; calyx patelliform, 3–4 mm in diam., lobes deltoid-ovate, glabrous, ciliate; corolla rotate, ca. 7 mm in diam., petals ovate-oblong, ca. 3 × 1.5 mm, basally slightly connate, apex rounded; staminodes 5, ca. 1/2 as long as petals, sterile anthers minute; ovary conical-ovoid, stigma capitate, 5-lobed. Fruit red, globose, 5–7 mm in diam.; fruiting pedicel ca. 6 mm; persistent calyx explanate; persistent stigma thickly discoid; pyrenes (3–)5, ellipsoidal, ca. 5 mm, ca. 3 mm in diam., abaxially smooth, not striate, not sulcate, endocarp leathery. Fl. Jun–Jul, fr. Aug–Nov.

- Forests, *Abies* forests, thickets, alpine shrub forests; 2700–3700(–4300) m. W Sichuan, SE Xizang, NW Yunnan.

**50. *Ilex ludianensis*** S. C. Huang ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 7. 1985.

鲁甸冬青 lu dian dong qing

Shrubs evergreen, 1.5–3 m tall. Branchlets stout, longitudinally ridged, densely tomentose; terminal buds conical, 4–5 mm, bud scales densely tomentose. Petiole 3–5 mm, densely tomentose; leaf blade abaxially greenish, adaxially green, ovate, or ovate-elliptic, 2.5–4.5 × 1.5–2.5 cm, leathery, abaxially densely tomentose, adaxially very shortly tomentose, midvein slightly flat or impressed adaxially, tomentose on both surfaces, lateral veins 7 or 8 pairs, slightly raised abaxially, flat adaxially, reticulate veins obscure adaxially, base rounded, rarely obtuse, margin crenulate-serrate, teeth incurved, black, apex shortly acuminate. Flowers not known. Infructescences: 1-fruited cymes, solitary, axillary on current year's branchlets; fruiting pedicels 1.2–1.5 cm, densely tomentose, nodose at middle. Fruit red, globose, 7–8 mm in diam.; persistent calyx explanate, pentangular, ca. 4 mm in diam., tomentose, shallowly 5-lobed, lobes obtusely triangular, ciliate; persistent stigma discoid; pyrenes 5, ellipsoidal, ca. 5 mm, 2.5–3 mm in diam., cross section trigonous, abaxially smooth, not striate, not sulcate, endocarp leathery. Fr. Aug–Nov.

- Shrub forests on limestone mountains; ca. 1400 m. NE Yunnan (Ludian).

**51. *Ilex yunnanensis*** Franchet, Pl. Delavay. 1: 128. 1889.

云南冬青 yun nan dong qing

Shrubs or trees, evergreen, 1–12 m tall. Young branchlets terete, longitudinally ridged and sulcate, densely golden yellow villous; older branchlets densely ferruginous tomentose, with subcircular, raised leaf scars, lenticels absent. Petiole 2–6 mm,

densely tomentose; leaf blade black-brown to brown when dry, oblong, oblong-lanceolate, ovate, ovate-lanceolate, or elliptic, (1–)2–4 × (0.4–)1–2.5 cm, thinly to thickly leathery, glabrous except on midvein adaxially, midvein abaxially flat or raised, glabrous, adaxially raised, densely pubescent, lateral veins obscure on both surfaces, base rounded or obtuse, margin crenulate-serrate or crenate-serrate, teeth often aristate, or margin entire or spinulose-serrate, apex rarely obtuse or subacute, acute and mucronate, or acuminate, spiny or not. Inflorescences: cymes, solitary, axillary to leaves or on scales of current year's branchlets, pubescent. Male inflorescences: cymes of order (1 or)2, (1–)3-flowered; peduncles 8–14 mm; pedicels 2–4 mm; flowers 4(–)6-merous, white, or pink to red at high elevations; calyx patelliform, ca. 2 mm in diam., deeply 4-lobed, lobes deltoid, apex acute or obtuse, ciliate or not; petals ovate, ca. 2 × 1.5 mm, basally slightly connate, apex obtuse; stamens shorter than petals, anthers ovoid-globose; rudimentary ovary conical, apex obtuse. Female inflorescences: cymes of order 1(or)2, 1(–)3-flowered; pedicels 3–14 mm; bracteoles 1 or 2 on distal half; calyx and corolla as in male flowers; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary globose, ca. 1 mm in diam., longitudinally 4-sulcate, styles present, ca. 0.5 mm, stigma discoid, 4-lobed. Fruit red, globose, 5–6 mm in diam.; fruiting pedicel 5–15 mm, glabrous; persistent calyx explanate, quadrangular, ciliate or not; persistent stigma discoid, raised; pyrenes 4, oblong, ca. 5 mm, ca. 3 mm in diam., cross section subtriangular, abaxially smooth, not striate, not sulcate, endocarp leathery. Fl. May–Jul, fr. Aug–Nov.

Evergreen broad-leaved forests, *Tsuga* forests, mountain forests, sparse forests, margins of woods, thickets, shrub forests in valleys or on mountains; 1100–3500 m. S Gansu, Guangxi, Guizhou, Hubei, S Shaanxi, Sichuan, Taiwan, SE Xizang, Yunnan [N Myanmar].

- 1a. Leaf blade thickly leathery, apex acute and spiny, margin entire or 1–3-spinulose-serrate ..... 51d. var. *paucidentata*
- 1b. Leaf blade thinly leathery to leathery, margin crenate-serrate or crenulate-serrate.
- 2a. Margin of leaf blade crenate-serrate, teeth not aristate ..... 51b. var. *gentilis*
- 2b. Margin of leaf blade crenulate-serrate, teeth often aristate.
- 3a. Leaf blade ovate or ovate-lanceolate, rarely elliptic, 1–4 × 0.4–2 cm, apex acute, mucronate ..... 51a. var. *yunnanensis*
- 3b. Leaf blade oblong-lanceolate, elliptic, or oblong, 1.2–2 × 0.5–0.7 cm, apex acute to acuminate ..... 51c. var. *parvifolia*

#### 51a. *Ilex yunnanensis* var. *yunnanensis*

云南冬青(原变种) *yun nan dong qing* (*yuan bian zhong*)

*Ilex yunnanensis* var. *brevipedunculata* S. Y. Hu; *I. yunnanensis* var. *eciliata* S. Y. Hu.

Leaf blade ovate or ovate-lanceolate, 1–4 × 0.4–2 cm, thinly leathery to leathery, margin crenulate-serrate, teeth often aristate, apex acute, mucronate. Flowers 4-merous. Fl. May–Jun, fr. Aug–Nov.

Evergreen broad-leaved forests, *Tsuga* forests, shrub forests on mountains; 1500–3500 m. S Gansu (Wenxian), Guangxi, Guizhou, Hubei, S Shaanxi (Liuba, Yangxian), Sichuan, SE Xizang (Zayü), Yunnan [N Myanmar].

51b. *Ilex yunnanensis* var. *gentilis* (Loesener) Rehder, Man. Cult. Trees, 544. 1927.

高贵云南冬青 *gao gui yun nan dong qing*

*Ilex yunnanensis* f. *gentilis* Loesener, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 132. 1901.

Leaf blade ovate or oblong, thinly leathery, base rounded, margin crenate-serrate, teeth never aristate, apex obtuse, rarely subacute. Male flowers 4(–)6-merous.

• Sparse forests, shrub forests on mountains; 1100–2600 m. Guizhou, Hubei, S Shaanxi, Sichuan, Taiwan, Yunnan.

51c. *Ilex yunnanensis* var. *parvifolia* (Hayata) S. Y. Hu, J. Arnold Arbor. 30: 341. 1949.

小叶云南冬青 *xiao ye yun nan dong qing*

*Ilex parvifolia* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 57. 1911; *I. transarisanensis* Hayata ex Kanehira.

Leaf blade oblong-lanceolate, elliptic, or oblong, 1.2–2 × 0.5–0.7 cm, leathery, margin crenulate-serrate, teeth aristate, apex acute to acuminate. Fl. Jun, fr. Nov.

• Mountain forests; 2000–3300 m. Taiwan.

51d. *Ilex yunnanensis* var. *paucidentata* S. Y. Hu, J. Arnold Arbor. 30: 340. 1949.

硬叶云南冬青 *ying ye yun nan dong qing*

Leaf blade ovate-lanceolate, 2–3.5 × 1–1.5 cm, thickly leathery, margin entire or 1–3-spinulose-serrate, apex acute and spiny.

• Margins of woods on hills; ca. 2000 m. NW Yunnan (Weixi).

52. *Ilex nanchuanensis* Z. M. Tan, J. Sichuan Univ., Nat. Sci. Ed. 1983(2): 79. 1983.

南川冬青 *nan chuan dong qing*

Shrubs evergreen, 1–2 m tall. Young branchlets green-brown, longitudinally angular and sulcate, puberulent or glabrous, lenticels distinct. Stipules minute; petiole 5–8 mm, glabrous or puberulent; leaf blade abaxially greenish, adaxially deep green, ovate-oblong, 3.5–5.5 × 1.2–2 cm, leathery, both surfaces glabrous, midvein slightly impressed adaxially, lateral veins 5–8 pairs, slightly raised on both surfaces, reticulate veins evident, base cuneate, margin crenulate-serrate, apex long acuminate. Flowers not known. Infructescences: 1-fruited cymes, solitary, axillary on current year's branchlets; fruiting pedicels 6–10 mm, glabrous or puberulent, with subulate bracteoles. Fruit red, globose, 4–5 mm in diam.; persistent calyx 4- or 5-lobed, lobes deltoid, glabrous, ciliate; persistent stigma discoid; pyrenes 4, ellipsoidal, ca. 2 mm, ca. 1 mm in diam., abaxially longitudinally 1-sulcate, laterally smooth. Fl. unknown, fr. Oct–Nov.

• Mountain forests; 600–800 m. Chongqing (Nanchuan).

**53. *Ilex shennongjiaensis*** T. R. Dudley & S. C. Sun, J. Arnold Arbor. 64: 63. 1983.

神农架冬青 shen nong jia dong qing

Trees evergreen, ca. 10 m tall, ca. 25 cm d.b.h.; bark gray-white, shiny. Young branchlets reddish brown, smooth, very sparsely puberulent, glabrescent; older branchlets grayish brown, shiny, terete, 3–4 mm in diam., glabrous; terminal buds shortly stalked, ovoid or ellipsoidal, 3–4 mm, glabrous or sparsely puberulent, apically acute. Stipules subulate, minute, ca. 0.5 mm, glabrous; petiole 2.5–3(–4) mm, sparsely puberulent, deeply sulcate adaxially; leaf blade adaxially deep green, shiny, elliptic-ovate, 2.5–4(–5) × (1–)1.5–2.5(–3) cm, thickly leathery, adaxially glabrous, midvein flat or sometimes impressed adaxially, base shortly attenuate or truncate to briefly cuneate, margin crenulate-serrate in upper part, apex acute to slightly obtuse, mucronate. Flowers not known. Inflorescences: cymes, solitary, axillary on current year's branchlets; peduncles erect; fruiting pedicels 5.5–12 mm, stout, glabrous; bracteoles 2, ovate, 1–1.5 mm, glabrous. Fruit red, depressed globose, 8–12 mm in diam., glabrous; persistent calyx explanate, 4–5 mm in diam., glabrous, 4–6-lobed, lobes 1–1.5 × 0.5–1 mm, apex obtuse to subacute, not ciliate; persistent stigma rounded, 1.2–2 mm in diam., 4-lobed; pyrenes 4 or 5, oblong, 4–5 mm, 2.5–3 mm in diam., abaxially 3-striate and sulcate, laterally smooth, not striate, endocarp bony. Fl. unknown, fr. Aug–Sep.

- Thickets; 1800–2000 m. W Hubei (Shennongjia Linqu).

**54. *Ilex cornuta*** Lindley & Paxton, Paxton's Fl. Gard. 1: 43. 1850.

枸骨 gou gu

*Ilex burfordii* S. R. Howell; *I. cornuta* f. *burfordii* (De France) Rehder; *I. cornuta* var. *burfordii* De France; *I. cornuta* var. *fortunei* (Lindley) S. Y. Hu; *I. cornuta* f. *gaetana* Loesener; *I. fortunei* Lindley; *I. furcata* Lindley ex Göppert; *I. reevesiana* Fortune.

Shrubs or small trees, evergreen, (0.6–)1–4 m tall. Young branchlets longitudinally ridged and sulcate, puberulent or glabrescent along groove; older branchlets gray-white, subterete, longitudinally minutely fissured, leaf scars raised, lenticels absent. Petiole 4–8 mm, adaxially narrowly sulcate and puberulent; leaf blade abaxially greenish, adaxially deep green, shiny, quadrangular-oblong, rarely ovate, 4–9 × 2–4 cm, thickly leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 5 or 6 pairs, anastomosing near margin, evident abaxially, obscure adaxially, base rounded or subtruncate, margin with 1 or 2 spines per side, sometimes entire, apex with 1 strong spine often reflexed. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; persistent scales suborbicular, pubescent and ciliate; bracts ovate, pubescent, ciliate, apex obtuse or mucronate; flowers yellowish, 4-merous. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; pedicels 5–6 mm, glabrous; bracteoles basal, broadly deltoid; calyx discoid, ca. 2.5 mm in diam., lobes broadly deltoid, ca. 0.7 × 1.5 mm, membranous, sparsely puberulent, ciliate; corolla rotate, ca. 7 mm in diam., petals reflexed, oblong-ovate, 3–4 mm, basally connate; stamens ca. as long as or slightly longer than petals, anthers oblong-

ovoid, ca. 1 mm; rudimentary ovary subglobose, apex obtuse or rounded, indistinctly 4-lobed. Female inflorescences: 1-flowered cymes; pedicels 7–9 mm, glabrous; bracteoles 2, basal, broadly triangular; calyx and corolla as in male flowers; staminodes ca. 4/5 as long as petals, sterile anthers ovoid-sagittate; ovary oblong-ovoid, 3–4 mm, ca. 2 mm in diam., stigma discoid, 4-lobed. Fruit red, globose, 8–10 mm in diam.; fruiting pedicel 1.3–1.4 cm; persistent calyx quadrangular; persistent stigma discoid, distinctly 4-lobed; pyrenes 4, obovoid or ellipsoidal, 7–8 mm, ca. 5 mm in diam., rugose and rugose-pitted throughout, abaxially longitudinally 1-sulcate, endocarp bony. Fl. Apr–May, fr. Aug–Dec.  $2n = 38^*$ .

Shrubby areas, sparse forests, hillsides, streamsides, roadsides, near villages; 100–1900 m. Anhui, Beijing, Fujian, Guangdong, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Tianjin, Zhejiang [Korea].

**55. *Ilex hylonoma*** Hu & T. Tang, Bull. Fan Mem. Inst. Biol. 9: 250. 1940.

细刺枸骨 xi ci gou gu

Trees evergreen, to 10 m tall. Branchlets castaneous, straight, glabrescent or glabrous; terminal buds conical, slender, glabrous, apically acute, with ciliate bud scales. Leaves on first and second year's branchlets; stipules deltoid, minute, ca. 1 mm, apically acute; petiole 8–14 mm, abaxially rugose, adaxially sulcate and minutely pubescent or glabrous; leaf blade abaxially greenish, adaxially green, elliptic, oblong-elliptic, lanceolate, oblanceolate, or ovate-lanceolate, 6–12.5 × (1.8–)2.4–4.5 cm, thinly to thickly leathery, midvein adaxially impressed, pilose, glabrescent, or glabrous, lateral veins 9 pairs, raised and prominent abaxially, obscurely impressed adaxially, branched and anastomosing near margin, reticulate veinlets rather obscure abaxially, evident adaxially, base obtuse or acute, rarely cuneate, margin coarsely and sharply serrate, sometimes teeth ending in weak spines, apex shortly acuminate. Inflorescences: cymes, fasciculate, axillary on second year's branchlets. Male inflorescences: cymes of order 2, 3-flowered, sparsely pubescent; peduncles ca. 1 mm; bracts deltoid, glabrous and ciliate, apex acute; pedicel ca. 3 mm; bracteoles 2, basal, ciliate; flowers 4-merous, yellowish; calyx ca. 1.8 mm in diam., glabrous, lobes broadly deltoid, ca. 0.5 × 0.5–1 mm, ciliate, apex obtuse; corolla rotate, petals obovate-elliptic, 3.3–3.5 × ca. 1.8 mm, basally connate; stamens slightly longer than petals, anthers ovoid; rudimentary ovary subglobose. Female flowers not known. Inflorescences: 1-fruited cymes, few fascicled; fruiting pedicels ca. 2 mm; bracteoles 2, subbasal. Fruit brown, ellipsoid-subglobose, 0.8–1.2 cm in diam., quite rugose when dry; persistent calyx explanate, ca. 3 mm in diam.; persistent stigma prominent, thickly discoid or nearly mammilliform; pyrenes 4, obovoid or oblong, trigonous in cross section, apical end obliquely retuse, 7–9 mm, 3–4 mm in diam., abaxially irregularly rugose and pitted, with a median longitudinal ridge, endocarp bony. Fl. Mar–May, fr. Jul–Nov.

• Forests, hills; 300–1800 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Sichuan, Zhejiang.

- 1a. Leaf blade thinly leathery, elliptic or oblong-elliptic, midvein adaxially

sparsely puberulent or glabrescent ..... 55a. var. *hylonoma*  
 1b. Leaf blade leathery or thickly leathery,  
 lanceolate, oblanceolate, ovate-lanceolate,  
 or elliptic, midvein adaxially glabrous ..... 55b. var. *glabra*

**55a. *Ilex hylonoma* var. *hylonoma***

细刺枸骨(原变种) *xi ci gou gu* (*yuan bian zhong*)

Branchlets glabrous or glabrescent. Leaf blade elliptic or oblong-elliptic, 6–12.5 × 2.4–4.5 cm, thinly leathery, midvein adaxially sparsely puberulent or glabrescent. Fruit ellipsoidal-subglobose, 1–1.2 cm in diam.; pyrenes obovoid. Fl. Mar–May, fr. Oct–Nov.

• Forests on hills; 700–1800 m. Guizhou, Sichuan.

**55b. *Ilex hylonoma* var. *glabra*** S. Y. Hu, *J. Arnold Arbor.* 30: 351. 1949.

光叶细刺枸骨 *guang ye xi ci gou gu*

Branchlets, terminal buds, petiole, midvein, and fruiting pedicels glabrous. Leaf blade lanceolate, oblanceolate, ovate-lanceolate, or elliptic, 6–10 × 1.8–4.2 cm, leathery or thickly leathery. Fruit ellipsoid or subglobose, 8–10 mm in diam.; pyrenes oblong, trigonous. Fl. unknown, fr. Jul.

• Forests, hills; ca. 300 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Zhejiang.

**56. *Ilex centrochinensis*** S. Y. Hu, *J. Arnold Arbor.* 30: 351. 1949.

华中枸骨 *hua zhong gou gu*

*Ilex aquifolium* Linnaeus var. *chinensis* Loesener; *I. dipyrrena* Wallich f. *leptacantha* (Lindley & Paxton) Loesener; *I. dipyrrena* var. *leptacantha* (Lindley & Paxton) Loesener; *I. huoshanensis* Y. H. He; *I. leptacantha* Lindley & Paxton.

Shrubs evergreen, 1.5–3 m tall. Branchlets brown or gray-brown, slender, longitudinally ridged and sulcate, puberulent or glabrescent, lenticels absent; terminal buds conical, thin, puberulent or glabrescent, apically acute, with ciliate bud scales. Petiole 5–8 mm, abaxially rugose, adaxially shallowly sulcate, glabrous or sparsely puberulent; leaf blade abaxially greenish, adaxially dark green, shiny, elliptic-lanceolate, rarely ovate-elliptic, 4–9 × 1.5–2.8 cm, leathery, midvein adaxially shallowly impressed, puberulent near base, lateral veins 6–8 pairs, abaxially shallowly prominent or obscure, adaxially obscure, rarely evident, base broadly cuneate or subrounded, margin with 3–10 pairs of spinose teeth 2–4 mm, teeth apically yellow-brown or black, apex acuminate, spinose. Inflorescences: 1-flowered cymes, solitary or fasciculate, axillary on second year's branchlets. Male inflorescences: cymes fasciculate; bracts ovate-lanceolate, pubescent, ciliate; flowers 4-merous, yellow; pedicels 1–2 mm, puberulent; bracteoles 2, median, deltoid, ciliate; calyx patelliform, ca. 2.5 mm in diam., deeply lobed, lobes ovate or deltoid, puberulent and ciliate; corolla rotate, ca. 6 mm in diam., petals oblong, ca. 3 mm, basally shallowly connate, apex ciliate; stamens longer than petals, anthers oblong-ovoid; rudimentary ovary subglobose, apex rounded. Female flowers not known. Inflorescences: cymes, solitary or fasciculate, fascicles 2- or 3-fruited; fruiting pedicels ca. 2 mm, puberulent, with 2

subbasal, ciliate bracteoles. Fruit purplish red, globose, 6–7 mm in diam.; persistent calyx explanate, quadrangular, lobes ciliate; persistent stigma thinly discoid, 4-lobed; pyrenes 4, oblong-trigonous, ca. 6 mm, ca. 3 mm in diam., abaxially longitudinally 1-ridged, rugose and pitted throughout, endocarp stony. Fl. Mar–Apr, fr. Aug–Nov.

• Margins of woods, by small streams, shrubby areas at roadsides; 500–1000 m. Anhui (cultivated), Chongqing (Fengjie, Wushan), Hubei, Yunnan.

**57. *Ilex zhejiangensis*** C. J. Tseng ex S. K. Chen & Y. X. Feng, *Acta Phytotax. Sin.* 37: 144. 1999.

浙江冬青 *zhe jiang dong qing*

Shrubs or small trees, evergreen, 2–4 m tall. Branches longitudinally angular, pubescent or glabrescent. Petiole 4–5 mm, puberulent; leaf blade green, ovate-elliptic or elliptic, rarely ovate, 3–6 × 1.5–3 cm, leathery, midvein abaxially glabrous, adaxially impressed, sulcate, densely puberulent, lateral veins 5–7 pairs, distinctly raised abaxially, slightly impressed adaxially, reticulate veins obscure on both surfaces, base rounded or obtuse, margin sparsely (2–)4–7-spinulose-serrate, teeth black, apex acute, rarely obtuse. Inflorescences: 1-flowered cymes, fasciculate, axillary. Male flowers 4-merous; calyx lobes deltoid-ovate, ciliate; petals oblong, basally connate; stamens 4, ca. as long as petals. Female flowers not known. Inflorescences: fruiting pedicels 4–8 mm, puberulent or glabrescent; bracteoles 2, basal. Fruit red, subglobose, ca. 8 mm, 7–8 mm in diam.; persistent calyx patelliform, quadrangular, lobes broadly deltoid, ciliate; persistent stigma navel-shaped or discoid; pyrenes ovoid, ca. 4 mm, ca. 3 mm in diam., irregularly rugose and sulcate, endocarp woody. Fl. Apr, fr. Aug–Nov.

• Forest margins, shrub forests, hills; 500–1200 m. Zhejiang (Hangzhou, Jingning, Tiantai).

**58. *Ilex perryana*** S. Y. Hu, *J. Arnold Arbor.* 30: 367. 1949.

皱叶冬青 *zhou ye dong qing*

*Ilex georgei* H. F. Comber var. *rugosa* H. F. Comber.

Shrubs prostrate, evergreen, 20–30 cm tall. Branchlets straight, stout, puberulent, with distinctly raised leaf scars; terminal buds ovoid, puberulent. Leaves on first to sixth year's branches; petiole 1–2 mm, dorsiventrally flattened, glabrous or puberulent; leaf blade abaxially greenish, adaxially deep green, shiny, hexangular-subrhombic, rarely elliptic, 1–3.2 × 0.7–1.5 cm, thickly leathery, abaxially smooth, adaxially rugose, both surfaces glabrous, midvein obscure abaxially, deeply impressed adaxially, lateral veins 3 or 4 pairs, obscure abaxially, deeply impressed adaxially, base obtuse, rarely rounded, margin subentire, sinuate, with 2 or 3 pairs of spines, apex broadly deltoid, acute, with 1 spine ca. 2 mm. Inflorescences: 1-flowered cymes, few fascicled, fascicles 2–4-flowered, axillary on second year's branchlets, persistent bud scales basal, cartilaginous, rounded, glabrous; flowers 4-merous. Male inflorescences: bracts ovate, slightly puberulent, ciliate; pedicels 2–3 mm, glabrous; bracteoles 2, submedian, glabrous, or ciliate; flowers 4-merous; calyx patelliform, ca. 3 mm in diam., 4-lobed, lobes ovate, ca. 0.9



mm, glabrous or ciliate; corolla 4–5 mm in diam., petals ovate, ca. 1.5 mm, basally slightly connate; stamens equaling or slightly longer than petals, anthers ovoid-oblong, ca. 0.75 mm; rudimentary ovary pulvinate, obscurely lobed. Female flowers: calyx and corolla as in male flowers; staminodes shorter than petals, sterile anthers ovoid; ovary ovoid, 1.5–2 mm, stigma thickly discoid. Fruit red, ellipsoidal-globose, 6–7 mm in diam.; fruiting pedicel 3–4 mm; persistent stigma discoid; pyrene 1, subglobose, slightly dorsiventrally flattened, ca. 5 mm in diam., abaxially palmately striate, not sulcate, adaxially canaliculate, endocarp woody. Fl. May–Jul, fr. Sep–Nov.

Broad-leaved forests, *Abies* forests, *Picea* forests, thickets, open rocky slopes; 2400–3800 m. SE Xizang, N Yunnan [NE India, N Myanmar].

**59. *Ilex wugongshanensis*** C. J. Tseng ex S. K. Chen & Y. X. Feng, *Acta Phytotax. Sin.* 37: 144. 1999.

武功山冬青 *wu gong shan dong qing*

Shrubs evergreen, ca. 2 m tall. Branchlets brown, terete, longitudinally ridged, puberulent or glabrescent, minutely tuberculate; terminal buds ovoid, pubescent. Petiole 3–9 mm, densely or sparsely puberulent, adaxially sulcate; leaf blade adaxially green, oblong-ovate, oblong-lanceolate, or narrowly ovate, rarely ovate, 4.5–6 × (1.5–)2–2.5(–3) cm, thinly leathery, glabrous, midvein adaxially slightly impressed, puberulent, lateral veins 4–6 pairs, impressed adaxially, reticulate veins obscure, base obtuse or subrounded, margin serrate with 2 or 3(or 4) pairs of teeth, teeth each tipped with a weak spine, apex angular with a spine. Male inflorescences: 1-flowered cymes, fasciculate, axillary; pedicel ca. 1.5 mm, puberulent; flowers 4-merous; calyx discoid (patelliform), glabrous, 4-lobed, lobes deltoid-ovate, ciliate; petals 4, obovate-oblong, ca. 4 mm, not ciliate, basally slightly connate; stamens ca. 3/4 as long as petals; rudimentary ovary ovoid, apex indistinctly 2-lobed. Female flowers not known. Fruit red, globose, 6–7 mm in diam.; persistent calyx ca. 3 mm in diam., 4-lobed, lobes deltoid-ovate, glabrous, not ciliate; persistent stigma thin discoid. Pyrenes suboblong, ca. 5 mm, ca. 3 mm in diam., both ends obtuse, abaxially palmately striate and sulcate, endocarp stony. Fl. and fr. unknown.

• Shrubby areas on mountain slopes; 500–1300 m. Jiangxi (Wugong Shan, Wuning).

**60. *Ilex miguensis*** S. Y. Hu, *J. Arnold Arbor.* 32: 396. 1951.

米谷冬青 *mi gu dong qing*

Shrubs evergreen. Branchlets gray, glabrous, current year's branchlets 2–2.5 mm in diam.; terminal bud conical, glabrous. Petiole ca. 3 mm, glabrous; leaf blade olivaceous and shiny on both surfaces, elliptic, 1.5–3 × 0.7–1.5 cm, leathery, midvein impressed adaxially, lateral veins 4 or 5 pairs, raised abaxially, impressed adaxially, reticulate veins evident abaxially, base acute, rarely obtuse, margin ± sparsely spinose-serrate, apex acute with a spine. Flowers not known. Inflorescences: 1-fruited cymes, fasciculate, fascicles often 2-fruited, axillary; fruiting pedicels ca. 3 mm, glabrous; bracteoles 2, basal. Fruit red, globose, ca. 4 mm in diam.; persistent calyx quadrangular, ca. 2 mm in diam., not ciliate; persistent stigma discoid;

pyrenes 4, ca. 3 mm, ca. 2 mm in diam., abaxially palmately striate, not sulcate, endocarp woody. Fl. and fr. unknown.

• Forests; 3300–3600 m. SE Xizang.

**61. *Ilex euryoides*** C. J. Tseng, *Bull. Bot. Res.*, Harbin 1(1–2): 16. 1981.

桧叶冬青 *ling ye dong qing*

Trees evergreen, small. Branchlets yellow-brown, terete, longitudinally ridged, densely pubescent, branches more than 2 years old longitudinally fissured; terminal buds ovoid, densely pubescent. Leaves on first to second year's branchlets; petiole 3–4 mm, densely pubescent; leaf blade abaxially greenish, adaxially green, shiny when dry, ovate, rarely ovate-lanceolate, 2.5–3.5 × 1–1.5 cm, leathery, both surfaces glabrous, midvein abaxially slightly raised, adaxially slightly impressed, puberulent, lateral veins 6 or 7 pairs, slightly raised abaxially, indistinct adaxially, reticulate veins evident abaxially, absent adaxially, base obtuse, margin sparsely 5- or 6-spinose-dentate, apex triangular, acuminate, terminated by a short spine. Flowers not known. Inflorescences: 1-fruited cymes, fasciculate, axillary on current year's branchlets; fascicles 3- or 4-fruited; bracts ovate, ciliate; fruiting pedicels ca. 2 mm, pubescent, with basal bracteole. Fruit red, globose, 5–5.5 mm in diam., minutely tuberculate (under magnifying lens); persistent calyx quadrangular, ca. 2 mm in diam., 4-lobed, lobes deltoid-ovate, ciliate; persistent stigma mammilliform, nearly square, retuse at median; pyrenes 4, oblong, 4–5 mm, ca. 3 mm in diam., both ends obtuse, abaxially longitudinally 4-striate and 3-sulcate, laterally striate and sulcate, endocarp woody. Fl. unknown, fr. Oct.

• Sparse woods; 800–1500 m. W Hubei (Lichuan).

**62. *Ilex pernyi*** Franchet, *Nouv. Arch. Mus. Hist. Nat.*, sér. 2, 5: 221. 1883.

猫儿刺 *mao er ci*

Shrubs or trees, evergreen, 1–5(–10) m tall; bark silver-gray. Branchlets terete or subterete, densely dirty-gray pubescent; terminal buds ovoid-conical, pubescent, apically acute. Petiole ca. 2 mm, pubescent; leaf blade abaxially greenish, adaxially dark green, shiny, ovate or ovate-lanceolate, (1.3–)1.5–3 × 0.5–1.4 cm, leathery, both surfaces glabrous, lateral veins 1–3 pairs, adaxially obscure, base rounded or truncate, margin sinuate-dentate with 1–3 pairs of spines, apex triangularly acuminate, acumen 1.2–1.4 cm, with a strong spine. Inflorescences: 1-flowered cymes, fasciculate, axillary on second year's branchlets; flowers yellowish, 4-merous. Male inflorescences: pedicels ca. 1 mm, glabrous; bracteoles 2, suborbicular, above middle, ciliate; calyx ca. 2 mm in diam., deeply 4-lobed, lobes broadly deltoid or suborbicular, ciliate; corolla rotate, ca. 7 mm in diam., petals ca. 3 mm, broadly elliptic, apical half ciliate; stamens slightly longer than petals; rudimentary ovary conical-ovoid, apex obtuse. Female inflorescences: pedicels ca. 2 mm; calyx as in male flowers; petals free, ovate, ca. 2.5 mm; staminodes ca. 2/3 as long as petals, sterile anthers ovoid; ovary ovoid, stigma discoid. Fruit globose or depressed globose, 7–8 mm in diam.; persistent calyx quadrangular, ca. 2.5 mm in diam., ciliate; persistent stigma thickly discoid, 4-lobed; pyrenes 4, obovoid or oblong, 4.5–5.5

mm, ca. 3.5 mm in diam., abaxially palmately striate and sulcate, laterally reticulately striate and sulcate, endocarp thick, woody. Fl. Apr–May, fr. Oct–Nov.

• Forests or shrubby areas in valleys; 1000–2500 m. Anhui, S Gansu, Guizhou, Henan, W Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Xizang, Zhejiang.

**63. *Ilex wenchowensis*** S. Y. Hu, J. Arnold Arbor. 30: 360. 1949.

温州冬青 wen zhou dong qing

Shrubs evergreen, small, 1.5–2 m tall. Branchlets green, longitudinally angular, pubescent. Petiole 1–2 mm, puberulent; leaf blade abaxially greenish, adaxially green, slightly shiny, ovate, 3–6.5 × 1.2–3 cm, leathery, both surfaces glabrous, midvein impressed pubescent adaxially, lateral veins 4 or 5 pairs, obscure abaxially, evident adaxially, base truncate or rounded, margin sinuate, with 3–7 pairs of spines, apex acuminate, with spine. Inflorescences: 1-flowered cymes, fasciculate, axillary on second year's branchlets; flowers 4-merous. Male inflorescences: pedicels ca. 1 mm, puberulent; bracts 2, large, ciliate; calyx patelliform, ca. 2 mm in diam., deeply 4-lobed, lobes deltoid, apex obtuse, ciliate; corolla rotate, 6–7 mm in diam., petals oblong, ca. 3 × 2.5 mm, sparsely ciliate, basally slightly connate; stamens 4, ca. as long as petals, anthers ovoid; rudimentary ovary conical, ca. 1 mm, apex obtuse. Female flowers not known. Infructescences: fruiting pedicels 4–5 mm, puberulent; bracteoles 2, basal, ovate, ciliate. Fruit depressed globose, 5–6 mm, ca. 8 mm in diam., longitudinally sulcate; persistent calyx explanate; persistent stigma thinly discoid or navel-shaped; pyrenes 4, subglobose, ca. 5 mm, ca. 4.5 mm in diam., abaxially palmately striate, not sulcate and not longitudinally impressed, laterally reticulately striate and sulcate, endocarp woody. Fl. May, fr. Oct.

• Thickets on slopes and in valleys; 600–900 m. Zhejiang (Jinyun, Wenzhou).

**64. *Ilex synpyrena*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 17. 1981.

合核冬青 he he dong qing

Shrubs. Branchlets yellow-brown, terete, thick, hirsute-pubescent or glabrescent, minutely fissured, bud scales convex, circular, lenticels absent; terminal buds ovoid, ca. 6 mm, ca. 4 mm in diam., glabrous. Leaves only on current year's branchlets; petiole 3–4 mm, sulcate, adaxially puberulent; leaf blade brown when dry, oblong-elliptic, 7–8 × 2–2.5 cm, thickly leathery, midvein adaxially impressed, puberulent, lateral veins 6–8 pairs, obscure abaxially, slightly impressed adaxially, base cuneate, margin entire, apex acute. Flowers not known. Infructescences: 1-fruited cymes, solitary or few fascicled, fascicles 2- or 3-fruited, axillary on current year's branchlets; fruiting pedicels ca. 1.5 mm, thick; bracteoles 2, narrowly ovate-triangular, ca. 2 × 1 mm, not ciliate. Fruit shiny, black-purple when dry, globose, 8–12 mm in diam., glabrous; persistent calyx explanate, ca. 4 mm in diam., 4-lobed, lobes triangular, glabrous; persistent stigma discoid; pyrenes 1 or 2, oblong, ca. 8 mm, ca. 5.5 mm in diam., both ends obtuse, longitudinally thickly striate and deeply sulcate, endocarp stony. Fl. and fr. unknown.

• Yunnan.

**65. *Ilex georgei*** H. F. Comber, Notes Roy. Bot. Gard. Edinburgh 18: 50. 1933.

长叶枸骨 chang ye gou gu

*Ilex pernyi* Franchet var. *manipurensis* Loesener.

Shrubs evergreen, 1–5(–8) m tall. Branchlets gray-yellow, terete, longitudinally shallowly striate-sulcate, densely pubescent; terminal buds conical, pubescent. Petiole 1–2 mm, adaxially sulcate, pubescent; leaf blade abaxially greenish, adaxially dark green and shiny, lanceolate or ovate-lanceolate, rarely ovate, 1.8–4.5 × 0.7–1.5 cm, thickly leathery, glabrous, midvein adaxially shallowly impressed, pubescent, lateral veins 5–7 pairs, evident abaxially, indistinct adaxially, reticulate veins indistinct on both surfaces, base rounded or cordate, margin thickened, recurved, subtire or with 2 or 3 pairs of spines, apex acuminate, with a yellow spine ca. 3 mm. Inflorescences: cymes, fasciculate, axillary on second year's branchlets. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; 1-flowered pedicels 2–4 mm; 3-flowered peduncles and pedicels ca. 1 mm, sparsely puberulent; bracts ovate, ciliate; bracteoles 2, pubescent; flowers 4-merous; calyx ca. 2 mm in diam., 4-lobed, lobes ovate, apex obtuse or rounded, ciliate; corolla rotate, petals ca. 2 mm, sparsely ciliate, basally connate; stamens longer than petals, anthers oblong; rudimentary ovary subglobose or ovoid, apex obtuse, sometimes slightly 2-lobed. Female flowers not known. Infructescences: 1-fruited cymes; fascicles 2(or 3)-fruited; fruiting pedicels ca. 2 mm, pubescent. Fruit red, obovoid-ellipsoidal, 4–7 mm, 3–4 mm in diam.; persistent calyx explanate, 4-lobed, lobes broadly angular, sparsely puberulent; persistent stigma discoid, retuse at middle; pyrenes 1 or 2, obovoid-oblong, 4–5 mm, 2.5–3 mm in diam., abaxially palmately striate and sulcate, endocarp woody. Fl. Feb–May, fr. Oct.

Sparse forests, shrub forests, roadsides; 1600–3700 m. W Sichuan, Xizang, Yunnan [NE India, N Myanmar].

**66. *Ilex bioritsensis*** Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 53. 1911.

刺叶冬青 ci ye dong qing

*Ilex bioritsensis* var. *ovatifolia* H. L. Li; *I. diplosperma* S. Y. Hu; *I. pernyi* Franchet f. *veitchii* (Rehder) Rehder; *I. pernyi* var. *veitchii* Rehder.

Shrubs or trees, evergreen, 1.5–10 m tall. Branchlets gray-brown, subterete, sparsely puberulent or glabrescent, smooth, without lenticels; terminal buds conical, puberulent, apically acute, bud scales ciliate. Leaves on up to fourth year's branches; petiole ca. 3 mm, pubescent; leaf blade abaxially greenish, adaxially deep green, shiny, ovate to rhombic, 2.5–5.5 × 1.5–2.5 cm, leathery, glabrous, midvein sulcate, puberulent adaxially, lateral veins 4–6 pairs, indistinct or slightly raised abaxially, impressed adaxially, reticulate veins obscure on both surfaces, base rounded or truncate, margin sinuate, with 3 or 4 pairs of strong spines, apex acuminate, with spine ca. 3 mm. Inflorescences: 1-flowered cymes, fasciculate, axillary on second year's branchlets; bracts ovate, ca. 1.75 mm, ciliate; flowers 4-merous,

yellowish green. Male inflorescences: pedicels ca. 2 mm, glabrous; bracteoles 2, ovate; calyx patelliform, ca. 3 mm in diam., lobes broadly deltoid, ciliate; petals broadly elliptic, ca. 3 mm, basally slightly connate; stamens longer than petals, anthers oblong; rudimentary ovary ovoid, ca. 1 mm in diam. Female inflorescences: pedicels ca. 2 mm; bracteoles 2, subbasal, glabrous; calyx as in male flowers; petals free; staminodes ca. 1/2 as long as petals, sterile anthers cordate; ovary oblong-ovoid, 2–4 mm, stigma thinly discoid. Fruit red, ellipsoidal, 8–10 mm, ca. 7 mm in diam.; persistent calyx explanate; persistent stigma discoid; pyrenes 2, dorsiventrally compressed, ovoid or subglobose, 5–6 mm, 4–5 mm in diam., slightly convex, abaxially palmately striate and sulcate, adaxially striate, endocarp woody. Fl. Apr–May, fr. Jul–Oct.

• Evergreen broad-leaved forests, thickets; 900–4000 m. Guizhou (Fanjing Shan), SW Hebei, SW Hubei, Hunan, Sichuan, C Taiwan, N Yunnan.

**67. *Ilex ciliospinosa*** Loesener in Sargent, Pl. Wilson. 1: 78. 1911.

纤齿枸骨 xian chi gou gu

*Ilex bioritsensis* Hayata var. *ciliospinosa* (Loesener) H. F. Comber.

Shrubs or small trees, evergreen, 1–7 m tall. Young branchlets brown, shiny, or gray-white, longitudinally striate, densely pubescent; terminal buds ovoid, pubescent, apex cuspidate. Petiole 2–3 mm, rugose, pubescent; leaf blade abaxially greenish, adaxially deep green, shiny, elliptic or ovate-elliptic, 2.5–4 × 1–2.5 cm, leathery, glabrous, midvein abaxially raised and glabrous, adaxially impressed and pubescent, lateral veins 4–6 pairs, indistinct adaxially, base rounded, rarely obtuse, margin spinescent-serrate, with 4–6 pairs of spines, apex shortly acuminate or acute, with a weak spine. Inflorescences: 1-flowered cymes, fasciculate, fascicles 2–5-flowered, axillary on current year's branchlets; bracts lanceolate, ciliate; pedicels 2–3 mm, pubescent or glabrescent; bracteoles 2, median or submedian; flowers yellowish, 4-merous. Male flowers: calyx deeply 4-lobed, lobes ovate-deltoid, apex obtuse or rounded, ciliate; corolla rotate, ca. 6 mm in diam., petals ovate, ca. 3 × 2 mm, basally slightly connate, apex ciliate; stamens longer than petals, anthers oblong; rudimentary ovary ovoid, ca. 1 mm in diam. Female flowers: calyx as in male flowers; corolla erect, ca. 6 mm in diam., petals ovate, ca. 2.5 mm; staminodes ca. as long as petals, sterile anthers sagittate; ovary oblong, ca. 2 mm, ca. 1.5 mm in diam., stigma discoid. Infructescences: solitary or paired, rarely 3-fruited fascicles. Fruit red, ellipsoid, 7–8 mm, 5–6 mm in diam.; fruiting pedicel 2–4 mm, pubescent or glabrescent; persistent calyx quadrangular, 2–3 mm in diam., ciliate; persistent stigma thinly discoid; pyrenes (1 or)2(or)3, obovoid, ca. 5 mm, ca. 3.5 mm in diam., abaxially palmately striate and sulcate, endocarp thickly woody. Fl. Apr–May, fr. Sep–Oct.  $2n = 40^*$ .

• Mixed forests, *Picea* forests, *Abies* forests on mountain slopes or roadsides; 1500–2600(–3100) m. SW Hubei, Sichuan, SE Xizang, Yunnan.

**68. *Ilex dipyrena*** Wallich in Roxburgh, Fl. Ind. 1: 473. 1820.

双核枸骨 shuang he gou gu

*Ilex bioritsensis* Hayata var. *integra* H. F. Comber; *I. dipyrena* var. *connexiva* W. W. Smith; *I. dipyrena* var. *pau-cispinosa* Loesener; *I. monoplyrena* G. Watt ex Loesener.

Shrubs or trees, evergreen, 2–15(–25) m tall; bark gray-black, slightly longitudinally fissured. Branchlets striate, puberulent or glabrescent; old branches gray-yellow, thick and strong, smooth or minutely fissured, lenticels obscure, leaf scars semicircular. Petiole 3–6 mm, abaxially rugose, adaxially sulcate and pubescent; leaf blade abaxially greenish, adaxially deep green, shiny, elliptic-oblong, elliptic, or ovate-elliptic, rarely ovate, 4–10 × 2–4 cm, thickly leathery, both surfaces glabrous, midvein impressed, puberulent or glabrescent adaxially, lateral veins 6–9 pairs, raised abaxially, impressed adaxially, base broadly cuneate to rounded, margin entire or subentire with 3–14 spines per side, apex shortly acuminate to acuminate, with a sharp spine. Inflorescences: 1-flowered cymes, fasciculate, axillary on second year's branchlets; bracts ovate-lanceolate, ciliate; flowers greenish, 4-merous. Male inflorescences: pedicels 2–3 mm, sparsely puberulent or glabrescent; bracteoles basal, lanceolate, ca. 1.5 mm; calyx discoid, ca. 3 mm in diam., deeply lobed, lobes ovate-deltoid, sparsely ciliate, apex acute or obtuse; corolla rotate, ca. 7 mm in diam., petals ovate, ca. 3 mm, ciliate, basally slightly connate; stamens 4, longer than petals, anthers oblong-ovoid; rudimentary ovary ovoid, ca. 1.5 mm in diam., apex obtuse or truncate. Female inflorescences: pedicels 1–3 mm, sparsely puberulent or glabrescent; calyx and corolla as in male flowers; staminodes slightly shorter than petals, sterile anthers subcordate or sagittate; ovary ovoid, stigma discoid, lobed. Fruit red, globose, 7–9 mm in diam.; persistent calyx quadrangular; persistent stigma discoid, 2–4-lobed; pyrenes (1 or)2(–4), when 2 pyrenes: oblong-ellipsoidal or subglobose, 5–7 mm, ca. 5 mm in diam., abaxially palmately striate and sulcate, adaxially striate-sulcate; when 4 pyrenes: oblong, ca. 3.5 mm in diam.; endocarp woody. Fl. Apr–Jul, fr. Jun–Dec.  $2n = 40$ .

Evergreen broad-leaved forests, mixed forests, shrubby areas, valleys, roadsides; 2000–3400 m. SW Hubei, SW Sichuan (Muli), SE Xizang, Yunnan [Bhutan, N India, N Myanmar, Nepal].

**69. *Ilex dabieshanensis*** K. Yao & M. B. Deng, Acta Phytotax. Sin. 25: 324. 1987.

大别山冬青 da bie shan dong qing

Trees evergreen, small, ca. 5 m tall, glabrous; bark gray-white, smooth. Branches yellow-brown or castaneous-brown when dry, strong, terete, longitudinally fissured, with subcircular convex leaf scars; current year's branchlets longitudinally ridged; terminal buds ovoid-conical, bud scales ovoid, midvein raised, margin entire or serrate, apex acuminate. Leaves on first to second year's branchlets; stipules subdeltoid, minute; petiole yellow-brown or castaneous-brown when dry, strong, 5–8 mm, abaxially rugose, adaxially slightly sulcate or flat; leaf blade adaxially olivaceous or brown-olivaceous, shiny, ovate-oblong, ovate, or elliptic, 5.5–8 × 2–4 cm, thickly leathery, both surfaces glabrous, midvein slightly impressed adaxially, lateral veins 4–6 pairs, anastomosing near margin, reticulate veins obscure on both surfaces, base subrounded or obtuse, margin slightly revolute, with 4–8 pairs of spines, spines ca. 2 mm, apex

triangular-acute, with a spine. Male inflorescences: 1-flowered cymes, glomerate, fasciculate, axillary on first to second year's branchlets; pedicels 1–1.5 mm, glabrous; flowers 4-merous, yellow-green; calyx subpatelliform, lobes suborbicular, ciliate; petals obovate, ca. 2 mm, basally slightly connate; stamens ca. 2/3 as long as petals, anthers oblong; rudimentary ovary ovoid, ca. 0.75 mm in diam., apex obtuse. Female flowers not known. Infructescences: 1-fruited cymes, fasciculate, axillary; rachis strong, ca. 3 mm, glabrous; fruiting pedicels ca. 2 cm; bracts 2, basal, ovate-oblong, glabrous. Fruit dark brown when dry, subglobose or ellipsoidal, 5–7 mm, 4–5 mm in diam.; persistent calyx 4-lobed, lobes ovate-deltoid; persistent stigma thickly discoid; pyrenes 3, ovoid-ellipsoidal, ca. 5 mm, ca. 3 mm in diam., abaxially palmately or longitudinally striate and sulcate, endocarp leathery. Fl. Mar–Apr, fr. Oct.

- Slopes, roadsides, streamsides; 100–500 m. W Anhui (Huoshan).

**70. *Ilex chengkouensis*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 15. 1981.

城口冬青 cheng kou dong qing

Trees evergreen. Young branchlets dark brown, longitudinally angular and sulcate, pubescent; second year's branchlets dark brown, minutely tuberculate. Petiole short, ca. 2 mm, abaxially rugose, adaxially sulcate, glabrous; leaf blade abaxially greenish, adaxially deep green, shiny, oblong, or ovate-oblong, 3.5–7 × 2–3.5 cm, leathery, glabrous except puberulent on midvein adaxially, midvein adaxially impressed and becoming narrowly sulcate, lateral veins 3–6 pairs, slightly raised abaxially, slightly impressed adaxially, reticulate veins obscure, base truncate or subcordate, margin with 2–5 pairs of large spines, spine tip black, apex narrowly deltoid-acuminate, with 1 thick spine. Flowers not known. Infructescences: 1-fruited cymes, solitary or few fascicled, axillary; fascicles 2-fruited. Fruit red, subglobose, ca. 9 mm in diam.; fruiting pedicel ca. 2 mm; persistent calyx 4-lobed, lobes suborbicular, ciliate; persistent stigma thickly discoid; pyrenes 4, oblong or ovoid, 6–8 mm, 4–5 mm in diam., palmately striate and sulcate, endocarp woody. Fl. May–Jun, fr. Oct.

- Forests, hills; 1500–2100 m. Chongqing (Chengkou), Sichuan (Wanyuan).

**71. *Ilex trichocarpa*** H. W. Li ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 9. 1985.

毛果冬青 mao guo dong qing

Trees evergreen, small, ca. 4 m tall. Branchlets terete, longitudinally ridged and sulcate, minutely pubescent; terminal buds ovoid-conical, densely pubescent, apically acuminate. Leaves on first to second year's branchlets; petiole 5–10 mm, densely pubescent, abaxially rugose, adaxially flat, convex, narrowly winged by decurrent leaf base; leaf blade abaxially greenish, adaxially green and shiny, obovate-oblong or oblong-lanceolate, 7.5–10 × 2–3.7 cm, leathery, abaxially glabrous, midvein adaxially slightly impressed or flat, sparsely puberulent, lateral veins 9 or 10 pairs, anastomosing near margin, raised and prominent on both surfaces, reticulate veins evident on both surfaces, base cuneate, margin recurved, sparsely serrate, teeth inwardly curved, apex abruptly or not acuminate. Flowers not

known. Infructescences: cymes, axillary. Fruit ovoid-globose, ca. 1 cm, ca. 8 mm in diam., densely puberulent; persistent stigma subquadrangular, thickly discoid; persistent calyx quadrangular, ca. 3 mm in diam., 4-lobed, lobes orbicular, ciliate; pyrenes 4, ellipsoidal, ca. 6 mm, ca. 4 mm in diam., abaxially irregularly striate and slightly sulcate, laterally irregularly longitudinally ridged and deeply sulcate, endocarp stony. Fl. unknown, fr. Nov.

- Shrubby areas; 1000–1500 m. SE Yunnan (Xichou).

**72. *Ilex kaushue*** S. Y. Hu, J. Arnold Arbor. 30: 372. 1949.

扣树 kou shu

*Ilex latifolia* Thunberg f. *puberula* W. P. Fang & Z. M. Tan.

Trees evergreen, ca. 8 m tall. Branchlets brown, strong, subterete, longitudinally ridged and sulcate, puberulent; terminal buds conical, large, pubescent, apically acute; bud scales serrulate. Leaves on first to second year's branchlets; petiole 2–2.2 cm, abaxially subrounded, rugose, adaxially sulcate, pubescent; leaf blade abaxially greenish, adaxially green and shiny, oblong to oblong-elliptic, 10–18 × 4.5–7.5 cm, leathery, midvein raised and keeled abaxially, impressed and sparsely puberulent adaxially, lateral veins 14 or 15 pairs, prominent on both surfaces, reticulate veins evident on both surfaces, base obtuse or cuneate, margin doubly serrate or densely serrate, apex acute or shortly acuminate. Inflorescences: cymes pseudopaniculate or pseudoracemose, axillary on current year's branchlets; flower buds glomerate; bracts basal, broadly ovate or suborbicular, ciliate. Male inflorescences: cymes of order 2 or 3, 3- or 4(–7)-flowered, pseudopaniculate; peduncles 1–2 mm; pedicels 1.5–3 mm, minutely puberulent; bracteoles ovate-lanceolate, minutely ciliate; calyx patelliform, deeply 4-lobed, lobes broadly ovate-deltoid, ca. 1.5 × 2 mm, membranous; petals 4, ovate-oblong, ca. 3.5 mm; stamens 4, shorter than petals, anthers ellipsoidal; rudimentary ovary ovoid. Female flowers not known. Infructescences: 1-fruited cymes, pseudoracemose; rachis strong, 4–6(–9) mm; fruiting pedicels (4–)8 mm, thick, pubescent or glabrescent. Fruit red, globose, ca. 11 mm, 9–12 mm in diam., densely puberulent; exocarp fragile when dry; persistent calyx explanate, 4–5 mm in diam., lobes deltoid, sparsely ciliate; persistent stigma navel-like; pyrenes 4, oblong, ca. 7.5 mm, 4–5 mm in diam., abaxially reticulately striate and sulcate, laterally rugose and pitted, endocarp stony. Fl. Apr–Jun, fr. Jul–Oct.

- Dense forests; 1000–1200 m. Guangdong, Guangxi, Hainan, Hubei, Hunan, Sichuan, SE Yunnan.

**73. *Ilex pubilimba*** Merrill & Chun, Sunyatsenia 5: 109. 1940.

毛叶冬青 mao ye dong qing

*Ilex hirsuticarpa* Tardieu.

Trees evergreen, 6–15 m tall. Branches terete, strong, densely dark yellow hirsute-pubescent; terminal buds small, densely pubescent. Leaves on first to second year's branchlets; stipules caducous; petiole 3–6 mm, densely pubescent; leaf blade abaxially pale, adaxially cinereous-olivaceous, shiny when dry, elliptic, rarely ovate-elliptic or lanceolate, 3–7 × 1.5–2.5 cm, thickly leathery, abaxially pubescent, midvein adaxially impressed and pubescent, lateral veins 6–8 pairs, obscure adaxially,

base rounded, obtuse, or cuneate, margin crenate-serrate, slightly recurved, apex shortly acuminate. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; bracts ovate or suborbicular, densely pubescent; flowers yellow-white, 4-merous. Male inflorescences: cymes of order 1 or 2, 1-3-flowered; peduncles 0.5-1 mm; pedicels 2-3 mm; bracteoles 2, basal; calyx patelliform, 1.5-2 mm, 4-lobed, lobes orbicular, pubescent, ciliate; corolla rotate, ca. 6 mm in diam., petals narrowly elliptic, ca. 2.5 mm, ciliate, basally slightly connate; stamens slightly shorter than petals, anthers ovoid; rudimentary ovary conical, ca. 1 mm in diam., apex obtuse. Female inflorescences: 1-flowered cymes; calyx and corolla as in male flowers; staminodes ca. 1/3 as long as petals, sterile anthers ovoid; ovary subglobose, ca. 1.75 mm in diam., sparsely pubescent, stigma discoid, convex. Fruit depressed globose, 5-6 mm, 7-8 mm in diam.; fruiting pedicel 3-5 mm, pubescent; persistent calyx orbicular, explanate, ca. 2 mm in diam., 4-lobed, ciliate; persistent stigma thinly discoid, rounded; pyrenes 4, subglobose or narrowly ellipsoid, 4-5 mm, 3.5-4 mm in diam., rugose, abaxially flattened and slightly impressed, endocarp woody. Fl. Mar, fr. Aug-Oct.

Dense forests; middle elevations. Hainan [Vietnam].

**74. *Ilex latifolia*** Thunberg in Murray, Syst. Veg., ed. 14, 168. 1784.

大叶冬青 da ye dong qing

*Ilex latifolia* var. *tarajo* (Göppert) Lavallée; *Ilex tarajo* Göppert.

Trees evergreen, to 20 m tall, ca. 60 cm d.b.h., glabrous throughout; bark gray-black, smooth. Branches yellow-brown or brown, strong, longitudinally ridged and sulcate, smooth; leaf scars evidently raised, broadly discoid or semicircular. Leaves on first to third year's branchlets; stipules broadly deltoid, very minute, apically acute; petiole subterete, 1.5-2.5 cm, ca. 3 mm in diam., abaxially rugose, adaxially slightly impressed; leaf blade abaxially greenish, adaxially deep green, shiny, oblong or ovate-oblong, 8-19(-28) × 4.5-7.5(-9) cm, thickly leathery, midvein impressed adaxially, lateral veins 12-17 pairs, obscure abaxially, obvious adaxially, base rounded or broadly cuneate, margin sparsely serrate, teeth black at tips, apex obtuse or shortly acuminate. Inflorescences: cymes, pseudopaniculate or pseudoracemose, axillary on second year's branchlets; rachis 1-2 cm; bud scales persistent, rounded, imbricate; flowers yellowish green, 4-merous. Male inflorescences: cymes of order 2-4, 3-9-flowered, pseudopaniculate; peduncles ca. 2 mm; bracts ovate or lanceolate, 5-7 × 3-5 mm; pedicels 6-8 mm; bracteoles 1 or 2, deltoid; calyx subcupuliform, ca. 3.5 mm in diam., 4-lobed, lobes orbicular; corolla rotate, ca. 9 mm in diam., petals ovate-oblong, ca. 3.5 × 2.5 mm, basally connate; stamens ca. as long as petals, anthers ovoid-oblong; rudimentary ovary subglobose, apex 4-lobed. Female inflorescences: cymes of order 1 or 2, 1-3-flowered, pseudopaniculate or pseudoracemose; peduncles ca. 2 mm; 1-flowered pedicels 5-8 mm; bracteoles 1 or 2; calyx patelliform, ca. 3 mm in diam.; corolla erect, ca. 5 mm in diam., petals 4, ovate, ca. 3 × 2 mm; staminodes ca. 1/3 as long as petals, sterile anthers ovoid, minute; ovary ovoid, ca. 2 mm in diam., stigma discoid, 4-lobed. Fruit red, globose, ca. 7 mm in diam.; persistent stigma thinly discoid; persistent calyx ex-

nate, discoid; exocarp thick, smooth; pyrenes 4, oblong-ellipsoid, ca. 5 mm, ca. 2.5 mm in diam., abaxially irregularly rugose and pitted, with distinct longitudinal ridges, endocarp stony. Fl. Apr-May, fr. Sep-Oct.

Evergreen broad-leaved forests, shrub forests, bamboo forests; 200-1500 m. Anhui, Fujian, Guangdong, Guangxi, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Yunnan, Zhejiang [Japan].

**75. *Ilex perlata*** C. Chen & S. C. Huang ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 8. 1985.

巨叶冬青 ju ye dong qing

Shrubs or small trees, evergreen. Branchlets black-purple or brown, terete, robust, with distinctly raised rounded leaf scars; terminal buds narrowly conical, slightly pubescent. Petiole 1.8-2.5 cm, thick, abaxially rugose and longitudinally striate and sulcate, adaxially sulcate; leaf blade adaxially olivaceous or brown-olivaceous when dry, shiny, elliptic or oblong, (20-)30-36 × (8-)9-13 cm, leathery, abaxially very shortly puberulent and minutely glandular punctate, midvein impressed adaxially, lateral veins 15-20 pairs, slightly raised on both surfaces, reticulate veins obscure abaxially, slightly raised adaxially, base obtuse or broadly cuneate, margin revolute, sparsely serrate, teeth incurved, apex acuminate or falcate-acuminate. Inflorescences: cymes, pseudopaniculate or fasciculate, axillary, on first to second year's branchlets; rachis, peduncle, and pedicels puberulent; bracts and bracteoles ovate-deltoid, ciliate; flowers purple-red, 4-merous. Male inflorescences: cymes of order 1 or 2, 1- or 3-flowered; pedicels 5-6 mm; calyx cup-shaped, ca. 3 mm in diam., sparsely puberulent, 4-lobed, lobes orbicular, ciliate; petals 4, obovate-oblong, ca. 4 mm, nearly free; stamens ca. 2/3 as long as petals, anthers ellipsoidal, ca. 2 mm; rudimentary ovary conical, 1-1.5 mm. Female inflorescences: cymes of order 1 or 2, 1- or 3-flowered; pedicels 5-6 mm, thick, puberulent; bracteoles basal; calyx ca. 2.5 mm, ca. 3 mm in diam., sparsely puberulent, lobes orbicular, ciliate; petals free, obovate-oblong, 5-5.5 × ca. 3 mm; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ellipsoidal-globose, 3-5 mm, ca. 2.5 mm in diam., stigma discoid, 4-lobed. Fruit subglobose, ca. 9 mm, ca. 8 mm in diam., rugose; persistent calyx explanate; persistent stigma thinly discoid; pyrenes 4, ellipsoidal, ca. 6 mm, ca. 3.5 mm in diam., abaxially longitudinally deeply sulcate, rugose and pitted, laterally irregularly striate, pitted. Fl. Apr-May, fr. May-Jun.

• Moist dense forests; 100-800 m. SE Yunnan (Hekou).

**76. *Ilex chingiana*** Hu & T. Tang, Bull. Fan Mem. Inst. Biol. 9: 252. 1940.

苗山冬青 miao shan dong qing

Trees evergreen, 8-12 m tall. Branchlets subterete, robust, glabrous; young branchlets longitudinally ridged and sulcate, old ones longitudinally rugose, with semicircular leaf scars, lenticels absent; terminal buds conical, axillary buds globose, glabrous. Leaves on first to third year's branchlets; petiole 0.8-1.5 cm, abaxially rugose, adaxially narrowly sulcate, glabrous or puberulent; leaf blade abaxially greenish, adaxially green, oblong, elliptic, oblong-elliptic, or oblanceolate, rarely obovate, (7-)11-15 × (3-)4-5.5 cm, thickly leathery, rarely leathery, midvein

impressed and sparsely puberulent adaxially, lateral veins 8–15 pairs, slightly raised adaxially, reticulate veins obscure abaxially, evident adaxially, base obtuse, rarely rounded or cuneate, margin sparsely serrate, apex acuminate. Flowers not known. Infructescences: usually 1-fruited cymes, few fascicled; fruiting pedicels 2–4 mm, slightly puberulent when young, later glabrescent; bracteoles 2, subbasal. Fruit red, globose, 1.1–2.6 cm in diam.; persistent calyx explanate, ca. 3.5 mm in diam., inconspicuously 4-lobed, lobes rounded, slightly puberulent and ciliate; persistent stigma navel-like, 4–5 mm in diam., orbicular when young, becoming quadrangular; pyrenes 4, obovoid, 1–1.2 cm, 6–9 mm in diam., reticulately striate, sulcate, rugose and pitted, abaxially flat and broadly impressed, endocarp stony. Fl. May, fr. Aug–Nov.

• Forests, hilly areas; 800–1500 m. Guangdong (Lianshan), Guangxi, Guizhou, Hunan.

- 1a. Petiole puberulent, leaf blade oblanceolate; fruit ca. 1.1 cm in diam. .... 76b. var. *puberula*  
 1b. Petiole glabrous, leaf blade oblong to elliptic; fruit 1.5–2.6 cm in diam.  
 2a. Base of leaf blade obtuse; fruit ca. 1.5 cm in diam. .... 76a. var. *chingiana*  
 2b. Base of leaf blade cuneate; fruit 2–2.6 cm in diam. .... 76c. var. *megacarpa*

**76a. *Ilex chingiana* var. *chingiana***

苗山冬青(原变种) miao shan dong qing (yuan bian zhong)

Petiole glabrous; leaf blade oblong-elliptic, rarely oblanceolate, 11–15 × 4–5 cm, base obtuse. Fruit large, ca. 1.5 cm in diam.

• Broad-leaved forests in hilly areas; ca. 800 m. Guangxi, Guizhou, Hunan.

**76b. *Ilex chingiana* var. *puberula*** S. Y. Hu, J. Arnold Arbor. 30: 382. 1949.

毛苗山冬青 mao miao shan dong qing

Petiole puberulent; leaf blade oblanceolate, 7–12 × ca. 3 cm, base cuneate. Fruit small, ca. 1.1 cm in diam.

• Mixed forests, hilly areas; 800–1500 m. Guangxi (Lingyun).

**76c. *Ilex chingiana* var. *megacarpa*** (H. G. Ye & H. S. Chen) L. G. Lei, **comb. et stat. nov.**

巨果冬青 ju guo dong qing

Basionym: *Ilex megacarpa* H. G. Ye & H. S. Chen, J. Trop. Subtrop. Bot. 9: 311. 2001.

Petiole glabrous; leaf blade oblong-elliptic, 9–15 × 4–5.5 cm, base cuneate. Fruit 2–2.6 cm in diam.

• Forests in hilly areas; ca. 1100 m. Guangdong (Lianshan)

**77. *Ilex yangchunensis*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 24. 1981.

阳春冬青 yang chun dong qing

Shrubs evergreen; bark gray. Young branchlets dark yellow when dry, terete, longitudinally striate and sulcate, glabrous;

second or more year's branchlets yellow-brown, with slightly raised circular leaf scars and lenticels. Leaves on first to second year's branchlets; petiole 1–1.2 cm, abaxially rugose, adaxially sulcate, glabrous, narrowly winged at apex; leaf blade yellow-olivaceous when dry, oblong-elliptic, 7–8.5 × 2–2.5 cm, leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 7 or 8 pairs, abaxially conspicuous, raised, curved and anastomosing near margin, adaxially subconspicuous and slightly raised or indistinct, reticulate veins raised abaxially, obscure adaxially, base cuneate, margin sparsely crenate-serrate, apex acuminate, shortly acuminate, or obtuse. Flowers not known. Infructescences: 1-fruited cymes, solitary or fasciculate, fascicles 2- or 3-fruited, axillary on current year's branchlets; fruiting pedicels 1.2–1.5 cm, longitudinally striate, glabrous; bracteoles 1 or 2, basal, ovate-deltoid, glabrous. Fruit yellow, globose, ca. 1 cm in diam.; persistent calyx discoid, explanate, ca. 4 mm in diam., glabrous, 4-lobed, lobes half-orbicular; persistent stigma thickly discoid, ca. 1.5 mm in diam., 4-lobed; pyrenes 4, ovoid-triangular, 8–9 mm, ca. 5 mm in diam., transverse section V-form, abaxially broadly concave, irregularly striate and sulcate, endocarp stony. Fl. unknown, fr. Nov.

• Rocky places, hills; 500–1000 m. Guangdong (Yangchun).

**78. *Ilex suzukii*** S. Y. Hu, J. Arnold Arbor. 30: 376. 1949.

铃木冬青 ling mu dong qing

*Ilex lupingsanensis* H. E. Chiang.

Shrubs or small trees, evergreen. Young branchlets terete, longitudinally ridged, glabrous; third year's branchlets black, with lenticels and slightly raised semicircular leaf scars; axillary buds globose, large, terminal buds conical, apically acute, scales densely ciliate. Leaves on first to fourth year's branchlets; petiole 4–7 mm, adaxially narrowly sulcate, glabrous; leaf blade adaxially green, slightly shiny, elliptic, 2.5–5.5 × 1–2.2 cm, leathery, both surfaces glabrous, midvein slightly raised abaxially, flat adaxially, lateral veins 5 or 6 pairs, obscure, reticulate veins prominent abaxially, base acute or cuneate, margin entire, apex obtuse or shortly acuminate. Male flowers not known. Female flowers 4-merous; calyx 4-lobed, sepals ca. 1 mm, margin ciliolate; corolla 4-lobed, ca. 2.5 × 1.5 mm. Infructescences: 1-fruited cymes, fasciculate, axillary on second year's branchlets; fascicles 2- or 3-fruited; bracts suborbicular or ovate, ciliate; fruiting pedicels ca. 4 mm, glabrous; bracteoles 2, discoid, ciliate. Fruit castaneous, shiny, globose, ca. 5 mm in diam., smooth; persistent calyx rounded, explanate, 4-lobed, lobes orbicular, ciliate; persistent stigma navel-like, 4-lobed; pyrenes 4, oblong-obovoid, ca. 3 mm, ca. 2 mm in diam., both ends obtuse, abaxially palmately slightly raised striate, not sulcate, endocarp woody. Fl. unknown, fr. Aug.

• Woods, hills; middle elevations. Taiwan (Nantou, Taoyuan, Yilan).

**79. *Ilex integra*** Thunberg in Murray, Syst. Veg., ed. 14, 168. 1784.

全缘冬青 quan yuan dong qing

*Ilex asiatica* Sprengel (1824), nom. illeg. superfl., not Linnaeus (1753); ?*I. integra* var. *leucoclada* Maximowicz; ?*I.*

*leucoclada* (Maximowicz) Makino; *I. othera* Sprengel; *Othera japonica* Thunberg; *Prinos integer* Hooker & Arnott; *Winterlia integra* (Thunberg) K. Koch.

Trees evergreen, small, ca. 5.5 m tall; bark gray-white. Branchlets brown, robust, longitudinally rugose-plicate; lenticels raised, elliptic; leaf scars slightly raised, subcircular, glabrous; terminal buds ovoid-conical; axillary buds ovoid, glabrous. Petiole 1–1.5 cm, glabrous, abaxially subrounded, rugose, adaxially longitudinally sulcate, distal half narrowly winged by decurrent leaf base; leaf blade abaxially greenish, adaxially deep green, obovate or obovate-elliptic, rarely oblanceolate, 3.5–8 × 1.5–4.5 cm, thickly leathery, both surfaces glabrous, midvein flat or slightly impressed adaxially, lateral veins 6–9 pairs, furcate and anastomosing near margin, raised abaxially, evident or indistinct adaxially, reticulate veins slightly evident abaxially, indistinct adaxially, base cuneate, margin entire, apex obtuse-rounded, with short broad acumen. Inflorescences: cymes, fasciculate, axillary on current year's branchlets; basal bud scales numerous, ovate, leathery. Male inflorescences: cymes of order 2, 3-flowered; peduncles very short; pedicels 3–5 mm, glabrous; bracteoles 2, subbasal, ovate, 1–1.5 mm, ciliate; flowers 4-merous; calyx patelliform, ca. 3 mm in diam., deeply 4-lobed, lobes ovate, 1–1.5 mm, glabrous, not ciliate; corolla rotate, ca. 7 mm in diam., petals oblong-elliptic, ca. 3.5 × 2 mm; stamens ca. as long as petals, anthers ovoid-oblong; rudimentary ovary subglobose, apex obtuse. Female flowers not known. Infructescences: 1-fruited cymes, fasciculate, fascicles 1–3-fruited; fruiting pedicels 5–10 mm, glabrous; bracts 2, basal. Fruit red, globose, 1–1.2 cm in diam.; persistent calyx explanate, suborbicular, shallowly lobed; lobes orbicular, glabrous, not ciliate; persistent stigma discoid, center retuse, 4-lobed; pyrenes 4, broadly ellipsoidal, ca. 7 mm, ca. 4 mm in diam., abaxially irregularly rugose, pitted, striate, laterally longitudinally striate and pitted, endocarp subwoody. Fl. Apr, fr. Jul–Oct.

Hills along seashores; ca. 200 m to high elevations. Taiwan (Lan Yu), Zhejiang (Putuo) [Japan, Korea].

**80. *Ilex tenuis*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 20. 1981.

薄核冬青 bo he dong qing

Trees evergreen, ca. 7 m tall, ca. 20 cm d.b.h. Young branchlets subterete, longitudinally striate, glabrous; old branches yellow-brown, with black blotches, terete, minutely longitudinally fissured; terminal buds conical, small, glabrous. Leaves on first to third year's branchlets; petiole 5–8 mm, abaxially transversely rugose, adaxially sulcate, glabrous; leaf blade dark green when dry, obovate-elliptic or elliptic, 5–8 × 2–3 cm, leathery, glabrous, abaxially brown glandular punctate, midvein impressed adaxially, lateral veins 6–8 pairs, slightly raised on both surfaces, obliquely extended, anastomosing near margin, reticulate veins distinct on both surfaces, base cuneate or obtuse, margin slightly revolute, sparsely crenulate-serrate, teeth black, apex shortly acuminate, rarely rounded. Flowers not known. Infructescences: 1-fruited cymes, solitary or fasciculate, fascicles 2–4-fruited, axillary on current year's branchlets; axis nearly absent; fruiting pedicels 6–28 mm, longitudinally striate, glabrous; bracteoles 2, subbasal, ovate-deltoid, glabrous, ciliate.

Fruit globose, 1–1.2 cm in diam., glabrous; young fruit deep green, glandular punctate; persistent calyx explanate, subquad-rangular, ca. 2 mm in diam., 4-lobed, lobes deltoid, glabrous; persistent stigma discoid, slightly 4-lobed; pyrenes 4, oblong, transverse section V-form, with tips at both ends, ca. 7 mm, ca. 5 mm in diam., abaxially broadly sulcate, irregularly rugose and pitted, laterally irregularly reticulately striate and pitted, endocarp leathery or woody. Fl. unknown, fr. Jun.

• Sparse forests, hills; ca. 900 m. Guangdong (Liashan).

**81. *Ilex subficoidea*** S. Y. Hu, J. Arnold Arbor. 30: 384. 1949.

拟榕叶冬青 ni rong ye dong qing

Trees evergreen, 8–15 m tall. Branchlets terete, longitudinally ridged, glabrous, with deltoid or ovate leaf scars, lenticels absent. Leaves on first to second year's branchlets; petiole 5–12 mm, adaxially sulcate, narrowly distally winged; leaf blade adaxially green, shiny, ovate or oblong-elliptic, 5–12 × 2–3 cm, leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 10 or 11 pairs, raised abaxially, obscure adaxially, reticulate veins obscure on both surfaces, base obtuse, rarely rounded, margin undulate and obtusely serrate, slightly revolute, apex abruptly acuminate. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; flowers white, 4-merous. Male inflorescences: cymes of order 2, 3-flowered; bracts broadly ovate, ciliate, basal appendages stipulelike; peduncles ca. 1 mm; pedicels ca. 2 mm, pubescent or glabrescent; calyx patelliform, ca. 5 mm in diam., lobes sparsely ciliate; corolla 6–7 mm in diam., petals 4, obovate-oblong, ca. 3 mm, sparsely ciliate, basally connate; stamens slightly longer than petals, anthers ovoid, ca. 0.75 mm; rudimentary ovary conical, apex obtuse. Female flowers not known. Infructescences: 1-fruited cymes; fruiting pedicels ca. 1 cm; bracteoles 2, basal or subbasal. Fruit globose, 1–1.2 cm in diam., densely tuberculate; persistent calyx 2.5–3 mm in diam., 4-lobed, lobes orbicular, ciliate; persistent stigma thinly discoid, 4-lobed; pyrenes 4, ovoid-ellipsoidal, 8–9 mm, 5–7 mm in diam., irregularly rugose and pitted, endocarp stony. Fl. Jan–May, fr. Jun–Dec.

Mixed forests, hills; 400–1400 m. Fujian (Nanjing), Guangdong, Guangxi, Hainan, S Hunan (Yizhang), Jiangxi (Quannan) [N Vietnam].

**82. *Ilex chengbuensis*** C. J. Qi & Q. Z. Lin, Bull. Bot. Res., Harbin 20: 1. 2000.

城步冬青 cheng bu dong qing

Trees evergreen, small, ca. 8 m tall. Branchlets longitudinally ridged; first year's branchlets brownish yellow; second year's branchlets grayish black. Petiole 9–12 mm, adaxially sulcate, pubescent; leaf blade abaxially yellow-green when dried, adaxially olivaceous, shiny, lanceolate-elliptic, 6–7.5 × 2.1–2.8 cm, leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 7–9 pairs, raised abaxially, obscure adaxially, base acute to attenuate, margin coarsely serrate, apex acuminate with an obtuse acumen. Flowers not known. Infructescences: cymes of order 1 or 2, 1- or 2-fruited, fasciculate, axillary; fruiting pedicels 1.5–2 cm. Fruit red, globose, 1.2–1.5 cm in diam.; persistent calyx discoid, lobes inconspicuous; persistent stigma discoid; pyrenes 6, oblong, ca. 1 cm, 5–7 mm in diam.,

abaxially rugose and pitted, longitudinally striate, endocarp bony. Fl. unknown, fr. Dec.

- Mixed forests, valleys; ca. 800 m. Hunan (Chengbu).

**83. *Ilex oblonga*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 23. 1981.

长圆果冬青 cháng yuán guo dòng qīng

Trees evergreen, ca. 20 m tall. Young branchlets castaneous-purple, longitudinally ridged, glabrous; second year's branchlets castaneous or brown, subterete, with raised elliptic lenticels; terminal buds conical, puberulent or glabrescent. Petiole 8–15 mm, glabrous, adaxially sulcate; leaf blade brown when dry, oblong-elliptic or elliptic, rarely ovate-elliptic, 7.5–9.5 × 2.7–3.6 cm, leathery, both surfaces glabrous, abaxially glandular punctate, midvein impressed or subflat adaxially, lateral veins 7–9 pairs, anastomosing near margin, reticulate veins ± distinct adaxially, base attenuate-obtuse or obtuse, rarely rounded, margin sparsely crenulate, apex long acuminate or acuminate. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, fascicles 2–4-fruited, axillary; fruiting pedicels 2–4 mm, pubescent; bracteoles 2, subbasal. Fruit red, oblong or obovoid-oblong, 4–4.5 mm, ca. 3 mm in diam., sulcate when dry; persistent calyx ca. 1.5 mm in diam., 4-lobed, lobes broadly deltoid; persistent stigma thin discoid; pyrenes 4, oblong-ellipsoidal, ca. 3.5 mm, ca. 2 mm in diam., abaxially impressed, irregularly striate and sulcate, sometimes rugose and pitted, endocarp scabrous, stony. Fl. unknown, fr. Dec.

- Forests, hills; 800–1200 m. Guangxi (Jinxu, Longsheng, Rongshui).

**84. *Ilex denticulata*** Wallich ex Wight, Ill. Ind. Bot. 2: 147. 1850.

细齿冬青 xì chí dòng qīng

Trees evergreen, ca. 12 m tall, glabrous throughout. Young branchlets subterete, longitudinally ridged, second year's branchlets brownish or gray, minutely fissured, with flat deltoid leaf scars; terminal buds narrowly conical; bud scales papery, glabrous, not ciliate. Leaves on first to second year's branchlets; petiole 1–1.3 cm, glabrous, abaxially rugose, adaxially narrowly sulcate or flat; leaf blade green, ovate-elliptic or elliptic-oblong, rarely obovate-oblong, 5–10 × 2.5–4 cm, leathery, both surfaces glabrous, midvein narrowly sulcate adaxially, lateral veins 6–9 pairs, and reticulate veins distinct abaxially, obscure adaxially, base obtuse or cuneate, margin densely irregularly denticulate-serrate, teeth black, apex obtuse or abruptly shortly acuminate. Male inflorescences: cymes of order 1 or 2, 1–3-flowered, pseudopaniculate, axillary on second year's branchlets; rachis 4–14 mm; peduncles ca. 2 mm; bracts obovate, ca. 4 × 2–5 mm, apex acute; pedicels 2–3 mm; 1-flowered pedicels ca. 5 mm; bracteoles 2, median, deltoid; flowers 4-merous; calyx patelliform, ca. 2.5 mm in diam., 4-lobed, lobes deltoid, margin entire, apex acute or acuminate; corolla rotate, ca. 7 mm in diam., petals reflexed, oblong, ca. 3 × 1.5 mm, basally connate; stamens 4, ca. as long as petals, anthers ovoid, ca. 0.75 mm; rudimentary ovary globose, apex rounded and impressed. Female flowers not known. Infructescences: 1-fruited cymes, fasciculate or pseudoracemose; central axis 5–10 mm; fruiting pedicels 6–10 mm,

glabrous or slightly puberulent. Fruit globose or depressed globose, 6–7 mm in diam., smooth; persistent stigma navel-like, often impressed, 4-lobed; persistent calyx explanate; pyrenes 4, oblong or ellipsoidal, ca. 4 mm, ca. 3 mm in diam., abaxially irregularly 3-striate and 2-sulcate, laterally rugose and pitted, endocarp stony. Fl. unknown, fr. Jul.

- Mixed forests; ca. 2000 m. S Yunnan (Menghai) [India].

**85. *Ilex pentagona*** S. K. Chen et al., Acta Phytotax. Sin. 36: 357. 1998.

五棱苦丁茶 wu léng kǔ dīng chá

Trees evergreen, 8–12 m tall. Current year's branchlets castaneous when dry, stout, 5–6 mm in diam., glabrous, longitudinally sharply angular; terminal buds ovoid-conical, ca. 6 mm, glabrescent or very shortly puberulent. Petiole 2–2.5 cm, abaxially rugose, adaxially narrowly sulcate, glabrous; leaf blade abaxially greenish, adaxially dark green, slightly shiny, narrowly elliptic to elliptic, 7.5–20 × 3–7.5 cm, leathery, both surfaces glabrous, midvein deeply narrowly sulcate adaxially, lateral veins 12 pairs, evident or indistinct abaxially, slightly raised adaxially, furcate and anastomosing near margin, reticulate veins obscure abaxially, evident adaxially, base cuneate to obtusely rounded, margin sparsely and shallowly serrulate, slightly reflexed, apex obtuse or acute. Flowers not known. Infructescences: 1-fruited cymes, pseudoracemose, axillary on first to second year's branchlets; central axis 5–10 mm, robust, glabrous, longitudinally angular and sulcate; fruiting pedicels 5–6 mm, glabrous; bracteoles ovate, ca. 1.5 mm, apex obtuse, minutely ciliate. Fruit (immature) globose, 6–8 mm in diam., rugose when dry; persistent calyx explanate, orbicular, ca. 3 mm in diam., minutely ciliate; persistent stigma discoid, slightly impressed; pyrenes 4, oblong-ellipsoid or ovoid-globose, 5–6 mm, 3–4 mm in diam., abaxially striate and sulcate. Fl. unknown, fr. May, Sep–Oct.

- Forests on limestone hills; 300–600 m or 1400–1500 m. W Guangxi (Daxin, Tian'e), Guizhou (Suiyang), Hunan (Baojing), SE Yunnan (Xichou).

**86. *Ilex tsangii*** S. Y. Hu, J. Arnold Arbor. 30: 380. 1949.

细枝冬青 xì zhī dòng qīng

Trees evergreen, ca. 8 m tall, glabrous throughout. Young branchlets slender, subterete, longitudinally ridged; third year's branchlets black, with leaf scars raised, lenticels absent; terminal buds narrowly conical, apically acute. Leaves on first to third year's branchlets; petiole 1–1.6 cm, slender, narrowly sulcate; leaf blade green, ovate-elliptic, elliptic, or narrowly elliptic, 2.5–8 × 1–3 cm, subleathery, midvein slightly impressed adaxially, lateral veins 6–8 pairs, evident or obscure abaxially, obscure adaxially, base acute or cuneate, margin inconspicuously crenulate or subentire, apex acuminate, acumen 1–1.5 cm. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, fascicles 2–4-fruited, axillary on second year's branchlets; fruiting pedicels 1.5–12 mm; bracteoles 2, basal, ciliate. Fruit globose, 3–6 mm in diam., rugose, apex depressed; persistent calyx minute, ca. 1.5 mm in diam.; persistent stigma thin discoid; pyrenes 4, obovoid, 3–4 mm, 1.5–3 mm in diam., one end slightly pointed, throughout reticulately striate and irregularly



rugose and sulcate, or abaxially deeply 1-sulcate, nearly smooth and laterally slightly striate-rugose, endocarp thickly leathery. Fl. unknown, fr. Jun–Jul.

• Thickets, hills, forests at summits of rocky hills; 500–1500 m. E Guangdong, Guangxi.

- 1a. Fruit ca. 6 mm in diam., fruiting pedicel 10–12 mm; leaf blade ovate-elliptic or elliptic, 5–8 × 2–3 cm ..... 86a. var. *tsangii*  
 1b. Fruit 3–4 mm in diam., fruiting pedicel 1.5–2.5 mm; leaf blade narrowly elliptic, 2.5–5 × 1–1.6 cm ..... 86b. var. *guangxiensis*

#### 86a. *Ilex tsangii* var. *tsangii*

细枝冬青(原变种) xi zhi dong qing (yuan bian zhong)

Leaf blade ovate-elliptic or elliptic, 5–8 × 2–3 cm, lateral veins evident abaxially. Fruiting pedicel 10–12 mm, slender; fruit ca. 6 mm in diam.; pyrenes ca. 4 mm, ca. 3 mm in diam., abaxially and laterally reticulately striate, irregularly rugose and sulcate. Fr. Jul.

• Thickets, hills; 500–1000 m. E Guangdong (Dabu).

**86b. *Ilex tsangii* var. *guangxiensis*** T. R. Dudley, Acta Bot. Yunnan. 6: 46. 1984.

瑶山细枝冬青 yao shan xi zhi dong qing

Leaf blade narrowly elliptic, 2.5–5 × 1–1.6 cm, lateral veins nearly obscure abaxially. Fruiting pedicel 1.5–2.5 mm; fruit 3–4 mm in diam.; pyrenes 3–3.3 mm, 1.5–3 mm in diam., abaxially deeply 1-sulcate, nearly smooth, laterally slightly striate-rugose. Fr. Jun.

• Forests at summits of rocky hills; 800–1500 m. Guangxi (Dayao Shan, Rongshui).

**87. *Ilex occulta*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 18. 1981.

隐脉冬青 yin mai dong qing

Shrubs evergreen, ca. 2 m tall; bark gray. Young branchlets slender, longitudinally angular, pubescent; second year's branchlets glabrescent. Petiole ca. 5 mm, pubescent or glabrescent, narrowly winged; leaf blade abaxially brown, adaxially olivaceous when dry, elliptic or obovate-elliptic, rarely obovate, 3–4.5 × 1.4–1.6 cm, leathery, abaxially small glandular punctate, both surfaces glabrous, midvein slightly raised abaxially, impressed adaxially, lateral veins obscure on both surfaces, base cuneate or cuneate-acuminate, decurrent, margin subentire, slightly recurved, apex obtuse or subrounded. Flowers not known. Inflorescences: 1-fruited cymes, fasciculate, fascicles 2- or 3-fruited, axillary; fruiting pedicels 3–4 mm, pubescent. Fruit (immature) globose, 5–6 mm in diam., tuberculate, rugose when dry; persistent calyx quadrangular, ca. 2 mm in diam., 4-lobed, lobes broadly deltoid, ciliate; persistent stigma discoid; pyrenes 4, broadly oblong, ca. 4 mm, ca. 4 mm in diam., abaxially longitudinally slightly depressed, throughout rugose and sulcate, endocarp woody. Fl. unknown, fr. Jun.

• Forests, slopes of hills; low elevations. Guangdong (Yangchun), Guangxi (Dongxing).

**88. *Ilex nanningensis*** Handel-Mazzetti, Sinensia 5: 2. 1934.

南宁冬青 nan ning dong qing

Trees evergreen, ca. 20 m tall. Young branchlets dark brown, subterete, longitudinally angular, densely pubescent; third year's branchlets straight, longitudinally obscurely fissured, with semicircular leaf scars, pubescent; terminal buds small. Leaves on first to fourth year's branchlets; stipules falcate-deltoid, pubescent at base, apically acute; petiole 7–10 mm, pubescent, adaxially sulcate, distal half narrowly winged by decurrent leaf base; leaf blade abaxially greenish, adaxially green, shiny, gray-brown when dry, elliptic, rarely lanceolate or ovate-elliptic, 5–8 × 1.5–3.5 cm, thickly leathery, midvein impressed and pubescent adaxially, lateral veins 7 or 8 pairs, distinct abaxially, obscure adaxially, reticulate veins distinct only abaxially, base obtuse or cuneate, margin crenate-serrate, slightly recurved when dry, apex shortly acuminate, acumen broadly deltoid, 2–12 mm. Male flowers not known. Female inflorescences: 1-flowered cymes, fasciculate, fascicles 2–5-flowered, axillary on second year's branchlets; bracts ovate-reniform, apex cuspidate or mucronate, ciliate; flowers fragrant, 4-merous; pedicels 6–8 mm, pubescent; bracteoles 2, narrowly deltoid, pubescent; calyx patelliform, ca. 3 mm in diam., 4-lobed, lobes orbicular, ca. 0.5 × 1.5 mm, sparsely minutely puberulent, ciliate; corolla rotate, ca. 8 mm in diam., petals ca. 3 × 2 mm, apex ciliate; staminodes 4, slightly shorter than petals, sterile anthers sagittate; ovary ovoid, ca. 3 mm, ca. 2.5 mm in diam., apex truncate, stigma discoid. Fruit subglobose, ca. 8 mm, ca. 1 cm in diam.; fruiting pedicel ca. 8 mm; persistent calyx orbicular, explanate, ca. 3 mm in diam.; persistent stigma discoid, ca. 2 mm in diam., mesocarp fleshy; pyrenes 4, oblong, ca. 6.5 mm, ca. 5.5 mm in diam., abaxially broadly depressed, rugose, reticulately striate, endocarp woody, thin. Fl. Apr–May, fr. Oct–Nov.

• Forests, mixed forests, hills; 600–800 m. Guangdong (Xinfeng), Guangxi, Hainan (Baoting).

**89. *Ilex uraiensis*** Yamamoto, J. Soc. Trop. Agric. 4: 486. 1932.

乌来冬青 wu lai dong qing

*Ilex formosae* (Loesener) H. L. Li; *I. mertensii* Maximowicz var. *formosae* Loesener; *I. uraiensis* var. *formosae* (Loesener) S. Y. Hu; *I. uraiensis* var. *macrophylla* S. Y. Hu.

Trees evergreen, to 25 m tall. Branchlets subterete, longitudinally ridged, when young puberulent or glabrescent; third year's branchlets longitudinally minutely fissured, glabrous, lenticels absent, with slightly raised, semilunar leaf scars. Leaves on first to second year's branchlets; petiole 6–10 mm, adaxially narrowly sulcate, distal half winged by decurrent leaf base; leaf blade abaxially greenish, adaxially green, shiny, elliptic or obovate-elliptic, 3.5–10 × 1.2–3.5 cm, thickly leathery, both surfaces glabrous, midvein slightly impressed adaxially, lateral veins 8 or 9 pairs, raised on both surfaces, reticulate veins raised on both surfaces, base cuneate, margin sparsely serrate, apex shortly and abruptly acuminate. Inflorescences: 1-flowered cymes, fasciculate, axillary on second or third year's branchlets. Male inflorescences: bracts suborbicular, ciliate; pedicels 3–5 mm, puberulent; bracteoles 2, basal, ciliate; flowers white, 4-merous; calyx patelliform, ca. 2 mm in diam., 4-lobed, lobes

orbicular, ciliate; petals 4, obovate-orbicular, 3–5 × ca. 2.5 mm, ciliate, basally slightly connate; stamens 4, longer than petals, anthers oblong-ovoid, ca. 1.25 mm; rudimentary ovary subglobose, apex rounded or slightly depressed. Female flowers not known. Infructescences: bracts oblong-ovate, puberulent, ciliate; fruiting pedicels 6–8 mm, slender, pubescent; bracteoles 2, deltoid, puberulent, ciliate. Fruit red, globose, ca. 1.1 cm in diam.; persistent calyx suborbicular, ciliate; persistent stigma navel-like, ca. 2.5 mm in diam.; pyrenes 4, oblong, 7–8 mm, ca. 4.5 mm in diam., both ends obtuse, abaxially flattened and depressed, laterally irregularly striate and rugose, endocarp stony. Fl. Mar–Apr, fr. Jul–Dec.

Broad-leaved forests, hills; 800–2000 m. Fujian, Taiwan (Pingdong, Taibei) [Japan (Ryukyu Islands)].

**90. *Ilex ningdeensis*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 19. 1981.

宁德冬青 *ning de dong qing*

Trees evergreen. Branchlets brown, angular and sulcate, densely black puberulent. Petiole 6–8 mm, adaxially sulcate, densely puberulent; leaf blade abaxially yellow-green when dry, adaxially dark olivaceous, obovate-elliptic, elliptic, or obovate, 4–6 × 2–2.7 cm, leathery, glabrous, abaxially glandular punctate, midvein impressed, only at base puberulent adaxially, lateral veins 8 or 9 pairs, reticulate veins evident abaxially, base obtuse and decurrent, margin crenulate, apex obtuse-rounded or abruptly shortly acuminate. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, axillary; fruiting pedicels ca. 5 mm, glabrescent; bracteoles basal. Fruit globose, ca. 1 cm in diam.; persistent calyx ca. 3 mm in diam., shallowly 4-lobed, lobes deltoid-ovate or suborbicular, not ciliate; persistent stigma navel-like; pyrenes 4, oblong, ca. 6 mm, ca. 4 mm in diam., abaxially rugose and sulcate, laterally striate and sulcate, endocarp stony. Fl. unknown, fr. Nov.

• Forests or forest margins on mountain slopes; 800–1400 m. Fujian (Ningde).

**91. *Ilex nuculicava*** S. Y. Hu, J. Arnold Arbor. 30: 385. 1949.

洼皮冬青 *wa pi dong qing*

Trees evergreen, ca. 9 m tall. Branchlets pubescent or glabrescent; young branchlets terete, longitudinally angular; third year's branchlets cinereous, longitudinally plicate and fissured, with semicircular leaf scars and raised inflorescence scars; terminal buds conical, pubescent or glabrous. Leaves on first to second year's branchlets; petiole brown or black when dry, 9–15 mm, slender, sparsely puberulent; leaf blade abaxially pale green, adaxially green, obovate-lanceolate, narrowly elliptic, lanceolate, or oblanceolate, (6–)8–13.5 × (2–)3–4.5 cm, leathery, abaxially glabrous, sparsely minutely glandular punctate, adaxially glabrous except on midvein slightly pubescent, midvein impressed adaxially, lateral veins 7 or 8 pairs, obscure adaxially, reticulate veins obscure on both surfaces, base obtuse, margin undulate-crenulate, apex shortly acuminate. Inflorescences: cymes, pubescent or glabrous, fasciculate, axillary on second year's branchlets, base of fascicles with persistent scales of flower buds, reniform, pubescent or glabrous; flowers yellow-white, 4-merous. Male inflorescences: cymes of order 2,

3-flowered; bracts broadly ovate, pubescent, with basal, stipule-like, pubescent appendages; peduncles 1–2 mm, densely pubescent; pedicels 3–4 mm, pubescent; bracteoles 2, basal or submedian; calyx patelliform, 2–2.5 mm in diam., sparsely pubescent, 4-lobed, lobes orbicular, ciliate; petals 4, oblong-ovate, ca. 3 × 2 mm, glabrous, margin sparsely ciliate, basally slightly connate; stamens ca. as long as petals, anthers ovoid; rudimentary ovary subglobose or ovoid, apex rounded or obtuse. Female inflorescences: 1-flowered cymes; pedicels ca. 3 mm, bracteoles 2, basal; calyx and corolla as in male flowers; staminodes ca. 1/3 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm in diam., apex truncate, stigma discoid. Fruit red, cinereous when dry, globose, ca. 1 cm in diam.; fruiting pedicel 2–6 mm; persistent calyx explanate, ca. 2.5 mm in diam., pubescent and ciliate; persistent stigma navel-like, ca. 3 mm in diam.; pyrenes 4, broadly ellipsoidal, 6–7 mm, 4–4.5 mm in diam., both ends acuminate, abaxially palmately striate and sulcate, laterally rugose and pitted, endocarp woody. Fl. Apr–May or Aug–Oct, fr. May–Dec.

• Forests, hills; 500–1800 m. Hainan.

- 1a. Terminal buds, branchlets, and inflorescences glabrous ..... 91b. var. *glabra*
- 1b. Terminal buds, branchlets, and inflorescences pubescent.
  - 2a. Leaf blade obovate-lanceolate or narrowly elliptic, 8–13.5 × 3–4.5 cm ..... 91a. var. *nuculicava*
  - 2b. Leaf blade narrowly oblanceolate, 6–11 × 2–3.5 cm ..... 91c. var. *auctumnalis*

**91a. *Ilex nuculicava* var. *nuculicava***

洼皮冬青(原变种) *wa pi dong qing* (yuan bian zhong)

*Ilex nuculicava* f. *brevipedicellata* (S. Y. Hu) T. R. Dudley; *I. nuculicava* var. *brevipedicellata* S. Y. Hu.

Terminal buds, branchlets, and inflorescences pubescent. Leaf blade obovate-lanceolate or narrowly elliptic, 8–13.5 × 3–4.5 cm, base obtuse. Fl. Apr–May.

• Forests, hills; 500–1800 m. Hainan.

**91b. *Ilex nuculicava* var. *glabra*** S. Y. Hu, J. Arnold Arbor. 30: 387. 1949.

光枝洼皮冬青 *guang zhi wa pi dong qing*

*Ilex nuculicava* f. *glabra* (S. Y. Hu) C. J. Tseng.

Terminal buds, branchlets, and inflorescences glabrous. Fl. Aug–Oct.

• Forests, hills; middle to high elevations. Hainan.

**91c. *Ilex nuculicava* var. *auctumnalis*** S. Y. Hu, J. Arnold Arbor. 30: 387. 1949.

秋花洼皮冬青 *qiu hua wa pi dong qing*

Terminal buds, branchlets, and inflorescences pubescent. Leaf blade narrowly oblanceolate, 6–11 × 2–3.5 cm, base cuneate. Fl. Aug–Oct.

• Forests, hills; middle to high elevations. Hainan.

**92. *Ilex graciliflora*** Champion ex Bentham, Hooker's J. Bot. Kew Gard. Misc. 4: 328. 1852.

纤花冬青 xian hua dong qing

Trees evergreen, 6–9 m tall. Young branchlets subterete, longitudinally ridged, slightly puberulent; second year's branchlets glabrous, longitudinally fissured and plicate; third year's branchlets castaneous, with flat, deltoid leaf scars. Leaves on first to third year's branchlets; petiole 1–1.5 cm, linear-sulcate, glabrous or minutely puberulent, distal half winged by decurrent leaf base; leaf blade abaxially greenish, adaxially green, shiny, obovate-elliptic or oblong-elliptic,  $2-7.5 \times 1.5-3.5$  cm, thickly leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 5–7 pairs, raised abaxially, obscure adaxially, reticulate veins loosely evident abaxially, base obtuse or acute, margin sparsely minutely serrate or subentire, apex retuse, rarely acute. Inflorescences: cymes, fasciculate, axillary on current year's branchlets; bracts ovate-deltoid, puberulent, apex acute or tricuspidate; flowers white, 4-merous. Male inflorescences: cymes of order 2, 3-flowered; peduncles 1–2 mm; pedicels 3–6 mm, both surfaces sparsely puberulent or glabrescent; bracteoles 1 or 2, basal or near base; calyx patelliform, ca. 2 mm in diam., 4-lobed, lobes deltoid, apex obtuse or rounded, ciliate; petals 4, reflexed, oblong, ca. 2.5 mm, ciliate, basally connate; stamens 4, shorter than petals, anthers oblong-ovoid; rudimentary ovary subglobose-ovoid, apex obtuse, indistinctly 4-lobed. Female inflorescences: 1-flowered cymes; bracts ovate; pedicels ca. 4 mm; bracteoles 2, basal; calyx as in male flowers; petals free, oblong-obovate, ca. 2 mm; staminodes ca.  $2/3$  as long as petals, sterile anthers sagittate; ovary globose-ovoid, ca. 1.5 mm in diam., stigma discoid. Fruit red, globose, 5–6 mm in diam.; fruiting pedicel ca. 6 mm; persistent calyx explanate, suborbicular, ca. 2 mm in diam.; persistent stigma thinly discoid, flat; pyrenes 4, subglobose, ca. 4 mm, ca. 3 mm in diam., rugose, irregularly reticulately striate and sulcate, abaxially shallowly depressed, endocarp woody. Fl. Apr, fr. Oct–Feb.

• Woods, thickets; low to middle elevations. Hong Kong (including Lantau Island).

**93. *Ilex intricata*** J. D. Hooker, Fl. Brit. India 1: 602. 1875.

错枝冬青 cuo zhi dong qing

*Ilex intricata* f. *macrophylla* H. F. Comber.

Shrubs evergreen, prostrate, small, 0.3–2 m tall, glabrous throughout. Branchlets brown to dark brown, terete, longitudinally ridged and verrucose; terminal buds ovoid, bud scales glabrous. Leaves on first to fourth year's branchlets; petiole 1–2 mm, adaxially shallowly sulcate, winged by decurrent leaf base; leaf blade abaxially greenish, adaxially deep green, shiny, obovate-elliptic,  $0.5-2 \times 0.3-0.9$  cm, leathery or subleathery, midvein impressed adaxially, lateral veins 2–4 pairs, raised abaxially, impressed adaxially, anastomosing near margin, reticulate veins obscure abaxially, impressed adaxially, base obtuse or cuneate, margin serrate with 3–6 pairs of teeth, apex obtuse or rounded, with acumen. Inflorescences: 1-flowered cymes, solitary or few fascicled, fascicles 2- or 3-flowered,

axillary on second year's branchlets; bracts suborbicular, glabrous, not ciliate; flowers 4-merous, pink. Male inflorescences: pedicels ca. 2 mm, glabrous; bracteoles 2, subbasal, ovate-deltoid, glabrous, not ciliate; calyx patelliform, ca. 2 mm in diam., deeply 4-lobed, lobes ovate, not ciliate; corolla rotate, ca. 5 mm in diam., petals oblong, ca. 2 mm, basally slightly connate; stamens 4, shorter than petals, anthers ovoid; rudimentary ovary subglobose, apex rounded. Female inflorescences: pedicels ca. 1 mm, glabrous; calyx as in male flowers; petals free, ovate, ca. 2 mm; staminodes ca.  $2/3$  as long as petals, sterile anthers cordate; ovary ovoid, ca. 1.5 mm in diam., style evident, stigma capitate, 4-lobed. Infructescences: 1(or 2)-fruited; fruiting pedicels ca. 2 mm. Fruit red, globose, ca. 5 mm in diam.; persistent calyx explanate, quadrangular; persistent stigma thickly discoid, 4-lobed; pyrenes 4, oblong, ca. 4 mm, ca. 2 mm in diam., abaxially longitudinally palmately striate and sulcate, laterally striate and slightly rugose, endocarp woody. Fl. Jun–Jul, fr. Aug–Nov.  $2n = 36^*$ .

*Abies* forests; 3000–4000 m. W Sichuan, SE Xizang (Mêdog), NW Yunnan (Gongshan) [Bhutan, India, N Myanmar, Nepal].

**94. *Ilex nothofagifolia*** Kingdon Ward, Pl. Hunting, 223. 1930.

小圆叶冬青 xiao yuan ye dong qing

*Ilex intricata* J. D. Hooker var. *oblata* W. E. Evans; *I. oblata* (W. E. Evans) H. F. Comber.

Trees evergreen, small, 3–5 m tall, glabrous throughout. Branchlets brown or gray, terete; young ones longitudinally ridged and sulcate, ridges densely corky verruculose; old branchlets smooth, nearly not verruculose; terminal buds narrowly ovoid; bud scales glabrous or puberulent. Leaves on first to third year's branchlets; petiole 4–5 mm, slender, narrowly sulcate; leaf blade broadly elliptic, rarely broadly obovate or broadly ovate,  $0.5-1.7 \times 0.5-1.2$  cm, papery, both surfaces glabrous, midvein impressed adaxially, lateral veins 3 or 4 pairs, and reticulate veins slightly raised abaxially, impressed adaxially, base obtuse or cuneate, margin slightly reflexed, with 4–9 pairs of teeth, apex obtuse-rounded, acumen. Inflorescences: 1-flowered cymes, solitary or few fascicled, fascicles 2- or 3-flowered, axillary on second year's branchlets. Male inflorescences: pedicels ca. 4 mm; bracteoles 2, subbasal; calyx patelliform, ca. 2 mm in diam., deeply 4-lobed, lobes suborbicular, glabrous, not ciliate; corolla greenish, rotate, ca. 4 mm in diam., petals 4, ovate, ca. 2 mm, glabrous, not ciliate, basally slightly connate; stamens 4, shorter than petals, anthers ovoid; rudimentary ovary globose, apex rounded. Female flowers not known. Infructescences: 1- or 2-fruited; fruiting pedicels 2.5–3 mm; bracteoles 2, basal, narrowly ovate, not ciliate. Fruit red, subglobose, 3–3.5 mm in diam.; persistent calyx explanate, subquadrangular, 4-lobed, lobes subrounded, glabrous; persistent style evident, stigma discoid, 4-lobed; pyrenes 4, ellipsoidal, ca. 3 mm, ca. 1.5 mm in diam., both ends obtuse, abaxially convex, longitudinally 3- or 4-striate, nearly smooth, laterally smooth, endocarp leathery. Fl. May–Aug, fr. Oct–Nov.

Broad-leaved forests, *Tsuga* forests, slopes, hills; 2000–3000 m. SE Xizang (Mêdog), W Yunnan (Fugong, Gongshan, Tengchong) [N India, N Myanmar].

**95. *Ilex liana*** S. Y. Hu, J. Arnold *Arbor.* 32: 398. 1951.

毛核冬青 *mao he dong qing*

Trees evergreen, ca. 13 m tall. Branchlets terete, thick, glabrous, rugose, tuberculate, lenticels elliptic, leaf scars circular, both raised; current year's branchlets longitudinally ridged and sulcate; terminal and axillary buds ovoid, large, bud scales densely puberulent. Petiole subterete, 1.5–2 cm, longitudinally narrowly sulcate, abaxially rugose, glabrous; leaf blade olivaceous when dry, not shiny, ovate-oblong or ovate, 7.5–9 × 4–5.5 cm, leathery, both surfaces glabrous, midvein deeply impressed adaxially, lateral veins 17 or 18 pairs, raised on both surfaces, anastomosing near margin, reticulate veins dense and evident, base rounded, margin crenulate-serrate, apex acute. Flowers not known. Infructescences: cymes of order 1 or 2, 1–3-fruited, pseudopaniculate, axillary; rachis ca. 1 cm, rugose; bracts caducous, ovate, puberulent, ciliate; fruiting pedicels 5–6 mm, glabrous or puberulent; bracteoles 2, basal. Fruit red, globose, ca. 4 mm; persistent calyx explanate, patelliform, 3–4 mm in diam., 4-lobed, lobes deltoid, ciliate; persistent stigma discoid, 4-lobed; pyrenes 4, ellipsoidal, ca. 2.5 mm, ca. 1.5 mm in diam., puberulent, abaxially palmately striate and longitudinally sulcate, laterally rugose and obscurely striate and sulcate, endocarp woody. Fl. unknown, fr. Oct–Nov.

• Mixed forests, hill slopes; 2800–2900 m. S Yunnan (Jingdong).

**96. *Ilex delavayi*** Franchet, J. Bot. (Morot) 12: 255. 1898.

陷脉冬青 *xian mai dong qing*

Shrubs or trees, evergreen, 1–9 m tall, glabrous throughout. Branchlets gray, terete, glabrous or pubescent, longitudinally ridged, verruculose along ridges, or smooth or shallowly plicate-sulcate; leaf scars flat, deltoid-elliptic, lenticels absent; terminal buds conical, glabrous, unfolding at anthesis. Leaves on first to second year's branchlets; petiole (5–)10–15 mm, abaxially rugose, adaxially shallowly sulcate, distal half narrowly winged by decurrent leaf base; leaf blade green, elliptic-lanceolate or obovate-elliptic, linear-lanceolate, elliptic, oblong, ovate-oblong, or oblong-elliptic, (2–)4–5(–8) × (0.7–)1–2(–2.5) cm, subleathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 5–7 pairs, raised abaxially, impressed adaxially, anastomosing near margin, reticulate veins raised abaxially, impressed adaxially, base cuneate or acute, margin crenulate-serrate, apex obtuse or acute. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; flowers greenish, 4-merous. Male inflorescences: cymes of order 1 or 2, 1–3-flowered, fascicles often umbelliform, ± stalked; axis ca. 3.5 mm; bracts ovate, glabrous, apex acute; peduncles ca. 1 mm; pedicels 1–2 mm; bracteoles 2, subbasal; calyx patelliform, ca. 2 mm in diam., deeply 4-lobed, lobes ovate-deltoid, ca. 1 × 1.25 mm, glabrous, not ciliate, apex obtuse or acute; corolla rotate, ca. 5 mm in diam., petals 4, obovate, ca. 2 × 2 mm, basally slightly connate; stamens shorter than petals, anthers ovoid; rudimentary ovary globose, apex rounded. Female inflorescences: 1-flowered cymes, fascicles 2–5-flowered, pedicels 2–4(–6) mm; calyx as in male flowers; petals free, ovate, ca. 2 mm; staminodes ca. 1/2 as long as petals, sterile anthers cordate; ovary ovoid, ca. 2 mm, ca.

1.5 mm in diam., apex truncate, stigma discoid. Fruit red, globose, rarely depressed globose, 5(–7) mm in diam.; persistent calyx explanate, quadrangular, 2–2.5(–3.5) mm in diam.; persistent stigma thickly discoid, rarely subcapitate, 4-lobed; pyrenes 4, oblong, 3.5–4.5 mm, 2–2.5 mm in diam., abaxially convex or slightly flattened, palmately striate and sulcate, laterally rugose striate-sulcate, endocarp woody. Fl. Mar–Jul, fr. Aug–Nov.

Forests, mixed woods, shrub forests, azalea forests, hill slopes; 2000–3700 m. Sichuan, Xizang, Yunnan [N Myanmar].

- 1a. Branchlets smooth or shallowly plicate-sulcate, not verruculose.
  - 2a. Branchlets shallowly plicate-sulcate ..... 96b. var. *exalata*
  - 2b. Branchlets smooth ..... 96c. var. *muliensis*
- 1b. Branchlets verruculose.
  - 3a. Branchlets glabrous; leaf blade elliptic-lanceolate or obovate-elliptic ..... 96a. var. *delavayi*
  - 3b. Branchlets pubescent; leaf blade oblong, elliptic, or linear-lanceolate.
    - 4a. Branchlets puberulent; leaf blade oblong or elliptic .... 96c. var. *comberiana*
    - 4b. Branchlets pubescent; leaf blade linear-lanceolate ..... 96d. var. *linearifolia*

**96a. *Ilex delavayi* var. *delavayi***

陷脉冬青(原变种) *xian mai dong qing* (*yuan bian zhong*)

Shrubs or trees, glabrous throughout. Branchlets ridged, verruculose along ridges. Leaf blade elliptic-lanceolate or obovate-elliptic, (2.5–)4–5(–7) × 1–2(–2.2) cm. Fruit globose, ca. 5 mm in diam.; persistent stigma thickly discoid. Fl. May–Jun, fr. Aug–Nov.

• *Quercus* forests, *Picea* forests, *Abies* forests, shrub forests; 2000–3700 m. W Sichuan, Xizang, NW Yunnan.

**96b. *Ilex delavayi* var. *exalata*** H. F. Comber, *Notes Roy. Bot. Gard. Edinburgh* 18: 44. 1933.

高山陷脉冬青 *gao shan xian mai dong qing*

Branchlets glabrous, not verruculose, shallowly plicate-sulcate. Leaf blade ovate-oblong or oblong-elliptic, 3–8 × 1.5–2.5 cm, midvein, lateral veins, and reticulate veins deeply impressed adaxially. Female flower: pedicel 4–6 mm, glabrous. Fl. Jun, fr. Sep–Nov.

Mixed woods, azalea forests, shrub forests; 2500–3600 m. W Sichuan, W Yunnan [N Myanmar].

**96c. *Ilex delavayi* var. *comberiana*** S. Y. Hu, J. Arnold *Arbor.* 31: 48. 1950.

丽江陷脉冬青 *li jiang xian mai dong qing*

Branchlets pubescent, verruculose. Leaf blade oblong or elliptic, 2–5(–7) × 1–2 cm. Fruit globose, ca. 7 mm in diam.; fruiting pedicel 2–3.5 mm; persistent stigma thickly discoid or subcapitate. Fl. May–Jul, fr. Sep.

• Forests, hill slopes; (2600–)2800–3600 m. NW Yunnan.

**96d. *Ilex delavayi* var. *linearifolia*** S. Y. Hu, J. Arnold Arbor. 31: 48. 1950.

线叶陷脉冬青 xian ye xian mai dong qing

Branchlets verruculose, pubescent. Leaf blade linear-lanceolate, 2–8 × 0.7–1.3 cm. Fruit solitary or paired, depressed globose. Fl. Jun–Jul, fr. Sep–Oct.

• Forests; ca. 3000 m. W Yunnan.

**96e. *Ilex delavayi* var. *muliensis*** W. P. Fang & Z. M. Tan, J. Sichuan Univ., Nat. Sci. Ed. 1983(2): 81. 1983.

木里陷脉冬青 mu li xian mai dong qing

Branchlets smooth, not verruculose. Fruit solitary or in fasciculate infructescences; axis 1–1.5 mm; fruiting pedicel 2–3 mm.

• Forests, hill slopes; ca. 3500 m. SW Sichuan (Muli).

**97. *Ilex xizangensis*** Y. R. Li, Acta Bot. Yunnan. 3: 353. 1981.

西藏冬青 xi zang dong qing

Shrubs evergreen, erect, ca. 1 m tall. Current year's branchlets brown, turning tawny, glabrous, longitudinally angular, scarcely lenticellate; second year's branchlets castaneous; terminal buds conical, glabrous. Petiole 2–3 mm, adaxially longitudinally sulcate, glabrous; leaf blade abaxially greenish, adaxially green, shiny, oblong or oblong-oblancheolate, 2–3 × 0.7–1 cm, leathery, both surfaces glabrous, midvein, lateral, and reticulate veins raised abaxially, impressed adaxially, lateral veins 4 pairs, base cuneate, margin crenate-serrate, apex obtuse. Male flowers not known. Female inflorescences: 1-flowered cymes, fasciculate, axillary on second year's branchlets; pedicels ca. 5 mm; bracteoles 2, basal, ovate, membranous; flowers 4-merous; calyx 4-lobed, lobes ovate-deltoid, glabrous; corolla rotate, petals ovate, basally slightly connate; ovary globose, 4-loculed, stigma discoid, 4-lobed. Fl. Jun–Jul, fr. unknown.

• *Abies* forests, hill slopes; ca. 3200 m. SE Xizang.

**98. *Ilex hookeri*** King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 55: 266. 1886.

贡山冬青 gong shan dong qing

Trees evergreen, ca. 18 m tall, glabrous throughout. Young branchlets castaneous, turning yellowish brown to gray, plicate-rugose, with broadly deltoid-elliptic leaf scars, lenticels absent; terminal buds ellipsoidal-conical, large, ca. 1.5 cm, bud scales glabrous, margin serrate. Leaves on first to third year's branchlets; petiole 1.2–3 cm, abaxially rugose, shallowly and narrowly sulcate; leaf blade cinereous-olivaceous or brown-olivaceous, not shiny, elliptic or obovate-elliptic, 5–14 × 2–4.5 cm, thickly leathery, midvein deeply impressed adaxially, lateral veins 11–15 pairs, and reticulate veins raised abaxially, impressed adaxially, base obtuse or rounded, margin serrate, teeth black, thin, apex acute or shortly acuminate. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; bracts ovate-orbicular, glabrous, not ciliate; flowers white-green, 4-merous. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles ca. 1 mm; pedicels 2–3 mm, glabrous; bracteoles 2,

subbasal; calyx patelliform, ca. 2.5 mm in diam., deeply 4-lobed, lobes deltoid-ovate, apex obtuse; petals 4, oblong-ovate, ca. 2.5 × 2 mm, basally slightly connate; stamens slightly shorter than petals, anthers oblong, ca. 1 mm; rudimentary ovary subglobose, ca. 1 mm, apex obtuse, slightly 4-lobed. Female inflorescences: 1-flowered cymes; pedicels 6–8 mm; bracteoles 2, subbasal, broadly deltoid; calyx and corolla as in male flowers; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm, ca. 1.5 mm in diam., apex truncate, stigma discoid, 4-lobed. Fruit globose, ca. 6 mm in diam.; persistent calyx explanate, ca. 4 mm in diam.; persistent stigma thinly discoid, 4-lobed; pyrenes 4, ellipsoidal, ca. 5 mm, ca. 2 mm in diam., abaxially and laterally palmately striate and deeply sulcate, pilose, endocarp leathery. Fl. May–Jun, fr. Oct–Nov.  $2n = 40^*$ .

Broad-leaved forests, hill slopes; 2100–3000 m. Xizang (Chumbi Valley), NW Yunnan [Bhutan, India, N Myanmar].

**99. *Ilex sikkimensis*** Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 44: 202. 1875.

锡金冬青 xi jin dong qing

*Ilex sikkimensis* var. *coccinea* H. F. Comber.

Trees evergreen, 10–17 m tall. Branchlets gray-black or reddish yellow-brown; bark pale yellowish when dry, thick, longitudinally angular, glabrous; second year's branchlets with expanded, raised elliptic or oblong lenticels, leaf scars slightly raised, semicircular; terminal buds ovoid, 1.5–2.5 cm, ca. 1.3 cm in diam.; buds scales ovate or broadly ovate, 1.5–2.5 cm, abaxially densely puberulent, margin often membranous, apex obtuse, axillary buds ovoid, ca. 5 mm in diam., buds scales ciliate. Leaves on first to second year's branchlets; petiole 2–5 cm, abaxially rugose, adaxially sulcate or broadly so, distal half narrowly winged by decurrent leaf base; leaf blade olivaceous when dry, elliptic, obovate-elliptic, or oblanceolate, (8–)10–15.5(–20) × 3–5.5(–6.2) cm, thinly leathery, both surfaces glabrous, midvein broadly and deeply impressed adaxially, longitudinally striate when dry, lateral veins 12–15 pairs, nearly parallel, raised abaxially, flat or slightly raised adaxially, furcate and anastomosing near margin, reticulate veins conspicuous abaxially, obscure adaxially, base rounded or obtuse, margin slightly reflexed, densely serrulate, apex acuminate or acute. Inflorescences: cymes, fasciculate, pseudopaniculate or pseudoracemose, axillary on second year's branchlets. Male inflorescences: cymes of order 2 or 3, 3–7-flowered, fasciculate; peduncles very short; bracts linear-lanceolate, ca. 1.5 mm, ciliate; pedicels 2–3 mm, with bracteoles; flowers 4-merous; calyx patelliform, 2–2.5 mm in diam., lobes 4, ovate-elliptic, ca. 1 mm, ciliate, apex rounded or obtuse; corolla rotate, petals broadly ovate or elliptic, ca. 2 mm, ca. 1.5 mm in diam., basally slightly connate; stamens slightly shorter than petals, anthers broadly ovate or ellipsoidal; rudimentary ovary small, apex depressed. Female inflorescences: cymes of order 2, 3-flowered, pseudopaniculate or pseudoracemose; peduncles very short, puberulent; bracts broadly deltoid, ca. 1 mm; pedicels 3–4 mm; bracteoles basal, deltoid; calyx ca. 2 mm in diam., lobes broadly deltoid, ca. 0.5 mm, minutely ciliate; petals as in male flowers; sterile anthers minute. Infructescence: rachis 4–7 mm, 2–2.5 mm in diam. Fruit red, globose, 4–5 mm in diam.; peduncle ca. 1.5 mm;

fruiting pedicel 6–10 mm, glabrous; persistent calyx explanate, subquadrangular, lobes deltoid, ciliate; persistent stigma discoid, 4-lobed; pyrenes 4, ovate-triangular, 2.5–3 mm, 1.5–1.8 mm in diam., abaxially convex, 3–5-striate and shallowly sulcate, laterally striate, sparsely pubescent or glabrous, endocarp stony. Fl. Jun–Jul, fr. Oct–Dec.  $2n = 36$ .

Evergreen broad-leaved forests; 2100–3000 m. SE Xizang, W Yunnan [Bhutan, N India, Myanmar, Nepal].

**100. *Ilex melanotricha*** Merrill, Brittonia 4: 101. 1941.

黑毛冬青 hei mao dong qing

*Ilex fargesii* Franchet subsp. *melanotricha* (Merrill) S. Andrews.

Trees evergreen, 5–10 m tall. Branchlets brown or deep brown, slightly thick, longitudinally ridged and sulcate, glabrous; second year's branchlets with raised deltoid-rounded leaf scars, lenticels absent; terminal buds narrowly conical, bud scales ciliate, apically acute. Leaves on first to second year's branchlets; petiole 1–1.7 cm, abaxially subrounded, adaxially shallowly sulcate, glabrous, narrowly winged by decurrent leaf base; leaf blade abaxially greenish, adaxially deep green, not shiny, oblanceolate or oblong-elliptic, 6.5–13 × 2.5–5 cm, subleathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 10–13 pairs, evident abaxially, obscure adaxially, reticulate veins evident abaxially, indistinct adaxially, base cuneate or obtuse, margin serrulate, teeth black, apex acuminate. Inflorescences: cymes, pseudopaniculate or pseudoracemose, axillary on second year's branchlets. Male inflorescences: cymes of order 2 or 3, 3- or 4-flowered, pseudopaniculate; rachis 6–10 mm, glabrous; bracts caducous, ovate, ciliate; peduncles 2–3 mm, puberulent; pedicels 3–4 mm, puberulent; bracteoles 2, submedian, ovate-lanceolate, ciliate; flowers fragrant, greenish, 4-merous; calyx deeply 4-lobed, lobes deltoid, apex obtuse or rounded, ciliate; corolla ca. 6 mm in diam., petals 4, obovate-oblong, ca. 3 × 2 mm, slightly ciliate, basally slightly connate; stamens 4, slightly shorter than petals, anthers ovoid-oblong, ca. 1 mm; rudimentary ovary subglobose, 0.5–0.75 mm in diam., papillose, apex obtuse, minutely 4-lobed. Female flowers not known. Infructescences: 1-fruited cymes, pseudoracemose; rachis 3–5 mm, puberulent; fruiting pedicels 4–7 mm, puberulent; persistent bracteoles 2, median, ovate, ciliate. Fruit red, globose, 4–7 mm in diam., longitudinally sulcate; glabrous; persistent calyx explanate, subquadrangular, ca. 2 mm in diam., lobes ciliate; persistent stigma flat, discoid, minutely 4-lobed; pyrenes 4, oblong-ellipsoidal, 3.5–4.5 mm, 2.5–3 mm in diam., abaxially palmately 6- or 7-striate, sulcate, or longitudinally ridged and 2-sulcate, laterally striate-sulcate, endocarp woody. Fl. May–Jun, fr. Oct–Nov.

Forests, hills; 1500–3400 m. Chongqing (Nanchuan), SE Xizang, NW Yunnan [N Myanmar].

**101. *Ilex franchetiana*** Loesener in Sargent, Pl. Wilson. 1: 77. 1911.

康定冬青 kang ding dong qing

Shrubs or small trees, evergreen, 2–8(–12) m tall, glabrous throughout. Branchlets brown, subterete, longitudinally angular

and sulcate; leaf scars broadly deltoid, flat or slightly raised, lenticels absent; terminal buds conical, apically acute, bud scales ciliate. Stipules persistent, deltoid, small, apically acute; petiole 1–2 cm, abaxially rugose, adaxially sulcate; leaf blade abaxially greenish, adaxially dark green, rather shiny, oblanceolate or oblong-lanceolate, rarely obovate or elliptic, (3–)6–12.5 × (1.2–)2–4.2 cm, subleathery, midvein slightly impressed adaxially, lateral veins (6–)8–15 pairs, both surfaces distinct, reticulate veins distinct abaxially, base cuneate or obtuse, margin narrowly recurved, serrulate, teeth black tipped and with hard acumen, apex acuminate or acute. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; bracts caducous, broadly ovate, ca. 4 mm, margin erose or ciliate; flowers greenish, 4-merous. Male inflorescences: cymes of order 2, 3-flowered; peduncles 1–1.5 mm; pedicels 2–5 mm; bracteoles 2, basal; calyx patelliform, ca. 2 mm in diam., deeply 4-lobed, lobes deltoid, minutely ciliate, apex obtuse or rounded; petals 4, oblong, ca. 2 × 1.5 mm, basally slightly connate; stamens rather shorter than petals, anthers oblong; rudimentary ovary conical, apex obtuse, 4-lobed. Female inflorescences: 1-flowered cymes; pedicels 3–4 mm; bracteoles 2, submedian; calyx as in male flowers; petals free, ovate, ca. 2 mm; staminodes ca. 3/4 as long as petals, sterile anthers cordate; ovary ovoid, ca. 2 mm, ca. 1.5 mm in diam., glabrous, apex truncate, stigma discoid. Infructescences: fruiting pedicels 4–5 mm. Fruit red, globose, (3–)6–7 mm in diam.; persistent calyx explanate, quadrangular 2–3 mm in diam.; persistent stigma thinly discoid; pyrenes 4(or 5), oblong, (2–)5–6 mm, 2.5–3 mm in diam., abaxially slightly raised, palmately striate and sulcate, laterally striate and rugose, endocarp woody. Fl. May–Jun, fr. Sep–Nov.

Forests, hills; 800–2300(–2900) m. Guizhou, Hubei, Sichuan, SE Xizang, NE Yunnan [N Myanmar].

- 1a. Leaf blade oblanceolate or oblong-lanceolate, 6–12.5 × 2–4.2 cm, lateral veins 8–15 pairs ..... 101a. var. *franchetiana*
- 1b. Leaf blade obovate or elliptic, 3–6 × 1.2–2.6 cm, lateral veins 6 or 7 pairs ..... 101b. var. *parvifolia*

**101a. *Ilex franchetiana* var. *franchetiana***

康定冬青(原变种) kang ding dong qing (yuan bian zhong)

Leaf blade oblanceolate or oblong-lanceolate, rarely elliptic, 6–12.5 × 2–4.2 cm, lateral veins 8–15 pairs, base cuneate or obtuse, apex acuminate or acute. Fruit globose, 6–7 mm in diam.; pyrenes 4, 5–6 mm. Fl. May–Jun, fr. Sep–Nov.

Broad-leaved forests, mixed forests, hills; 800–2300(–2900) m. Guizhou, Hubei, Sichuan, SE Xizang, NE Yunnan [N Myanmar].

**101b. *Ilex franchetiana* var. *parvifolia*** S. Y. Hu in W. P. Fang, Icon. Pl. Omei. 2: t. 160. 1946.

小叶康定冬青 xiao ye kang ding dong qing

*Ilex fargesii* Franchet var. *parvifolia* (S. Y. Hu) S. Andrews.

Leaf blade obovate or elliptic, 3–6 × 1.2–2.6 cm, lateral veins 6 or 7 pairs, base cuneate, margin serrate, apex shortly acuminate. Fruit globose, 3–5 mm in diam.; pyrenes 4 or 5, 2–4 mm.

- Forests, hills; 1800–2300 m. W Sichuan.

**102. *Ilex fargesii*** Franchet, J. Bot. (Morot) 12: 255. 1898.

狭叶冬青 xia ye dong qing

Trees evergreen, 4–8 m tall, or shrubs to 4 m tall, glabrous throughout. Branchlets brown or castaneous, terete, rugose; leaf scars deltoid and lenticels convex; young branchlets green, longitudinally angulate-ridged; terminal buds narrowly conical, apically acute. Petiole 0.8–1.6 cm, adaxially sulcate; leaf blade adaxially green, elliptic to elliptic-lanceolate, oblanceolate, linear-oblanceolate, linear-lanceolate, or linear, 5–13(–16) × (0.8–)1.5–2.5(–3.7) cm, subleathery, midvein slightly impressed adaxially, lateral veins 8–10 pairs, raised abaxially, evident adaxially, reticulate veins evident abaxially, obscure adaxially, base cuneate or obtuse, margin sparsely serrulate in distal half or serrate in distal 2/3, apex acuminate. Inflorescences: cymes, fasciculate, axillary on second year's branchlets. Male inflorescences: cymes of order 2, 3-flowered; peduncles ca. 1 mm; bracts deltoid, membranous, ciliate; pedicels ca. 2 mm; bracteoles 2, subbasal, deltoid or broadly deltoid, ciliate; flowers white, fragrant, 4-merous; calyx patelliform, ca. 2 mm in diam., 4-lobed, lobes suborbicular, ca. 1 mm, sparsely ciliate; corolla ca. 5 mm in diam., petals 4, obovate-oblong, 2–2.5 × ca. 1.5 mm, ciliate, basally slightly connate; stamens ca. 3/4 as long as petals, anthers oblong; rudimentary ovary ovoid-conical, apex obtuse, minutely 4-lobed. Female inflorescences: 1-flowered cymes; pedicels 2–3 mm; bracteoles 2 below middle; calyx as in male flowers; petals free, oblong, ca. 2 mm; staminodes shorter than petals, sterile anthers sagittate; ovary ovoid, 1.2–2 mm in diam., stigma discoid. Fruit red, globose, ca. 6 mm in diam., longitudinally striate; fruiting pedicels 5–7 mm; persistent calyx explanate; persistent stigma thinly discoid, 4-lobed; pyrenes 4, oblong, 4–4.5 mm, 3–3.5 mm in diam., abaxially convex, palmately striate and sulcate, laterally longitudinally striate and sulcate or sometimes reticulately striate and sulcate, endocarp woody. Fl. May, fr. Sep–Oct.

- Forests, forests and shrub forests on mountain slopes; 1500–3000 m. S Gansu, W Hubei, Hunan, S Shaanxi, Sichuan.

- 1a. Leaf blade elliptic to elliptic-lanceolate, to 7.3 cm ..... 102c. var. *brevifolia*  
 1b. Leaf blade oblanceolate, linear-oblanceolate, linear-lanceolate, or linear, to 16 cm.  
 2a. Leaf blade oblanceolate or linear-oblanceolate, 5–13(–16) × 1.5–2.5(–3.7) cm ..... 102a. var. *fargesii*  
 2b. Leaf blade linear-lanceolate or linear, 7–12 × 0.8–1.2 cm ..... 102b. var. *angustifolia*

**102a. *Ilex fargesii* var. *fargesii***

狭叶冬青(原变种) xia ye dong qing (yuan bian zhong)

*Ilex fargesii* f. *megalophylla* Loesener.

Leaf blade oblanceolate or linear-oblanceolate, 5–13(–16) × 1.5–2.5(–3.7) cm, upper margins serrate.

- Forests, shrub forests on mountain slopes; 1500–3000 m. S Gansu (Wenxian), W Hubei, Hunan, S Shaanxi, Sichuan.

**102b. *Ilex fargesii* var. *angustifolia*** C. Y. Chang, Fl. Tsinling, 1(3): 451. 1981.

线叶冬青 xian ye dong qing

Leaf blade linear-lanceolate or linear, 7–12 × 0.8–1.2 cm.

- Forests on mountain slopes; 1700–1800 m. S Gansu (Huixian), S Shaanxi (Foping, Liuba).

**102c. *Ilex fargesii* var. *brevifolia*** S. Andrews, Kew Mag. 3: 134. 1986.

短狭叶冬青 duan xia ye dong qing

Evergreen shrubs to 4 m tall, usually glabrous. Leaf blade elliptic to elliptic-lanceolate, 6–7.3 × 1.9–2.5 cm, margin serrate in distal 2/3.

- W Hubei.

**103. *Ilex gracilis*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 28. 1981.

纤枝冬青 xian zhi dong qing

Trees evergreen, small, ca. 8 m tall. Young branchlets castaneous or black, shiny, subterete, slender, irregularly striate, pubescent; second year's branchlets terete, glabrescent; terminal buds lanceolate, ferruginous pubescent. Petiole ca. 1 cm, pubescent, adaxially narrowly sulcate; leaf blade olivaceous when dry, elliptic or oblong-elliptic, 7–9 × 2.5–3.5 cm, leathery, both surfaces glabrous, sometimes strigose, midvein impressed adaxially, lateral veins 7–9 pairs, slightly raised on both surfaces, anastomosing near margin, reticulate veins slightly raised abaxially, inconspicuous adaxially, base obtuse or acute, margin crenulate-serrate, apex abruptly caudate-acuminate, acumen 1–1.5 cm. Flowers not known. Infructescences: 1-fruited cymes, fasciculate or pseudoracemose, axillary, fascicles 4- or 5-fruited; fruiting pedicels 3.5–4 mm, densely pubescent; persistent bracteoles basal, deltoid, pubescent. Fruit (immature) subglobose or ellipsoidal-globose, ca. 5 mm, ca. 4 mm in diam., pubescent; persistent calyx ca. 2 mm in diam., shallowly 4-lobed, lobes deltoid, ciliate; persistent stigma discoid; pyrenes 4, oblong, ca. 3.5 mm, ca. 2 mm in diam., abaxially palmately striate and sulcate, laterally striate and sulcate, endocarp stony. Fl. unknown, fr. Oct.

- Evergreen broad-leaved forests; 2300–2900 m. NW Yunnan (Gongshan).

**104. *Ilex dasyclada*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 13. 1985.

毛枝冬青 mao zhi dong qing

Shrubs evergreen, 1.6–2.5 m tall. Branchlets yellowish brown when dry, terete, slender, longitudinally angular and sulcate, densely shortly puberulent; leaf scars slightly raised; lenticels absent; terminal buds narrowly conical, densely shortly puberulent, apically shortly acuminate. Petiole 5–8 mm, sulcate, abaxially transversely rugose, adaxially puberulent; leaf blade oblong or oblong-elliptic, rarely ovate, 5–9 × 2–3.5 cm, papery, both surfaces glabrous, midvein impressed adaxially, lateral veins 6–8 pairs, anastomosing near margin, slightly raised

abaxially, flat adaxially, reticulate veins evident on both surfaces, base obtuse to subrounded, margin slightly reflexed, sparsely inconspicuously crenulate, teeth black, apex acuminate. Flowers not known. Infructescence: 1-fruited cymes, pseudoracemose, axillary on current year's branchlets, densely very shortly puberulent; axis 2–5 mm; fruiting pedicel ca. 2 mm; bracteoles 2, basal, ovate, densely pubescent. Fruit (immature) globose, 3–4 mm in diam., densely very shortly puberulent; persistent calyx explanate, ca. 2 mm in diam., shallowly 4-lobed, lobes ovate-deltoid, puberulent, ciliate; persistent stigma thickly discoid, slightly 4-lobed; pyrenes immature. Fl. unknown, fr. (Sep–)Oct–Nov.

• Mixed forests on mountain slopes; ca. 1600 m. S Yunnan (Jingdong).

**105. *Ilex wangiana*** S. Y. Hu, J. Arnold Arbor. 31: 54. 1950.

假枝冬青 jia zhi dong qing

*Ilex corallina* Franchet var. *wangiana* (S. Y. Hu) Y. R. Li.

Shrubs evergreen, ca. 3 m tall. Branchlets, petioles, leaf midvein, inflorescences, ovary, and fruit pubescent. Branchlets gray-black, terete, slender, longitudinally plicate-striate; terminal buds conical, bud scales densely pubescent. Petiole 5–7 mm, abaxially rugose, adaxially shallowly sulcate; leaf blade abaxially greenish, adaxially dark green, ovate-elliptic, 4–7 × 1.3–2.5 cm, leathery, abaxially sparsely pubescent, adaxially glabrous except on midvein, midvein impressed and pubescent adaxially, lateral veins 7 or 8 pairs, evident abaxially, obscure adaxially, reticulate veins obscure, base obtuse or rounded, margin crenate-serrate, teeth black, apex shortly acuminate. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, axillary on second year's branchlets; bracts ovate-deltoid, pubescent, ciliate; fruiting pedicels 2–3 mm, pubescent; bracteoles 2, subbasal, lanceolate, pubescent, ciliate. Fruit red, globose, 3–4 mm in diam., pubescent; persistent calyx explanate, quadrangular; persistent stigma thickly discoid or capitate; pyrenes 4, subglobose, 2–2.5 mm, 1.5–1.7 mm in diam., abaxially smooth or slightly depressed, obscurely palmately striate, laterally rugose and sulcate, endocarp stony. Fl. unknown, fr. Oct.

• Shrubby areas on mountain slopes; 1800–2000 m. NW Yunnan (Lancang Jiang valley, Weixi).

**106. *Ilex dicarpa*** Y. R. Li, Acta Bot. Yunnan. 3: 352. 1981.

双果冬青 shuang guo dong qing

Trees evergreen, small, ca. 5 m tall. Branchlets gray-brown, terete, longitudinally angulate and sulcate, puberulent; older branchlets with sparse minute rounded lenticels, leaf scars slightly raised, circular. Stipules persistent, narrowly discoid, puberulent, apically acuminate; petiole 6–7 mm, puberulent when young, glabrescent, adaxially sulcate; leaf blade abaxially greenish, adaxially green, not shiny, oblong or elliptic, 8–10 × 3–4 cm, papery, abaxially minutely glandular punctate, both surfaces glabrous, midvein impressed adaxially, lateral veins 9 or 10 pairs, inconspicuous, obliquely ascending, curved, furcate and anastomosing near margin, base obtuse to broadly cuneate, margin minutely crenulate-serrate, teeth black tipped, apex shortly acuminate. Flowers not known. Infructes-

cences: 1-fruited cymes, few fascicled, rarely solitary, fascicles 2-fruited, axillary on current year's branchlets; bracts narrowly triangular-ovate, 1–1.5 mm, puberulent; fruiting pedicels 5–7 mm, thickening distally, longitudinally plicate-rugose, sparsely puberulent or glabrescent; bracteoles 2, basal, narrowly triangular, puberulent. Fruit globose, ca. 5 mm in diam.; persistent calyx explanate, patelliform, deeply lobed, minutely ciliate; persistent stigma discoid, slightly convex, lobed; pyrenes 4, obscurely striate. Fl. unknown, fr. Aug.

• Evergreen broad-leaved forests, mountain slopes; ca. 1600 m. SE Xizang (Médog).

**107. *Ilex nubicola*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 13. 1985.

云中冬青 yun zhong dong qing

Trees or shrubs, evergreen. Branchlets stout, longitudinally ridged and sulcate; young branchlets puberulent; terminal buds conical, puberulent, bud scales ciliate. Petiole 8–10 mm, adaxially narrowly sulcate, puberulent on ridge, abaxially puberulent or glabrescent; leaf blade green, oblong, broadly lanceolate, or narrowly elliptic, 7–9 × 2–3.2 cm, papery, midvein impressed adaxially, minutely puberulent on both surfaces, lateral veins 9 or 10 pairs, raised abaxially, evident adaxially, anastomosing near margin, base broadly cuneate, margin undulate, sparsely serrulate, apex acuminate to long acuminate. Male inflorescences: cymes of order 2 or 3, 3–5-flowered, pseudopaniculate, axillary on current year's branchlets; rachis 3–6 mm, puberulent or glabrous; peduncles 1–2 mm; pedicels 2–3.5 mm, puberulent throughout; bracteoles 1 or 2, subbasal, puberulent, ciliate; calyx deeply 4-lobed, lobes suborbicular, sparsely ciliate; petals 4, oblong, ca. 3 × 2 mm, basally slightly connate; stamens 4, slightly shorter than petals, anthers elliptic; rudimentary ovary ovoid-globose, apex obtuse, stigma discoid, 4-lobed. Female flowers and fruit not known. Fl. Apr, fr. unknown.

• Forests; ca. 2500 m. SE Yunnan (Jinping).

**108. *Ilex chartaceifolia*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 11. 1985 [*“chartacifolia”*].

纸叶冬青 zhi ye dong qing

Trees evergreen, 10–25 m tall. Branchlets stout, longitudinally angular and sulcate, lenticellate; young branchlets puberulent or glabrous; second year's branchlets terete; leaf scars raised, deltoid; terminal buds conical, puberulent or glabrous, bud scale margin serrulate, ciliate. Petiole 1–1.5 cm; leaf blade abaxially greenish, adaxially green, oblong or broadly elliptic, 8–10 × 3–5 cm, papery, or thinly leathery, abaxially glabrous, adaxially glabrous or only puberulent on midvein, midvein impressed adaxially, lateral veins 7 or 8 pairs, raised abaxially, evident adaxially, reticulate veins evident abaxially, obscure adaxially, base obtuse, margin slightly reflexed, very obscurely crenulate, apex abruptly acuminate. Flowers not known. Infructescences: 1-fruited cymes, pseudoracemose, axillary on second year's branchlets; rachis 1–1.2 cm, stout, puberulent; fruiting pedicels ca. 5 mm, puberulent; bracteoles 2, basal, ovate. Fruit globose, ca. 6 mm, puberulent or glabrous; persistent calyx explanate, quadrangular, deeply 4-lobed, lobes broadly deltoid,



puberulent, ciliate; persistent stigma thinly discoid, 4-lobed; pyrenes 4, ellipsoidal, ca. 4.5 mm, ca. 2.5 mm in diam., abaxially and laterally palmately striate and sulcate. Fl. unknown, fr. Oct.

- Forests, mountain slopes; 1400–2500 m. NW and W Yunnan.

- 1a. Young branchlets, terminal buds, and leaf adaxial midvein puberulent ..... 108a. var. *chartaceifolia*  
 1b. Young branchlets, terminal buds, and leaf adaxial midvein glabrous ..... 108b. var. *glabra*

**108a. *Ilex chartaceifolia* var. *chartaceifolia***

纸叶冬青(原变种) zhi ye dong qing (yuan bian zhong)

Young branchlets, terminal buds, and leaf adaxial midvein puberulent.

- Dense mountain forests; 1400–2500 m. W Yunnan (Yangbi).

**108b. *Ilex chartaceifolia* var. *glabra*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 12. 1985.

无毛纸叶冬青 wu mao zhi ye dong qing

Young branchlets, terminal buds, petiole, and leaf adaxial midvein glabrous.

- Forests, mountain slopes; ca. 1900 m. NW Yunnan (Gongshan).

**109. *Ilex buergeri*** Miquel, Verwantschap Fl. Japan Azie Noord-Amerika, 20. 1866.

短梗冬青 duan geng dong qing

*Ilex buergeri* f. *subpuberula* (Miquel) Loesener; *I. subpuberula* Miquel.

Shrubs or trees, evergreen, (1–)7–15 m tall, ca. 30 cm d.b.h.; bark black, smooth. Branchlets terete, longitudinally ridged and sulcate, densely pubescent; old branchlets glabrescent; leaf scars slightly raised, crescent-shaped; terminal buds subovoid, bud scales densely pubescent. Petiole 4–8 mm, abaxially subrounded, rugose, puberulent, adaxially sulcate, pubescent; leaf blade abaxially greenish, adaxially dark green, shiny, ovate, oblong, or ovate-lanceolate, 4–8 × 1.7–2.5 cm, leathery, abaxially glabrous, adaxially glabrous except on midvein, midvein impressed and puberulent adaxially, lateral veins 7 or 8 pairs, slightly raised abaxially, minutely impressed adaxially when dry, reticulate veins obscure, base rounded, obtuse, or cuneate, margin slightly reflexed, sparsely irregularly shallowly serrate, apex acuminate. Inflorescences: 1-flowered cymes, fasciculate, fascicles 4–10-flowered, axillary on current year's branchlets; scales of flower buds reniform, pubescent, ciliate; bracts ovate, ca. 1.5 mm, pubescent; pedicels short, 2–3 mm, pubescent; bracteoles 2, basal, ovate-lanceolate, ciliate. Male flowers: calyx patelliform, ca. 2 mm in diam., 4-lobed, lobes deltoid, pubescent or subglabrous, ciliate; corolla yellowish green, 6–7 mm in diam., petals 4, oblong-obovate, ca. 3 mm, ciliate at apex, basally slightly connate; stamens 4, longer than petals, anthers oblong; rudimentary ovary conical, apex 4-lobed. Female flowers: calyx as in male flowers; petals free, equaling or slightly shorter than ovary, ciliate; staminodes equaling or slightly shorter than petals, sterile anthers ovoid; ovary ovoid, ca. 2.5 mm, ca. 1.7 mm in diam., stigma discoid. Fruit red, globose or subglobose, 4.5–6 mm in diam., tuberculate; fruiting

pedicel ca. 2.5 mm, persistent calyx explanate, 2–2.5 mm in diam., lobes 4, deltoid, ciliate; persistent stigma discoid, 4-lobed; fruiting pedicel very short, ca. 1 mm; pyrenes 4, subglobose, ca. 3 mm, ca. 3 mm in diam., abaxially longitudinally 4- or 5-palmately striate and broadly shallowly sulcate, laterally rugose and sulcate, endocarp stony. Fl. Apr–Jun, fr. Oct–Nov.

Evergreen broad-leaved forests, forest margins, stream banks, slopes; 100–700 m. S Anhui (Qimen), Fujian, Guangdong, Guangxi, Hubei, Hunan, Jiangxi, Zhejiang [Japan].

**110. *Ilex subrugosa*** Loesener in Sargent, Pl. Wilson. 1: 80. 1911.

异齿冬青 yi chi dong qing

*Ilex latifolia* Thunberg var. *subrugosa* (Loesener) Hu & T. Tang.

Trees evergreen, ca. 10 m tall. Branchlets terete, longitudinally striate and sulcate, densely yellow-brown pubescent, lenticels absent, leaf scars semicircular, raised; terminal buds narrowly conical, apically acuminate, bud scales densely pubescent. Petiole 4–10 mm, abaxially subrounded and rugose, adaxially narrowly and deeply sulcate, pubescent; leaf blade abaxially greenish, adaxially deep green, slightly shiny, oblong-elliptic or lanceolate, 4–10 × 1.5–2.5(–3) cm, leathery, abaxially glabrous, adaxially glabrous except on midvein, midvein impressed and pubescent adaxially, lateral veins 5–8 pairs, slightly raised abaxially, flattened or slightly impressed adaxially, reticulate veins obscure adaxially, base cuneate or obtuse, margin sparsely crenulate or coarsely sharply serrate, apex acuminate. Inflorescences: cymes, fasciculate or pseudoracemose, axillary on second year's branchlets; rachis puberulent or glabrous; bracts ovate, 2–3 mm, puberulent; flowers yellowish, fragrant. Male inflorescences: cymes of order 1(or 2), 1(–3)-flowered, fasciculate; pedicels 2–3 mm, pubescent; bracteoles 2, median, ca. 2 mm; calyx patelliform, ca. 2 mm in diam., puberulent, 4-lobed, lobes suborbicular, ciliate; corolla 6–7 mm in diam., petals 4, oblong, ca. 3 × 2 mm, basally slightly connate; stamens ca. as long as petals; rudimentary ovary ovoid, apex obtuse, obscurely lobed. Female inflorescences: 1-flowered cymes, pseudoracemose, puberulent; rachis 3–5 mm; pedicels 4–6 mm, puberulent; bracteoles 2, basal, lanceolate, puberulent; calyx patelliform, 4-lobed, lobes deltoid, ciliate; petals free, obovate, ca. 3 × 1.75 mm, not ciliate; staminodes ca. 2/3 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm, style evident, stigma thickly discoid or capitate. Fruit red, subglobose-ellipsoid, 5–6 mm, 4–5 mm in diam., tuberculate; persistent calyx explanate, subquadrangular, lobes ciliate; persistent stigma thickly discoid, 4-lobed; pyrenes 4, obovoid, ca. 3.5 mm, ca. 2 mm in diam., pointed at smaller end, abaxially palmately longitudinally striate and sulcate, laterally longitudinally striate and shallowly sulcate, endocarp woody. Fl. Apr–May, fr. Sep–Oct.

- Forests along stream banks, hills; 1200–2300 m. W Sichuan, Xizang, NW Yunnan (Weixi).

**111. *Ilex austrosinensis*** C. J. Tseng, Acta Phytotax. Sin. 22: 415. 1984 [*“austro-sinensis”*].

两广冬青 liang guang dong qing

Trees or shrubs, evergreen, 3–12 m tall. Young branchlets brown, slender, striate, puberulent or glabrescent. Petiole 5–10 mm, adaxially sulcate, puberulent; leaf blade green or olivaceous when dry, oblong, elliptic-oblong, or ovate-elliptic, 5–10 × 2–4 cm, leathery or thinly leathery, both surfaces glabrous except on midvein, midvein adaxially raised or subflat, or proximal half raised and gradually subflat upward, lateral veins 7–9 pairs, raised on both surfaces, reticulate veins evident abaxially, inconspicuous adaxially, base rounded or obtuse, margin sparsely serrulate or subentire, apex acuminate, acumen 6–10 mm. Inflorescences: cymes of order 1 or 2, 1–3-flowered, fasciculate or pseudoracemose, axillary, puberulent. Male inflorescences: peduncles ca. 3 mm; bracts deltoid-ovate; pedicels 2–3 mm, with bracteoles below middle; flowers 4-merous; calyx cup-shaped, lobes ovate or suborbicular; petals oblong, ciliate, basally ca. 1/4 connate; stamens shorter than petals; rudimentary ovary tuberculate, apex 4-lobed. Female inflorescences: peduncles 1–2 mm; pedicels 3–4 mm; bracteoles basal, deltoid-ovate; flowers 4-merous; calyx cup-shaped, lobes broadly deltoid; petals deltoid-oblong, ca. 2 mm, puberulent, ciliate; staminodes ca. as long as or shorter than petals; ovary ovoid, tuberculate, stigma capitate, shallowly 4-lobed. Fruit (immature) ellipsoidal; persistent stigma thickly discoid or capitate. Fl. Apr–May, fr. Jun–Jul.

• Forests on mountain slopes; 800–1000 m. Guangdong (Gaoyao, Ruyuan), Guangxi (Shanglin, Wuming), Hainan (Baisha).

**112. *Ilex chuniana*** S. Y. Hu, J. Arnold *Arbor.* 32: 397. 1951.

铁仔冬青 tie zi dong qing

Shrubs or small trees, evergreen, ca. 4 m tall. Branchlets slender, longitudinally striate, pubescent. Stipules persistent, minute; petiole 3–5 mm, puberulent, longitudinally sulcate; leaf blade olivaceous or brown when dry, not shiny, lanceolate, rarely narrowly elliptic, 3–5.5 × 0.9–1.5 cm, subleathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 5 or 6 pairs, obscure on both surfaces, base acute or acuminate, margin bluntly crenulate-serrate, apex obtuse. Inflorescences: 1-flowered cymes, fasciculate, axillary. Male inflorescences: pedicels ca. 2 mm, glabrous; bracteoles 2, basal; flowers yellow-white, 4-merous; calyx patelliform, ca. 2 mm in diam., lobes ciliate; corolla rotate, ca. 4 mm in diam., petals ovate, ca. 1.5 mm; stamens ca. as long as petals, anthers ovoid; rudimentary ovary subglobose. Female flowers not known. Fruit red when dry, subglobose-ellipsoidal, ca. 5.5 mm, ca. 4.5 mm in diam.; fruiting pedicel ca. 2 mm, sparsely puberulent; persistent calyx explanate, quadrangular, ca. 2.5 mm in diam., ciliate; persistent stigma thickly discoid, 4-lobed; pyrenes 4, ca. 4.5 mm, ca. 3 mm in diam., abaxially palmately striate, not sulcate, sparsely puberulent, endocarp woody. Fl. Oct–Dec, fr. Nov–Jan.

• Mountain forests; ca. 1000 m. S Guangdong (Taishan), Hainan.

**113. *Ilex pingnanensis*** S. Y. Hu, J. Arnold *Arbor.* 31: 59. 1950.

平南冬青 ping nan dong qing

Shrubs or small trees, evergreen, to 12 m tall. Branchlets gray, terete, densely pubescent, longitudinally striate and sulcate when young, leaf scars semicircular, lenticels absent; terminal buds densely pubescent. Stipules persistent, minute, apically acute; petiole 5–7 mm, densely pubescent; leaf blade abaxially

greenish, adaxially deep green, slightly shiny, oblong or oblong-elliptic, 5–12 × 2–3.2 cm, leathery, midvein raised and glabrous abaxially, impressed and pubescent adaxially, lateral veins 6–8 pairs, evident on both surfaces, reticulate veins obscure on both surfaces, base obtuse, margin entire or obscurely crenulate-serrate, apex acuminate, acumen 8–14 mm. Flowers not known. Inflorescences: cymes 1-fruited, fasciculate, axillary on second year's branchlets; basal bracts deltoid, thickly leathery, pubescent, ciliate, apex acute; basal appendage stipulelike; fruiting pedicels ca. 2 mm; bracteoles 2, basal. Fruit red, globose, ca. 6 mm in diam.; persistent calyx orbicular, ca. 2 mm in diam., lobes orbicular, ciliate; persistent stigma thickly discoid, convex, style very short; pyrenes 4, oblong, 4–4.5 mm, 2–2.5 mm in diam., abaxially longitudinally 1-sulcate, palmately striate and sulcate, laterally rugose and pitted, endocarp stony. Fl. Apr–May, fr. Oct–Nov.

• Mixed mountain forests; 200–600 m. Guangdong (Deqing, Fengkai), Guangxi (Longjin, Pingnan, Rongshui).

**114. *Ilex fengqingensis*** C. Y. Wu ex Y. R. Li, *Bull. Bot. Res., Harbin* 5(1): 10. 1985.

凤庆冬青 feng qing dong qing

Trees evergreen, 4–7 m tall. Branchlets brown when dry, terete; current year's branchlets longitudinally angular and sulcate, densely puberulent; second year's branchlets nearly glabrous. Petiole 5–8 mm, narrowly sulcate, densely puberulent; leaf blade abaxially greenish, adaxially green, shiny or not, oblong-elliptic, 3–6 × 1.3–2 cm, leathery, abaxially glabrous, midvein flattened or impressed, and puberulent adaxially, lateral veins 6 or 7 pairs, raised on both surfaces, reticulate veins evident on both surfaces, base broadly cuneate or obtuse, margin undulate, reflexed, obscurely sparsely serrulate, minute tips of teeth black, apex obtuse or shortly acuminate. Male flowers not known. Female inflorescences: 1-flowered cymes, fasciculate, fascicles 3–6-flowered, axillary on current year's branchlets; pedicels 1–2 mm, puberulent; bracteoles 2, basal, ovate-deltoid, ciliate; flowers 4-merous; calyx deeply 4-lobed, lobes orbicular, puberulent, ciliate; petals 4, obovate-oblong, ca. 3 × 2 mm, puberulent; staminodes ca. as long as or longer than petals, sterile anthers ovoid-sagittate; ovary globose, apex convex. Inflorescences: fruiting pedicels ca. 2 mm, sparsely puberulent. Fruit subglobose, ca. 4 mm, ca. 3 mm in diam., smooth, shallowly longitudinally 4-sulcate; persistent calyx explanate, 4-lobed, lobes suborbicular, ciliate; persistent stigma thickly discoid, minute, 4-lobed; pyrenes 4, ellipsoidal, ca. 3 mm, ca. 1.5 mm in diam., both ends obtuse, abaxially palmately striate and sulcate, laterally slightly striate and sulcate, ± smooth, endocarp woody. Fl. Jun–Jul, fr. Jul–Oct.

• Forests, forest margins; 2700–2800 m. W Yunnan (Fengqing, Lincang, Longling).

**115. *Ilex kunmingensis*** H. W. Li ex Y. R. Li, *Bull. Bot. Res., Harbin* 5(1): 19. 1985.

昆明冬青 kun ming dong qing

Shrubs evergreen, 2–4 m tall. Branchlets black or black-brown when dry, terete, longitudinally angular and sulcate, glabrous; leaf scars slightly raised, deltoid, lenticels absent;

terminal buds ovoid-conical, glabrous. Petiole 5–9 mm, abaxially transversely rugose, adaxially slightly flattened to broadly sulcate, glabrous; leaf blade green, olive or brown when dry, obovate-oblong or obovate-lanceolate, rarely elliptic, 4.5–7.5(–8) × 1.4–2.7(–3) cm, thinly leathery or papery, both surfaces glabrous, midvein impressed adaxially, lateral veins 7–9 pairs, raised abaxially, flattened and evident adaxially, forked and anastomosing near margin, reticulate veins evident abaxially, base broadly cuneate, margin sparsely serrulate, apex abruptly acuminate or acuminate. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, axillary on current year's branchlets; fruiting pedicels 2–3(–5) mm, glabrous or puberulent; bracteoles basal, ovate-deltoid, ciliate. Fruit (immature) globose, ca. 4 mm in diam.; persistent calyx 4-lobed, lobes ovate, ciliate; persistent stigma thickly discoid or capitate, slightly 4-lobed; pyrenes 4, ovoid, ca. 2 mm, ca. 1.5 mm in diam., abaxially smooth, nearly not or inconspicuously striate and sulcate, endocarp leathery. Fl. unknown, fr. Aug–Oct.

• Shrub forests, evergreen broad-leaved forests, mountain slopes; 2100–2500 m. C and S Yunnan.

- 1a. Fruiting pedicel 2–3 mm, glabrous,  
persistent stigma thickly discoid  
..... 115a. var. *kunmingensis*  
1b. Fruiting pedicel 3.5–5 mm, puberulent,  
persistent stigma capitate ..... 115b. var. *capitata*

**115a. *Ilex kunmingensis* var. *kunmingensis***

昆明冬青(原变种) *kun ming dong qing* (*yuan bian zhong*)

Leaf blade 4.5–7.5 × 1.4–2.7 cm. Fruiting pedicel 2–3 mm, glabrous; fruit globose; persistent stigma thickly discoid, slightly 4-lobed. Fr. Aug–Oct.

• Shrub forests, mountain slopes; 2100–2300 m. C Yunnan (Songming).

**115b. *Ilex kunmingensis* var. *capitata*** Y. R. Li, Bull. Bot. Res., Harbin 5(1): 19. 1985.

头状昆明冬青 *tou zhuang kun ming dong qing*

Leaf blade 5–8 × 2–3 cm. Fruiting pedicel 3.5–5 mm, puberulent; persistent stigma capitate. Fr. Sep.

• Evergreen broad-leaved forests on mountain slopes; 2200–2500 m. S Yunnan (Shuangjiang).

**116. *Ilex peiradena*** S. Y. Hu, J. Arnold Arbor. 31: 62. 1950.

上思冬青 *shang si dong qing*

Shrubs evergreen, ca. 2 m tall, glabrous throughout. Branchlets gray-green, terete, straight, slender; young ones longitudinally ridged, later irregularly rugose; leaf scar obovate or deltoid, lenticels absent; terminal buds narrowly conical, glabrous. Petiole 6–10 mm, glabrous, adaxially narrowly sulcate, broadly winged toward end by decurrent base; leaf blade dark brown when dry, lanceolate, 4–7.5 × 1.2–2 cm, leathery, abaxially punctate, unevenly pubescent, midvein impressed adaxially, lateral veins 5 or 6 pairs, evident abaxially, obscure adaxially, reticulate veins obscure on both surfaces, base cuneate, margin subentire or minutely glandular-crenulate, apex shortly

acuminate. Inflorescences: 1-flowered cymes, fasciculate, axillary on second year's branchlets; persistent scales of flower buds glabrous, ciliate; bracts deltoid, apex acute, keeled, ciliate; flowers 4-merous. Male inflorescences: pedicels 2–3 mm; bracteoles 2, basal; calyx discoid, ca. 2 mm in diam., 4-lobed, lobes small, ciliate; corolla 6–7 mm in diam., petals 4, ca. 3 mm, basally slightly connate, ciliate; stamens ca. as long as petals, anthers ovoid, ca. 0.75 mm; rudimentary ovary subglobose-pulvinate, minute, apex truncate. Female inflorescences: pedicels ca. 5 mm at fruiting; bracteoles 2, basal; calyx as in male flowers; petals free, ca. 2.5 mm; staminodes ca. 2/3 as long as petals, sterile anthers ovoid; ovary globose, stigma thickly discoid. Fruit subglobose, ca. 3 mm, ca. 4 mm in diam., longitudinally sulcate; persistent calyx explanate, quadrangular, ca. 2 mm in diam., ciliate; persistent stigma thickly discoid, evidently 4-lobed; pyrenes 4, subglobose, ca. 2.5 mm, ca. 2 mm in diam., abaxially palmately striate and sulcate, laterally rugose and pitted, endocarp stony. Fl. Mar, fr. Jul.

Thickets, swamps on mountains; 800–1200 m. S Guangxi (Shangsi, Shiwan Dashan) [Vietnam].

**117. *Ilex micropyrena*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 20. 1985.

小核冬青 *xiao he dong qing*

Shrubs evergreen, ca. 1.7 m tall. Current year's branchlets longitudinally angular, glabrous; second year's branchlets terete, smooth; leaf scars slightly raised, semicircular, lenticels obscure; terminal buds conical, bud scales serrulate, glabrous. Petiole 8–13 mm, abaxially transversely rugose, adaxially narrowly sulcate, glabrous; leaf blade oblong-elliptic or oblong-lanceolate, (6–)7–12 × 2.2–4 cm, leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 8–10 pairs, raised abaxially, minutely raised or ± flat adaxially, straight and ascending, furcate and anastomosing near margin, reticulate veins evident abaxially, obscure adaxially, base obtuse or broadly cuneate, margin slightly reflexed, sparsely crenulate-serrate, teeth black, apex acuminate. Flowers not known. Infructescences: 1-fruited cymes, pseudoracemose, axillary on current year's branchlets; rachis 5–7 mm, stout, glabrous or minutely puberulent; fruiting pedicels 5–7 mm, minutely puberulent; bract 1, basal, ovate-deltoid; bracteoles 2, submedian. Fruit globose, 5–6 mm in diam.; persistent calyx explanate, patelliform, glabrous; persistent stigma thinly discoid, 4-lobed; pyrenes 4, broadly ellipsoidal, ca. 2.5 mm, ca. 2 mm in diam., abaxially palmately striate and 3- or 4-sulcate, laterally shallowly pitted, smooth, not striate, endocarp stony. Fl. unknown, fr. Aug–Sep.

• Forests, stream banks; ca. 1700 m. NW Yunnan (Gongshan).

**118. *Ilex pingheensis*** C. J. Tseng, Bull. Bot. Res., Harbin 9(4): 29. 1989.

平和冬青 *ping he dong qing*

Shrubs evergreen, 2–3 m tall. Current year's branchlets erect, slender, angular, glabrous; second year's branchlets subterete, irregularly rugose, lenticels rounded. Petiole 4–7 mm, slender, abaxially transversely rugose, adaxially narrowly sulcate; leaf blade adaxially brown-green or dark green when dry, oblong-lanceolate or elliptic-lanceolate, 3.5–6 × 1.5–2.5 cm,

thickly leathery, both surfaces glabrous, midvein narrowly impressed adaxially, lateral veins 5–7 pairs, evident abaxially, reticulate veins evident abaxially, base cuneate, margin slightly or deeply undulate, sparsely black serrulate, apex acuminate or long acuminate. Inflorescences: 1-flowered cymes, fasciculate, fascicles 4-flowered, axillary, glabrous; pedicels very short; bracts on distal half of pedicels. Male flowers: calyx 4-lobed, lobes deltoid; petals oblong, ca. 2 mm, basally connate; stamens ca. 3 mm. Female flowers: calyx and petals as in male flowers; ovary terete, stigma discoid. Fruit purple, subglobose, ca. 5 mm in diam.; pyrenes 4, subglobose, ca. 2 mm in diam., abaxially thinly striate and sulcate, laterally rugose-pitted. Fl. and fr. Dec.

- Sparse forests; ca. 900 m. Fujian (Pinghe).

**119. *Ilex macrostigma*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 20. 1985.

大柱头冬青 da zhu tou dong qing

Shrubs evergreen, 1.5–2 m tall. Current year's branchlets yellow-brown when dry, longitudinally angulate and sulcate, glabrous; second year's branchlets terete, longitudinally fissured; leaf scars slightly raised, deltoid; lenticels obscure; terminal buds narrowly conical, glabrous. Petiole 5–8 mm, glabrous, abaxially subrounded, transversely rugose, adaxially broadly sulcate; leaf blade abaxially greenish, adaxially green, elliptic-lanceolate or oblong-lanceolate, 4.5–8.5 × 1.8–2.5 cm, thinly leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 8 or 9 pairs, obliquely ascending, raised abaxially, flattened or slightly raised adaxially, furcate and anastomosing near margin, reticulate veins obscure on both surfaces, base obtuse or broadly cuneate, margin sparsely shallowly serrate, apex acuminate to long acuminate. Male flowers not known. Female inflorescences: 1-flowered cymes, fasciculate, axillary on current year's branchlets; pedicels 2–3 mm, glabrous; bracteoles 2, basal, ovate, ciliate; calyx patelliform, ca. 2 mm in diam., 4-lobed, lobes broadly deltoid, ca. 0.5 × 1 mm, ciliate; petals and staminodes not seen; ovary ovoid, 1.5–2 mm in diam., glabrous, stigma black when dry, trapezoid-conical, large, ca. 0.5 mm, ca. 1 mm in diam. Fruit not known. Fl. Apr, fr. unknown.

- Forests, stream banks, mountain slopes; 1800–2500 m. NW Yunnan (Heqing).

**120. *Ilex dianguiensis*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 25. 1981.

滇贵冬青 dian gui dong qing

Trees evergreen, small, ca. 3.5 m tall. Current year's branchlets black or brown, angular, glabrous; second year's branchlets brown, terete. Petiole 8–11 mm, adaxially narrowly sulcate; leaf blade abaxially brownish and adaxially brown when dry, elliptic or obovate-elliptic, 4–6 × 1.5–2.5 cm, leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 5–7 pairs, slightly raised on both surfaces, reticulate veins evident, base attenuate and decurrent, margin crenulate-serrate, apex abruptly acuminate. Flowers not known. Inflorescences: 1-fruited cymes, fasciculate or pseudoracemose, fascicles 5- or 6-fruited, axillary. Fruit globose, ca. 5 mm in diam.; fruiting pedicel 6–7 mm; persistent calyx patelliform, ca. 2 mm in diam.,

shallowly 4-lobed, lobes broadly deltoid or suborbicular, not ciliate; persistent stigma thinly discoid; pyrenes 4, oblong, ca. 4.5 mm, ca. 3 mm in diam., abaxially palmately striate and sulcate or not, laterally irregularly striate and sulcate, endocarp stony. Fl. and fr. unknown.

- Forests or shrub forests on mountains; 1400–2000 m. Guizhou (Bijie), Yunnan (Xundian).

**121. *Ilex brachyphylla*** (Handel-Mazzetti) S. Y. Hu, J. Arnold Arbor. 31: 61. 1950.

短叶冬青 duan ye dong qing

*Ilex ficoidea* Hemsley var. *brachyphylla* Handel-Mazzetti, Symb. Sin. 7: 658. 1933.

Trees evergreen, small, 4–15 m tall. Branchlets castaneous, terete, longitudinally angular and sulcate, glabrous, lenticels absent; terminal buds lanceolate, bud scales glabrous, ciliate. Petiole 6–9 mm, abaxially plicate-rugose, adaxially deeply sulcate, glabrous throughout; leaf blade green, oblong-ovate, 5–9 × 2–3.5 cm, leathery, both surfaces glabrous, midvein narrowly impressed adaxially, lateral veins 6 or 7 pairs, evident abaxially, obscure adaxially, base rounded or obtuse, margin serrate, apex acuminate or abruptly acuminate, acumen 1–1.2 cm. Male inflorescences: cymes of order 1 (or 2), 1(–3)-flowered, fasciculate, axillary on second and third year's branchlets; persistent bud scales ovate, ca. 2 mm in diam., apex obtuse; bracts ovate-deltoid, ca. 2 mm, membranous, apex obtuse, with 2 stipulelike appendages ca. 1 mm, pubescent; peduncles 1–3 mm, pubescent; bracteoles 2, median, submedian, or rarely close to calyx, ovate, strongly keeled, apex obtuse, ciliate; flowers yellowish, 4-merous; calyx patelliform, ca. 2.5 mm in diam., glabrous, deeply 4-lobed, lobes suborbicular or broadly ovate, ca. 1 × 1 mm, ciliate; corolla 8–9 mm in diam., petals 4, oblong, ca. 3.5 mm, basally slightly connate, apex sparsely ciliate; stamens ca. as long as or slightly longer than petals, anthers oblong; rudimentary ovary globose, ca. 1 mm in diam., densely puberulent on apical half. Female flowers and fruit not known. Fl. Apr, fr. unknown.

- Forests on mountain slopes; 800–1300 m. SW Hunan (Wugang).

**122. *Ilex confertiflora*** Merrill, Lingnan Sci. J. 13: 35. 1934.

密花冬青 mi hua dong qing

Shrubs or small trees, evergreen, 3–8 m tall. Young branchlets terete, stout, longitudinally angular and sulcate, glabrous; older branchlets longitudinally fissured, leaf scars semi-circular, lenticels absent; terminal buds narrowly conical, puberulent, apically acute. Petiole 8–10 mm, abaxially transversely rugose, adaxially sulcate, glabrous; leaf blade adaxially yellowish, oblanceolate, elliptic, oblong, or obovate-oblong, 6–9(–13) × 3–4.2(–4.5) cm, thickly leathery, abaxially sparsely glandular punctate, both surfaces glabrous, midvein impressed adaxially, lateral veins 6–8 pairs, raised abaxially, slightly impressed adaxially, curved ascending, anastomosing near margin, reticulate veins evident on both surfaces, base rounded, rarely obtuse, margin recurved, sparsely crenulate, teeth black and very short, apex abruptly shortly acuminate, acumen deltoid, 3–5 mm, or long acuminate. Inflorescences: cymes, fasciculate,

axillary on second year's branchlets; flowers yellowish, 4-merous. Male inflorescences: cymes of order 2, 3-flowered; peduncles ca. 1 mm; pedicels 1–2 mm, puberulent; bracts deltoid, puberulent, apex acute; calyx patelliform, 2–2.5 mm in diam., deeply 4-lobed, lobes deltoid, glabrous, apex obtuse, ciliate; corolla ca. 7 mm in diam., petals oblong, ca. 3 mm, apex ciliate; stamens ca. 1/3 as long as petals, anthers ovoid; rudimentary ovary subglobose, ca. 0.5 mm in diam., apex rounded. Female inflorescences: 1-flowered cymes; pedicels 1.5–2 mm, puberulent; bracteoles 2, submedian, ovate-deltoid, puberulent; calyx patelliform, puberulent, ciliate; petals free, elliptic, ca. 2.5 mm, ciliate; staminodes ca. 2/3 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm, ca. 1.5 mm in diam., glabrous, stigma reflexed, thickly discoid, convex. Fruit red, globose, ca. 5 mm in diam.; fruiting pedicel 1–2 mm, puberulent; persistent calyx explanate, ca. 2 mm, 4-lobed, lobes suborbicular; persistent stigma thickly discoid; pyrenes 4, oblong, 3.5–4 mm, ca. 2.5 mm in diam., abaxially broadly depressed, palmately striate and sulcate, laterally coarse and rugose, endocarp stony. Fl. Apr, fr. May–Sep(–Oct).

• Forests, forest margins, mountain slopes; 700–1200 m. Guangdong, Guangxi, Hainan.

- 1a. Leaf blade oblong or obovate-oblong, 6–9 × 3–4.2 cm, apex abruptly shortly acuminate, 3–5 mm ..... 122a. var. *confertiflora*  
 1b. Leaf blade oblanceolate or elliptic, 10–13 × 3–4.5 cm, apex long acuminate, 5–10 mm ..... 122b. var. *kwangsiensis*

**122a. *Ilex confertiflora* var. *confertiflora***

密花冬青(原变种) mi hua dong qing (yuan bian zhong)

Shrubs or small trees, evergreen, 3–8 m tall. Leaf blade oblong or obovate-oblong, 6–9 × 3–4.2 cm, apex abruptly shortly acuminate, 3–5 mm. Infructescence 1-fruited, fasciculate, axillary; rachis absent. Fl. Apr, fr. May–Sep.

• Forests, forest margins, mountain slopes; 700–1200 m. Guangdong, Guangxi, Hainan.

**122b. *Ilex confertiflora* var. *kwangsiensis*** S. Y. Hu, J. Arnold Arbor. 31: 72. 1950.

广西密花冬青 guang xi mi hua dong qing

Trees small. Leaf blade oblanceolate or elliptic, 10–13 × 3–4.5 cm, apex long acuminate, 5–10 mm. Infructescence: rachis 5–22 mm. Fruit red, globose, ca. 5 mm in diam. Fr. Oct.

• Forests, mountain slopes; ca. 1200 m. Guangxi.

**123. *Ilex punctatilimba*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 21. 1985.

点叶冬青 dian ye dong qing

Shrubs or small trees, evergreen, 3–5 m tall. Current year's branchlets purple-black when dry, terete, glabrous, longitudinally angular and sulcate; second year's branchlets longitudinally fissured and transversely rugose, scabrid; leaf scars deltoid-semicircular, convex; lenticels sparse, pale, elliptic; terminal buds conical, bud scales ciliate. Petiole purple-black, 1–2

cm, stout, abaxially subrounded, adaxially shallowly sulcate, glabrous; leaf blade abaxially greenish, adaxially dark green, oblong-lanceolate, 6–9.5 × 2.5–3 cm, leathery, abaxially minutely glandular punctate, both surfaces glabrous, midvein impressed adaxially, lateral veins 9–11 pairs, obliquely ascending, anastomosing near margin, evident abaxially, inconspicuous adaxially, reticulate veins evident abaxially, obscure adaxially, base obtuse to subrounded, margin slightly reflexed, crenulate-serrate, apex acuminate. Male inflorescences: cymes of order 2, 3-flowered, pseudopaniculate, axillary on current year's branchlets; rachis purple-black, ca. 3 mm, inflated, stout, ca. 2.5 mm in diam., glabrous; peduncles ca. 1.5 mm, ciliate; pedicels ca. 3 mm, puberulent; bracteoles 2, basal, ovate, ciliate; flowers yellow, 4-merous; calyx patelliform, ca. 2 mm in diam., glabrous, 4-lobed, lobes deltoid-ovate, ca. 1 mm, ciliate; corolla rotate, ca. 7 mm in diam., petals 4, broadly elliptic, ca. 3 × 2 mm, basally slightly connate, apex rounded; stamens ca. 2 mm, anthers ovoid; rudimentary ovary subglobose, ca. 1 mm in diam., apex obtuse, minutely lobed. Female flowers and fruit not known. Fl. Apr–May, fr. unknown.

• Evergreen broad-leaved forests, roadsides, mountain slopes; 2500–3000 m. NW and S Yunnan.

**124. *Ilex robustinervosa*** C. J. Tseng ex S. K. Chen & Y. X. Feng, Acta Phytotax. Sin. 37: 144. 1999.

粗脉冬青 cu mai dong qing

Shrubs or small trees, evergreen, 2–3.5 m tall; bark brown. Branchlets brownish or gray, subterete, striate, glabrous; terminal buds lanceolate, glabrescent. Petiole 1–1.5 cm, adaxially sulcate; leaf blade adaxially dark green, ovate-oblong or oblong, rarely broadly ovate or suborbicular, (8–)11–14 × 5–7 cm, leathery, abaxially minutely brown punctate when dry, both surfaces glabrous, midvein impressed adaxially, lateral veins 7–10 pairs, anastomosing near margin, slightly raised abaxially, strongly raised adaxially, reticulate veins obscure abaxially, raised adaxially, base rounded, margin subentire, slightly reflexed, apex shortly acuminate, rarely rounded. Male inflorescences: cymes of order 1 or 2, 1–3-flowered, fasciculate, axillary; peduncles ca. 1 mm; pedicels ca. 3 mm, puberulent or glabrescent; bracteoles 2, basal; flowers 4-merous; calyx puberulent or glabrescent, lobes deltoid-ovate, ciliate; petals oblong, ca. 3.5 mm, basally slightly connate; stamens ca. 4 mm; rudimentary ovary ovoid. Female flowers not known. Infructescences: 1-fruited cymes, fasciculate or pseudoracemose, axillary; fruiting pedicels 5–6 mm, puberulent; bracteoles 2, basal. Fruit (immature) globose, ca. 4 mm in diam.; persistent calyx 4-lobed, lobes broadly deltoid or deltoid-ovate, ciliate; persistent stigma discoid or thinly discoid; pyrenes 4, broadly ovoid, ca. 3 mm, ca. 2 mm in diam., abaxially depressed at center, striate and sulcate, endocarp leathery or subwoody. Fl. Apr, fr. May.

• Forests or thickets on mountains; 500–1000 m. Guangdong (Yangchun, Yangjiang).

**125. *Ilex cinerea*** Champion ex Benth, Hooker's J. Bot. Kew Gard. Misc. 4: 327. 1852.

灰冬青 hui dong qing

*Ilex cinerea* var. *faberi* Loesener.

Shrubs or small trees, evergreen, 3–6 m tall. Branchlets brown or gray, straight, longitudinally angular and sulcate; leaf scars semicircular, slightly raised, lenticels absent; current year's branchlets minutely pubescent when young; terminal buds conical, ca. 3 mm, bud scales pubescent. Petiole 2–4 mm, minutely pubescent and rugose; leaf blade abaxially greenish, adaxially green, oblong-oblongate, 7–15 × 2–4 cm, leathery, adaxially glabrous except on midvein, midvein impressed and pubescent adaxially, lateral veins 9–11 pairs, raised abaxially, obscure adaxially, reticulate veins evident abaxially, base obtuse or rounded, margin crenulate or serrate, apex acute or shortly acuminate. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; flowers yellowish green, 4-merous. Male inflorescences: 3–9-flowered cymes, pubescent; bracts deltoid-ovate, apex with stipulelike appendages; peduncle 1–2 mm; secondary axis ca. 1 mm; pedicels 3–4 mm; bracteoles 2, sub-basal, lanceolate, membranous; calyx patelliform, ca. 2.5 mm in diam., 4-lobed, lobes suborbicular, sparsely pubescent and ciliate; corolla ca. 7 mm in diam., petals 4, oblong, ca. 3 × 2.3 mm, basally slightly connate, apex ciliate. Stamens 4, ca. as long as or shorter than petals; anthers ovoid-oblong; rudimentary ovary globose, ca. 1 mm in diam., glabrous. Female inflorescences: 1-flowered cymes; bracts suborbicular; pedicels 2–3 mm; bracteoles ciliate; calyx subcupulate, ca. 2 mm in diam., pubescent, shallowly 4-lobed, lobes orbicular, ciliate; petals ca. 3 mm, nearly free at base; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary oblong-ellipsoidal, ca. 2 mm, ca. 1.5 mm in diam., pubescent, apex truncate, stigma discoid. Fruit red, globose, ca. 7 mm in diam.; persistent calyx explanate, ca. 2.5 mm in diam., lobes ciliate; persistent stigma discoid, 4-lobed; pyrenes 4, obovoid, ca. 4 mm, ca. 3 mm in diam., abaxially palmately longitudinally striate and sulcate, laterally rugose, endocarp stony. Fl. Mar–Apr, fr. May–Oct.

Mountain forests; high elevations. Guangdong (Hebao Dao), Hainan, Hong Kong [Vietnam].

**126. *Ilex venosa*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 15. 1985.

细脉冬青 xi mai dong qing

Trees evergreen, small, ca. 5 m tall. Young branchlets yellow-brown when dry, terete, longitudinally angular and sulcate, glabrous; older than two year's branchlets with light-colored lenticels and slightly raised subcircular leaf scars; terminal buds narrowly conical, glabrous, apex acuminate; axillary buds subglobose. Petiole 8–10 mm, abaxially raised and transversely rugose, adaxially narrowly sulcate, glabrous; leaf blade olivaceous when dry, oblong or elliptic to oblong-elliptic, 7–12 × 2.5–4.3 cm, papery, both surfaces glabrous, midvein impressed adaxially, lateral veins 10 or 11 pairs, raised on both surfaces, curved ascending, anastomosing near margin, reticulate veins evident on both surfaces, base obtuse, margin slightly reflexed, sparsely and shallowly crenulate, apex acuminate. Flowers not known. Inflorescence: 1-fruited cymes, pseudoracemose; rachis ca. 5 mm; fruiting pedicel ca. 2 mm, glabrous or slightly puberulent; bracteoles 2, below middle, ovate-deltoid. Fruit subglobose, ca. 9 mm, ca. 8 mm in diam.; persistent calyx explanate, suborbicular, ca. 3.5 mm in diam.; persistent stigma discoid, ca. 2.5 mm in diam., minutely lobed; pyrenes 4, trigon-

ous-ellipsoid, 6–7 mm, ca. 3 mm in diam., abaxially longitudinally 5-striate and sulcate, laterally longitudinally 2- or 3-striate and sulcate, endocarp stony. Fl. unknown, fr. Oct.

• Forests, open mountain slopes; ca. 2100 m. C Yunnan (Xinping).

**127. *Ilex dunniana*** H. Léveillé, Repert. Spec. Nov. Regni Veg. 9: 458. 1911.

龙里冬青 long li dong qing

*Ilex chieniana* S. Y. Hu; *I. fangii* (Rehder) S. Y. Hu; *I. intermedia* Loesener var. *fangii* (Rehder) S. Y. Hu; *I. latifolia* Thunberg var. *fangii* Rehder.

Trees evergreen, 2–10 m tall. Branchlets brown, longitudinally ridged and sulcate, glabrous or slightly puberulent near apex; terminal buds conical, glabrous, current year's branchlets with lenticels often coalescent, second and third year's branchlets without lenticels. Petiole 8–10 mm, abaxially transversely rugose, adaxially longitudinally sulcate, glabrous or slightly puberulent; leaf blade green, broadly elliptic to lanceolate, 8–13 × 2.5–7 cm, thickly leathery, both surfaces glabrous, midvein impressed, and glabrous or slightly minutely puberulent adaxially, lateral veins 8–10 pairs, raised on both surfaces, branching and anastomosing near base, reticulate veins obscure on both surfaces, base obtuse or cuneate, margin densely sharply serrate, teeth black, apex acuminate, acumen 6–12 mm. Inflorescences: cymes, fasciculate, pseudopaniculate, or pseudoracemose, axillary on current year's branchlets. Male inflorescences: cymes of order 1 or 2, 1–3-flowered, fasciculate, or pseudopaniculate; rachis 4–7 mm; peduncles 1–2 mm; pedicels 2–3 mm, glabrous or puberulent; bracteoles 2, basal; flowers green, 4-merous; calyx patelliform, deeply 4-lobed, lobes ovate-deltoid, not ciliate; corolla rotate, petals 4, oblong, ca. 3 × 2 mm, basally slightly connate; stamens ca. as long as petals, anthers ovoid-oblong; rudimentary ovary subglobose, apex obtuse or minutely depressed. Female inflorescences: 1-flowered cymes, pseudoracemose, axillary; pedicels 3–4 mm, glabrous or puberulent; bracteoles 2, basal; calyx as in male flowers; petals ovate-oblong, 2–2.5 × ca. 1.5 mm; staminodes ca. 3/4 as long as petals, sterile anthers ovoid-sagittate; ovary subglobose, stigma discoid, 4-lobed. Inflorescences: rachis 5–10 mm thick; fruiting pedicels ca. 5 mm; persistent bracteoles 2, subbasal. Fruit red, depressed globose, 4–5 mm in diam., minutely tuberculate; persistent calyx explanate; persistent stigma thickly discoid, evidently 4-lobed; pyrenes 4, ovoid-trigonal, ca. 2.5 mm, ca. 2 mm in diam., abaxially irregularly reticulately striate, rugose, endocarp stony. Fl. Apr–Jun, fr. Aug–Oct.

• Broad-leaved forests, thickets, slopes; 700–2200 m. E Guizhou, W Hubei, SW Sichuan, NE Yunnan.

**128. *Ilex intermedia*** Loesener, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 273. 1901.

中型冬青 zhong xing dong qing

Trees evergreen, 5–10 m tall. Young branchlets yellow-brown, longitudinally angular, puberulent or glabrescent; older than second year's branchlets glabrous, leaf scars crescent-shaped, slightly raised, lenticels absent; terminal buds conical, bud scales ciliate. Stipules minute, deltoid; petiole 9–16 mm,

puberulent or glabrous, abaxially rounded, rugose, adaxially shallowly and broadly sulcate; leaf blade adaxially deep green, shiny, oblong-elliptic, ovate-elliptic, or obovate-elliptic, 6–12.5 × 2.5–5 cm, leathery, midvein abaxially raised, adaxially flattened or slightly impressed, puberulent or glabrous, lateral veins 5–8 pairs, slightly raised on both surfaces, furcate and anastomosing near middle, reticulate veins obscure on both surfaces, base cuneate, obtuse, or rarely rounded, margin slightly reflexed, sparsely crenulate or serrate, apex obtuse, acute or very shortly acuminate, or nearly caudate-acuminate. Male inflorescences: cymes of order 1 or 2, 1–3-flowered, fasciculate or pseudopaniculate, axillary on second year's branches; rachis 3–5 mm; peduncles ca. 1 mm; pedicels 1–2 mm; bracteoles 1 or 2, basal; flowers yellowish, 4-merous; calyx patelliform, ca. 1.5 mm in diam., glabrous, 4-lobed, lobes deltoid, sparsely ciliate; corolla rotate, ca. 6 mm in diam., petals 4, oblong, ca. 3 × 1.5 mm; stamens slightly longer than petals, anthers ovoid; rudimentary ovary subglobose, minute, apex obtuse. Female flowers not known. Infructescences: 1-fruited cymes, pseudoracemose; rachis 4–8 mm; fruiting pedicels 5–8 mm, sparsely puberulent; bracteoles 2, submedian. Fruit red, subglobose, ca. 4 mm, ca. 5 mm in diam., tuberculate (under lens); persistent calyx explanate, suborbicular, ca. 1.5 mm in diam., 4-lobed, lobes subdeltoid; persistent stigma thickly discoid, 4-lobed; pyrenes 4, broadly ellipsoidal or subglobose, ca. 2.5 mm, ca. 2 mm in diam., abaxially palmately striate and shallowly sulcate, laterally palmately striate, striae reticulate, nearly smooth, endocarp stony. Fl. May, fr. Aug–Oct.

• Forests, hills; 600–1900 m. N and NE Guizhou, W Hubei, Hunan, Jiangxi (Lu Shan), Sichuan.

**129. *Ilex medogensis*** Y. R. Li, Acta Bot. Yunnan. 3: 351. 1981.

墨脱冬青 mo tuo dong qing

Trees evergreen, ca. 8 m tall, ca. 20 cm d.b.h. Branchlets gray-brown, terete; second to third year's branchlets longitudinally fissured, subglabrous; leaf scars slightly raised, circular; current year's striate and sulcate, puberulent; terminal buds conical, puberulent. Petiole (0.8–)1–1.5 cm, abaxially rounded, rugose, adaxially longitudinally sulcate, glabrous; leaf blade elliptic, rarely obovate-elliptic, 8–12 × 3.5–4(–6.5) cm, thinly leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 8–10 pairs, obliquely ascending, furcate and anastomosing near margin, raised on both surfaces, reticulate veins evident on both surfaces, base obtuse to subrounded, margin sparsely crenulate, teeth black tipped, apex abruptly acuminate, acumen 8–12 mm. Flowers not known. Infructescences: 1-fruited cymes, pseudoracemose or fasciculate, axillary on first to second year's branchlets; rachis 3–4 mm; bracts broadly ovate, deltoid, puberulent; fruiting pedicels ca. 1 mm, densely puberulent; bracteoles 2, basal, ovate-deltoid, puberulent. Fruit subglobose, 5–6 mm in diam.; persistent calyx explanate, patelliform, 4-lobed, lobes broadly deltoid, puberulent, ciliate; persistent stigma black, thickly discoid or mammilliform; pyrenes 4, ellipsoidal-oblong, ca. 4 mm, ca. 2.5 mm in diam., abaxially slightly depressed, nearly reticulately striate, laterally striate and pitted, endocarp leathery. Fl. unknown, fr. Sep–Nov.

• Evergreen broad-leaved forests; ca. 800 m. SE Xizang (Médog).

**130. *Ilex gintungensis*** H. W. Li ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 17. 1985.

景东冬青 jing dong dong qing

Shrubs or trees, evergreen, 4–10 m tall, glabrous throughout. Current year's branchlets deep brown when dry, longitudinally striate and sulcate; second to third year's branchlets yellowish to yellow-brown, longitudinally rugose; leaf scars slightly raised, semicircular, lenticels absent; terminal buds narrowly conical, ca. 6 mm, glabrous, apex acuminate. Stipules caducous; petiole 5–8 mm, abaxially transversely rugose, adaxially narrowly sulcate; leaf blade olivaceous or rather dark when dry, oblong, oblong-elliptic, or ovate-elliptic, rarely ovate or obovate, 5.5–10 × 3–4 cm, papery, midvein shallowly sulcate adaxially, lateral veins 7–10 pairs, raised abaxially, flattened and evident adaxially, furcate and anastomosing near margin, reticulate veins evident abaxially, obscure adaxially, base obtuse or rounded, margin shallowly serrulate, apex acuminate to long acuminate, acumen 8–15 mm. Male inflorescences: cymes of order 1 or 2, 1- or 3-flowered, fasciculate or pseudopaniculate, axillary on current year's branchlets; rachis 4–5 mm, sparsely puberulent; basal bract 1, ovate-oblong, ca. 2.5 × 1.5 mm, apex obtuse, sparsely ciliate; peduncles 1.5–2 mm; pedicels 2–3 mm; bracteoles basal, ovate-deltoid, ciliate; flowers white, 4-merous; calyx patelliform, ca. 4 mm in diam., deeply 4-lobed, lobes ovate, ca. 1.5 × 1.5 mm, apex obtuse, ciliate; corolla rotate, ca. 1 cm in diam., petals 4, oblong, ca. 4 × 2.5 mm, basally slightly cuneate, apex rounded, ciliate; stamens 4, 5–7 mm, anthers ovoid, ca. 1 mm; rudimentary ovary ovoid, ca. 1 mm in diam., apex rounded. Female flowers not known. Infructescences: 1-fruited cymes, pseudoracemose; rachis 2–3 mm, glabrous; fruiting pedicels 4–5.5 mm, sparsely puberulent; bracteoles 2, basal, ovate-deltoid, ciliate. Fruit (immature) globose, 5–6 mm in diam.; persistent calyx explanate; persistent stigma thinly discoid; pyrenes 4, palmately striate and sulcate throughout. Fl. Feb–Mar, fr. Apr.

• Evergreen broad-leaved forests, roadsides, mountains; 1800–2500 m. S and W Yunnan (Fengqing, Jingdong).

**131. *Ilex formosana*** Maximowicz, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 29(3): 46. 1881.

台湾冬青 tai wan dong qing

Shrubs or trees, evergreen, 8–15 m tall; bark gray-brown, smooth. Young branchlets gray-white or gray-brown when dry, terete, longitudinally angular and sulcate, glabrous or slightly puberulent; second to third year's branchlets thinly fissured; leaf scars semicircular; lenticels absent; terminal buds conical, buds scales ovate-deltoid, firm, margin serrate, ciliate, puberulent. Stipules deltoid, minute; petiole 5–13 mm, abaxially raised and rugose, adaxially broadly sulcate or flattened, glabrous; leaf blade abaxially greenish, adaxially deep green, slightly shiny, gray-olivaceous when dry, elliptic, elliptic-lanceolate, or oblong-lanceolate, rarely oblanceolate, (3.5–)6–10 × (1.5–)2–3.5 cm, leathery or subleathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 6–8 pairs, evident abaxially, obscure adaxially, reticulate veins often evident abaxially, obscure adaxially, base cuneate, rarely obtuse, margin sparsely crenulate-serrate, or rarely only undulate, apex acuminate to

caudate-acuminate. Inflorescences: cymes, pseudopaniculate, fasciculate, or pseudoracemose, axillary on second year's branchlets. Male inflorescences: cymes of order 2, 3-flowered, paniculate or fasciculate; rachis 5–10 mm, puberulent; persistent bud scales basal, ovate-deltoid, ca.  $1 \times 1.5$  mm, shiny, glabrous, apex acute; peduncles ca. 1 mm, puberulent; basal bract 1, 1.5–2 mm, pubescent, ciliate; pedicels 3–4 mm, puberulent; bracteoles 2, basal; calyx patelliform, ca. 2 mm, puberulent, 4-lobed, lobes broadly deltoid, apex rounded, rarely obtuse, ciliate; corolla ca. 6 mm in diam., petals oblong, ca.  $3 \times 1.5$  mm, apex rounded, ciliate; stamens ca. as long as petals, anthers oblong; rudimentary ovary globose, ca. 1 mm in diam. Female inflorescences: 1-flowered cymes, fasciculate or pseudoracemose; rachis 4–6 mm, nearly glabrous, bud scales as in male flowers; pedicels ca. 3 mm, densely puberulent; bracteoles 2, submedian; calyx as in male flowers; petals free or connate at base, ovate, ca. 2.5 mm, ciliate; staminodes ca.  $2/3$  as long as petals, sterile anthers ovoid; ovary ovoid. Fruit red, globose or subglobose, 4–6 mm in diam.; fruiting pedicel ca. 3 mm; persistent calyx patelliform, ca. 2 mm in diam., lobes ciliate; persistent stigma capitate, 4-lobed; pyrenes 4, ovoid-oblong or oblong, 3–4 mm, 2–2.7 mm in diam., abaxially palmately striate and sulcate, center depressed, laterally longitudinally striate and deeply sulcate, endocarp stony. Fl. Mar–May, fr. Jul–Nov.

Forests, forest margins, shrubby areas, streamsides, mountains; sea level to 1500(–2100) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Philippines].

- 1a. Leaf blade elliptic or oblong-lanceolate, 6–10  $\times$  2–3.5 cm, margin sparsely crenulate-serrate or rarely undulate; pyrenes ovoid-oblong ..... 131a. var. *formosana*  
 1b. Leaf blade elliptic-lanceolate, 3.5–6.5  $\times$  1.5–2.2 cm, margin subentire; pyrenes oblong ..... 131b. var. *macropyrena*

**131a. *Ilex formosana* var. *formosana***

台湾冬青(原变种) tai wan dong qing (yuan bian zhong)

*Ilex formosana* var. *ruijinensis* C. J. Tseng; *I. kelungensis* Loesener; *I. lanceolata* H. E. Chiang (1989), not Chapman (1860).

Trees. Petiole 1.1–1.3 cm; leaf blade elliptic or oblong-lanceolate, rarely oblanceolate, 6–10  $\times$  2–3.5 cm, margin sparsely crenulate-serrate or rarely undulate. Female inflorescences: cymes, pseudoracemose. Fruit subglobose, 4–5 mm in diam.; pyrenes ovoid-oblong, ca. 3 mm, 2–2.2 mm in diam. Fl. Mar–May, fr. Jul–Nov.

Evergreen broad-leaved forests, forest margins, shrubby areas, streamsides, mountains; 100–1500(–2100) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Philippines].

**131b. *Ilex formosana* var. *macropyrena*** S. Y. Hu, J. Arnold Arbor. 31: 70. 1950.

大核台湾冬青 da he tai wan dong qing

Trees. Leaf blade elliptic-lanceolate, 3.5–6.5  $\times$  1.5–2.2 cm,

base acute, margin subentire, apex acuminate. Female inflorescence: cymes, fasciculate. Fruit globose, 5–6 mm in diam.; pyrenes oblong, ca. 4 mm, 2–2.7 mm in diam.

• Forests, mountains; sea level to middle elevations. N Guangdong (Wengyuan), NE Guangxi (Ziyuan), C Hunan.

This taxon may prove to be the same as the typical variety.

**132. *Ilex tetramera*** (Rehder) C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 21. 1981.

灰叶冬青 hui ye dong qing

Shrubs or trees, evergreen, (1.5–)3.5–12 m tall. Young branchlets yellow-brown, subterete, longitudinally angular and sulcate, glabrous or puberulent in groove near apex; older branchlets gray, fissured; leaf scars flattened; lenticels absent. Stipules deltoid, minute; petiole 4–7 mm, glabrous, adaxially broadly shallowly sulcate; leaf blade oblong-elliptic or oblong-lanceolate, 5–9(–11)  $\times$  (2–)2.3–3.5 cm, thickly papery or subleathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 7 or 8 pairs, abaxially prominent or raised, adaxially evident or obscure, furcate and anastomosing near margin, base obtuse or rounded, margin slightly recurved, crenulate, apices of teeth black and obtuse, or subentire, apex acuminate to caudate-acuminate, acumen 8–12 mm. Male inflorescences: cymes of order 2, 3-flowered, fasciculate, axillary on first to second year's branchlets; peduncles very short, ca. 0.5 mm; bracts basal, ovate, ciliate; pedicels 1–3(–5) mm, puberulent or glabrous; bracteoles 2, basal, puberulent or glabrous; flowers yellow-white, 4-merous; calyx patelliform, ca. 2 mm in diam., 4-lobed, lobes deltoid, ciliate; corolla 5–6 mm in diam., petals obovate-oblong, ca.  $2 \times 1.5$  mm, basally slightly connate, apex rounded; stamens longer than petals, anthers ovoid; rudimentary ovary subglobose, apex abruptly acute, minutely lobed. Female flowers not known. Infructescences: 1-fruited cymes, pseudoracemose or fasciculate; rachis 3–7 mm, glabrous; fruiting pedicels 2–3 mm, puberulent; bracteoles 2, basal, ovate, ciliate. Fruit red, globose, 5–6 mm; persistent calyx explanate, quadrangular, ca. 1.5 mm in diam., 4-lobed, lobes deltoid, ciliate; persistent stigma navel-like, ca. 1 mm in diam., minutely lobed; pyrenes 4, oblong, ca. 4 mm, 2–2.5 mm in diam., abaxially convex, palmately striate and sulcate, laterally irregularly longitudinally striate and deeply sulcate, endocarp stony. Fl. Feb–Apr, fr. Oct.

• Evergreen broad-leaved forests, sparse woods, shrubby areas, mountain slopes; 500–1800 m. Chongqing, Guangxi, Guizhou, Hunan, Sichuan, Yunnan.

- 1a. Pedicels of male flowers puberulent; leaf blade 5–9(–11)  $\times$  (2–)2.3–3.5 cm ..... 132a. var. *tetramera*  
 1b. Pedicels of male flowers glabrous; leaf blade 7–9  $\times$  2–2.5 cm ..... 132b. var. *glabra*

**132a. *Ilex tetramera* var. *tetramera***

灰叶冬青(原变种) hui ye dong qing (yuan bian zhong)

*Symplocos tetramera* Rehder in Sargent, Pl. Wilson. 2: 598. 1916; *Ilex odorata* Buchanan-Hamilton ex D. Don var. *tephrophylla* Loesener; *I. tephrophylla* (Loesener) S. Y. Hu.

Shrubs or trees. Leaf blade 5–9(–11)  $\times$  (2–)2.3–3.5 cm.



Peduncles and pedicels of male inflorescences puberulent. Fl. Feb–Apr, fr. Oct.

• Evergreen broad-leaved forests, sparse woods; 500–1800 m. Chongqing, Guangxi, Guizhou, Hunan, Sichuan, Yunnan.

**132b. *Ilex tetramera* var. *glabra*** (C. Y. Wu ex Y. R. Li) T. R. Dudley, *Holly Soc. J.* 6(4): 28. 1988.

无毛灰叶冬青 *wu mao hui ye dong qing*

*Ilex tephrophylla* var. *glabra* C. Y. Wu ex Y. R. Li, *Bull. Bot. Res.*, Harbin 5(1): 12. 1985.

Leaf blade 7–9 × 2–2.5 cm. Pedicels of male flowers ca. 5 mm, glabrous.

• Shrubby areas, mountain slopes; ca. 1300 m. S Yunnan (Menghai).

**133. *Ilex cupreonitens*** C. Y. Wu ex Y. R. Li, *Bull. Bot. Res.*, Harbin 5(1): 14. 1985.

铜光冬青 *tong guang dong qing*

Trees evergreen, 5–6 m tall, glabrous throughout. Young branchlets castaneous, terete, longitudinally angular and sulcate; older than second year's branchlets with raised, elliptic, paler lenticels; leaf scars slightly raised, crescent-shaped; terminal buds narrowly conical, glabrous. Petiole 1–1.2 cm, abaxially rugose, adaxially deeply sulcate; leaf blade adaxially deep olivaceous, oblong-elliptic, 6–12 × 2.5–4 cm, thinly leathery, midvein impressed adaxially, lateral veins 8–10 pairs, raised abaxially, slightly raised adaxially, anastomosing near margin, reticulate veins raised abaxially, rather evident adaxially, base obtuse to subrounded, margin shallowly serrulate, apex long acuminate. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, axillary; fruiting pedicels 1–2 mm; bracteoles 2, basal, ovate-deltoid, ciliate. Fruit globose, ca. 5 mm in diam., longitudinally angular and sulcate when dry; persistent calyx explanate, ca. 3 mm in diam., 4-lobed, lobes suborbicular; persistent stigma thickly discoid; pyrenes 4, ellipsoidal, ca. 4 mm, ca. 3 mm in diam., abaxially obscurely longitudinally striate and sulcate, laterally obscurely striate and sulcate, endocarp bony. Fl. unknown, fr. Aug–Oct.

• Mixed forests, mountains; 1800–2200 m. SE Yunnan (Wenshan).

**134. *Ilex corallina*** Franchet, *Bull. Soc. Bot. France* 33: 452. 1886.

珊瑚冬青 *shan hu dong qing*

Shrubs or trees, evergreen, 3–10 m tall. Branchlets brownish, terete, slender, longitudinally angular, glabrous or puberulent; third year's branchlets with small lenticels and slightly raised, narrow, deltoid leaf scars; terminal buds ovoid, small, glabrous or puberulent. Petiole purple-red, (1–)4–10 mm, abaxially transversely rugose, adaxially shallowly sulcate, glabrous or puberulent; leaf blade abaxially greenish, adaxially deep green, ovate, ovate-elliptic, ovate-lanceolate, or oblong, 4–10(–13) × 1.5–3(–5) cm, leathery, both surfaces glabrous or midvein sparsely puberulent adaxially, midvein impressed adaxially, lateral veins 7–10 pairs, raised on both surfaces, reticulate veins evident on both surfaces, base rounded or obtuse,

margin undulate, crenate-serrate, rarely tips of teeth spiny, apex acuminate or acute. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; peduncle subsessile; bracts ovate-deltoid, ciliate; flowers yellow-green, 4-merous. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles ca. 1 mm; pedicels ca. 2 mm; bracteoles 2, basal, ovate, ciliate; calyx patelliform, ca. 2 mm in diam., deeply 4-lobed, lobes ovate-deltoid, ciliate; corolla 6–7 mm in diam., petals oblong, ca. 3 × 1.5 mm, basally slightly connate; stamens ca. as long as petals, anthers oblong, ca. 1 mm; rudimentary ovary subglobose, apex rounded, minutely 4-lobed. Female inflorescences: 1-flowered cymes; pedicels 1–2 mm; bracteoles 2, basal, ovate-deltoid; calyx lobes orbicular, ciliate; petals free, ovate, ca. 2 × 1.2 mm; staminodes ca. 2/3 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 1.5 mm, ca. 1 mm in diam., apex subtruncate, stigma thinly discoid. Fruit purple-red, subglobose or ellipsoid, 3–5 mm in diam.; persistent stigma thinly discoid, 4-lobed; persistent calyx explanate; pyrenes 4, ellipsoidal-trigonal, 2–2.5(–5) mm, 1.5(–2) mm in diam., abaxially obscurely palmately striate and sulcate, laterally striate or rugose. Fl. Feb–May, fr. Sep–Oct.

• Forests, mixed forests, shrubby areas, mountain slopes; (400–)700–2400(–3000) m. Chongqing, S Gansu (Wenxian), Guizhou, Hubei, Hunan, Sichuan, Yunnan.

1a. Leaf blade ovate, ovate-elliptic, or ovate-lanceolate, margin undulate, crenate-serrate, not spiniform (serrate)

..... 134a. var. *corallina*

1b. Leaf blade oblong, margin spinose-serrate, spines 1–1.5 mm ..... 134b. var. *loeseneri*

**134a. *Ilex corallina* var. *corallina***

珊瑚冬青(原变种) *shan hu dong qing* (*yuan bian zhong*)

*Ilex corallina* var. *macrocarpa* S. Y. Hu; *I. corallina* var. *pubescens* S. Y. Hu.

Petiole 4–10 mm; leaf blade ovate, ovate-elliptic, or ovate-lanceolate, margin undulate, crenate-serrate. Fl. Feb–May, fr. Sep–Oct.

• Mixed forests, shrubby areas, mountain slopes; 400–2400(–3000) m. S Gansu (Wenxian), Guizhou, Hubei, Hunan, Sichuan, Yunnan.

**134b. *Ilex corallina* var. *loeseneri*** H. Léveillé ex Rehder, *J. Arnold Arbor.* 14: 242. 1933.

刺叶珊瑚冬青 *ci ye shan hu dong qing*

*Ilex corallina* var. *aberrans* Handel-Mazzetti, *Symb. Sin.* 7: 657. 1933.

Petiole 1–5 mm; leaf blade oblong, margin spinose-serrate, with 15–20 pairs of spines, spines 1–1.5 mm. Fl. Apr.

• Forests, mountains; 700–2100 m. Guizhou, Sichuan (Guangyuan), Yunnan.

**135. *Ilex arisanensis*** Yamamoto, *Icon. Pl. Formos.*, Suppl. 1: 30. 1925.

阿里山冬青 *a li shan dong qing*

Trees evergreen, small. Branchlets deep brown-purple, slender, glabrous; older branchlets gray-brown, terete, longitudinally rugose, with sparse small lenticels. Petiole 5–8 mm, adaxially sulcate, glabrous; leaf blade abaxially pale brown-green, adaxially dark brown-green, lanceolate or narrowly elliptic, 5–8 × 1.5–2.5 cm, papery, both surfaces glabrous, midvein impressed adaxially, lateral veins 7–12 pairs, raised abaxially, slightly impressed adaxially, anastomosing near margin, base acute or cuneate, margin serrulate, apex caudate, acumen (1.5–)1.8–2(–2.2) cm. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, fascicles 4–6-fruited, axillary; fruiting pedicels ca. 3.5 mm, glabrous; bracteoles basal, oblong, ca. 1 × 0.5 mm, puberulent. Fruit red, globose, 3–5 mm in diam., longitudinally sulcate; persistent calyx explanate, shallowly 4-lobed, lobes ovate, glabrous; persistent stigma mammilliform, shallowly 4-lobed; pyrenes 4, obovoid, transverse section compressed deltoid, abaxially longitudinally and slightly palmately striate. Fl. unknown, fr. Jun.

- Forests, mountains; ca. 800 m. Taiwan (Ali Shan).

**136. *Ilex marlipoensis*** H. W. Li ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 16. 1985.

麻栗坡冬青 ma li po dong qing

Trees, rarely shrubs, evergreen, 5–15 m tall, glabrous throughout. Branches brown to black-brown when dry, longitudinally angular and sulcate, smooth; second year's branchlets castaneous; leaf scars slightly raised, crescent-shaped; lenticels absent; terminal buds ovoid-conical, glabrous, apex acute. Petiole 9–10 mm, abaxially convex, transversely rugose, adaxially deeply sulcate; leaf blade adaxially deep green, oblong-elliptic, rarely ovate, (5–)6.5–11.5 × (2.5–)3.5–4 cm, thinly leathery, midvein impressed adaxially, lateral veins 7–10 pairs, raised abaxially, flattened to slightly impressed adaxially, furcate and anastomosing near margin, reticulate veins evident on both surfaces, base rounded or obtuse, margin slightly recurved, sparsely and shallowly serrulate, apex abruptly caudate-acuminate, acumen 1–1.5 cm, straight or slightly curved. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, axillary on current year's branchlets; rachis nearly absent; fruiting pedicels ca. 3 mm, glabrous; bracteoles 2, basal, ovate-deltoid, glabrous, ca. 1 mm. Fruit (immature) ellipsoidal, ca. 5 mm, 3.5–4 mm in diam.; persistent calyx explanate, ca. 2 mm in diam., deeply 4-lobed, lobes ovate-deltoid; persistent stigma thickly discoid, shallowly 4-lobed; pyrenes 4, ellipsoidal, 3.5–4 mm, ca. 2 mm in diam., abaxially palmately striate and sulcate. Fl. unknown, fr. May.

- Evergreen broad-leaved forests; 1300–1400 m. SE Yunnan (Malipo).

**137. *Ilex cyrtura*** Merrill, Brittonia 4: 101. 1941.

弯尾冬青 wan wei dong qing

Trees evergreen, ca. 12 m tall. Current year's branchlets slender, longitudinally angular and sulcate, glabrous or sparsely pubescent along groove; second year's branchlets smooth, glabrous; leaf scars crescent-shaped; lenticels absent. Petiole 7–12 mm, adaxially narrowly sulcate, puberulent, distal half narrowly winged by decurrent leaf base; leaf blade abaxially greenish,

adaxially green, elliptic or obovate-elliptic, 6–11 × 2–4 cm, subleathery, abaxially glabrous, adaxially glabrous except on midvein, midvein impressed, sparsely puberulent adaxially, lateral veins 7 or 8 pairs, conspicuous abaxially, obscure adaxially, reticulate veins obscure on both surfaces, base obtuse or cuneate, margin shallowly serrate, teeth black, apex long and often falcate-caudate, acumen 1.5–2 cm. Inflorescences: 1-flowered cymes, fasciculate, axillary on current year's branchlets, pubescent; bracts broadly elliptic, ciliate; flowers yellow, 4-merous. Male inflorescences: pedicels ca. 1 mm; bracteoles 2, subbasal, ovate, ca. 1 mm, ciliate; calyx patelliform, glabrous, deeply 4-lobed, lobes deltoid, ciliate; corolla rotate, ca. 6 mm in diam., petals oblong, ca. 3 mm, sparsely ciliate, basally slightly connate; stamens ca. as long as petals, anthers oblong; rudimentary ovary subovoid, apex obtuse. Female inflorescences: pedicels ca. 4 mm, pubescent; bracteoles 2, submedian, ciliate; calyx as in male flowers; corolla ca. 5 mm in diam., petals ovate-oblong, ca. 2 × 1.5 mm, basally slightly connate; staminodes ca. as long as petals, sterile anthers sagittate; ovary ovoid, ca. 1.5 mm, ca. 1 mm in diam., stigma very convex, 4-lobed. Fruit globose, ca. 6 mm in diam.; fruiting pedicel 5–6 mm; persistent calyx explanate, quadrangular, ca. 2.5 mm in diam., ciliate; persistent stigma thinly discoid; pyrenes 4, ellipsoidal, ca. 3.5 mm, 2.5–3 mm in diam., abaxially palmately striate, nearly not sulcate, endocarp woody. Fl. Apr, fr. Jun–Sep.

Broad-leaved mountain forests; 700–1800 m. Guangdong (Conghua), Guangxi, Guizhou (Suiyang, Xifeng), NW Yunnan (Gongshan) [Bhutan, N Myanmar].

**138. *Ilex wattii*** Loesener, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 322. 1901.

假香冬青 jia xiang dong qing

Trees evergreen, 7–10 m tall, glabrous throughout; bark gray-brown, smooth, fissured. Young branchlets yellowish or brown, longitudinally angular and sulcate, second to third year's branchlets longitudinally fissured, with raised leaf scars, lenticels absent. Petiole 1–1.2 cm, abaxially rounded, transversely rugose, adaxially sulcate; leaf blade olivaceous on both surfaces when dry, elliptic, oblong, or oblong-elliptic, 6–12 × 2–4 cm, papery to thinly leathery, midvein impressed adaxially, lateral veins (7–)11 pairs, raised on both surfaces, furcate and anastomosing near margin, reticulate veins slightly raised on both surfaces, base obtuse or subrounded, margin serrate, slightly recurved, apex acuminate to caudate-acuminate, acumen 1–2 cm. Inflorescences: cymes, fasciculate, axillary on current year's branchlets; flowers 4-merous. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles very short; pedicels 1–2 mm, glabrous; calyx patelliform, glabrous, ca. 2.5 mm in diam., 4-lobed, lobes ovate-deltoid, apex acute, ciliate; corolla rotate, ca. 5 mm in diam., petals oblong-obovate, ciliate, basally slightly connate; stamens ca. as long as petals, anthers oblong; rudimentary ovary subglobose, apex depressed, stigma distinctly 4-lobed. Female flowers not known. Infructescences: 1-fruited cymes; fruiting pedicels 2–3 mm; bracteoles 1 or 2, median, glabrous. Fruit subglobose, ca. 6 mm, ca. 7 mm in diam.; persistent calyx explanate, suborbicular, ca. 2.5 mm in diam., ciliate; persistent stigma discoid or navel-like; pyrenes 4, obo-

void-oblong, ca. 4 mm, ca. 3 mm in diam., both ends obtuse or rounded, abaxially palmately 5-striate and sulcate, laterally striate and sulcate, endocarp stony. Fl. (Feb-)Jun-Jul, fr. Aug-Oct.

Forests, mountain slopes; 2100–3000 m. SW Yunnan [NE India].

**139. *Ilex guangnanensis*** C. J. Tseng & Y. R. Li, Bull. Bot. Res., Harbin 5(1): 18. 1985.

广南冬青 *guang nan dong qing*

Trees evergreen, 6–15 m tall; bark gray. Current year's branchlets gray-green, slender, longitudinally angular and sulcate, glabrous; second to third year's branchlets brown-yellow, leaf scars convex, deltoid-semicircular, lenticels absent; terminal buds narrowly conical, glabrous, apically acuminate, bud scales sparsely ciliate. Stipules caducous; petiole 5–9 mm, raised abaxially, narrowly sulcate adaxially; leaf blade oblong-elliptic or obovate-elliptic, 4–8 × (1.3–)2–2.5 cm, leathery, lateral veins 9–11 pairs, conspicuous abaxially, obscure adaxially, reticulate veins evident only abaxially, base obtuse or broadly cuneate, margin undulate, conspicuously serrate, apex acuminate-caudate or falcate. Inflorescences: cymes, fasciculate, axillary on current year's branchlets; flowers 4-merous. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles nearly absent; pedicels very short, ca. 1 mm, glabrous; bracteoles 2, basal, ovate, ca. 1.5 mm, apex obtuse, ciliate; calyx patelliform, ca. 3 mm in diam., deeply 4-lobed, lobes ovate, ca. 1 mm, ciliate; corolla rotate, 5–6 mm in diam., petals oblong, ca. 2.5 × 2 mm, basally slightly connate, apex rounded; stamens shorter than petals, anthers ovoid, ca. 1 mm; rudimentary ovary ovoid, ca. 1 mm in diam., apex obtuse-rounded, shallowly 4-lobed. Female inflorescences: 1-flowered cymes; pedicels ca. 1.5 mm; bracteoles 2, basal, ovate, minutely ciliate; calyx patelliform, lobes broadly ovate-deltoid, ciliate; petals oblong, ca. 3 × 1.5 mm; staminodes shorter than petals, sterile anthers ovoid; ovary ovoid-globose, ca. 2 mm in diam., stigma convex, shallowly 4-lobed. Fruit red, globose, ca. 7 mm in diam.; fruiting pedicel ca. 2 mm, glabrous; bracteoles 2, basal; persistent calyx explanate, not quadrangular, 2.5–3 mm in diam.; persistent stigma thickly discoid, 4-lobed; pyrenes 4, ellipsoidal, ca. 4.5 mm, ca. 2.5 mm in diam., abaxially palmately thinly striate, subsmooth, inconspicuously sulcate, laterally nearly smooth, inconspicuously striate, endocarp bony. Fl. Mar, fr. Jun–Nov.

• Evergreen broad-leaved forests; 1100–1600 m. SE Yunnan (Guangnan).

**140. *Ilex ficoidea*** Hemsley, J. Linn. Soc., Bot. 23: 116. 1886.

榕叶冬青 *rong ye dong qing*

*Ilex buergeri* Miquel f. *glabra* Loesener; *I. glomeratiflora* Hayata.

Shrubs or trees, evergreen, 2–12 m tall. Young branchlets longitudinally angular and sulcate, glabrous; older than second year's branchlets yellow-brown or brown, smooth; leaf scars semicircular, flattened; lenticels absent. Stipules very minute, caducous; petiole 6–10 mm, abaxially rounded, transversely striate, adaxially sulcate; leaf blade adaxially deep green, shiny, elliptic, oblong, ovate, or obovate-elliptic, 4.5–10 × 1.5–3.5 cm, leathery, both surfaces glabrous, midvein narrowly impressed

adaxially, lateral veins 8–10 pairs, slightly raised abaxially, obscure adaxially, anastomosing near margin, reticulate veins obscure, base obtuse, cuneate, or subrounded, margin irregularly crenate-serrate, apices of teeth black and slightly recurved when dry, apex abruptly long caudate, acumen ca. 1.5 cm. Inflorescences: cymes of order 1 or 2, 1–3-flowered, fasciculate, axillary on current year's branchlets; flowers white or yellowish green, fragrant, 4-merous. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles ca. 2 mm; bracts scaly, ovate, ca. 1 mm, abaxially median keeled, base with appendage, apex acute, ciliate; pedicels 1–3 mm; bracteoles 2, basal or subbasal; calyx patelliform, 2–2.5 mm, lobes deltoid, apex acute, ciliate; corolla ca. 6 mm in diam., petals ovate-oblong, ca. 3 × 1.5 mm, basally slightly connate, apically ciliate; stamens longer than petals, anthers oblong-ovoid; rudimentary ovary ovoid-conical, ca. 1 mm in diam., apex minutely 4-lobed. Female inflorescences: 1-flowered cymes; pedicels 2–3 mm; bracteoles 2, basal, ciliate; calyx puberulent or glabrescent, lobes often keeled; corolla erect, 3–4 mm in diam., petals free, ovate, ca. 2.5 mm, ciliate; staminodes ca. as long as petals, sterile anthers ovoid, small; ovary ovoid, ca. 2 mm, ca. 1 mm in diam., stigma discoid. Fruit red, globose or subglobose, 5–7 mm in diam., tuberculate (under lens); persistent calyx explanate, quadrangular, ca. 2 mm in diam.; persistent stigma thinly discoid or navel-like; pyrenes 4, ovoid or subglobose, 3–4 mm, 1.5–2.5 mm in diam., both ends obtuse, abaxially palmately striate, longitudinally slightly 1-sulcate, laterally rugose and pitted, endocarp stony. Fl. Mar–May, fr. Aug–Nov.

Evergreen broad-leaved forests, thickets, forest margins, sparse woods, mountains; (100–)300–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan].

**141. *Ilex glomerata*** King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 64: 135. 1895.

团花冬青 *tuan hua dong qing*

Trees evergreen, ca. 13 m tall, ca. 30 cm d.b.h. Young branchlets slender, longitudinally ridged and sulcate, glabrous or glabrescent; terminal buds narrowly conical, bud scales glabrous, ciliate. Stipules very minute, obscure; petiole 8–15 mm, abaxially raised, transversely rugose, adaxially narrowly sulcate, glabrous; leaf blade olivaceous or brownish olivaceous when dry, shiny, oblong or oblong-elliptic, rarely ovate-elliptic, 6–12 × 2–4 cm, subleathery, both surfaces glabrous, midvein impressed and glabrous adaxially, lateral veins 8–10 pairs, raised abaxially, evident adaxially, obliquely ascending, reticulate veins obscure, base obtuse, cuneate, or rarely rounded, margin serrate, apex acuminate, acumen 8–15 mm. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; bracts ovate, ciliate. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles ca. 1 mm; pedicels 1–2 mm; bracteoles 2, basal, deltoid, ciliate; flowers 4-merous; calyx patelliform, ca. 2 mm in diam., deeply 4-lobed, lobes deltoid or suborbicular, ciliate; corolla 7–8 mm in diam., petals oblong, ca. 3.5 × 2 mm, basally slightly connate; stamens ca. as long as petals, anthers oblong, ca. 1 mm; rudimentary ovary subglobose, apex obtuse or subglobose. Female flowers not known. Infructescences: 1-fruited cymes; fruiting pedicels 1–3 mm. Fruit red,

globose, 7–8 mm in diam.; persistent calyx explanate, ca. 2 mm in diam., ciliate; persistent stigma flattened, discoid or navel-like; pyrenes 4, oblong or subglobose, 5.5–7 mm, 4–5 mm in diam., both ends obtuse or rounded, abaxially palmately striate and sulcate, laterally reticulate, rugose and pitted, endocarp stony. Fl. Apr–May, fr. Sep–Nov.

Evergreen broad-leaved forests, forest margins, shrubby areas, mountain slopes; 200–900 m. Guangdong, Guangxi, Hunan [Malaysia, Myanmar, Vietnam].

**142. *Ilex subodorata*** S. Y. Hu, J. Arnold Arbor. 31: 74. 1950.

微香冬青 wei xiang dong qing

Trees evergreen, ca. 12 m tall. Branchlets brownish, castaneous, or purple, stout, leaf scars raised, lenticels absent, glabrous; terminal buds conical, glabrous, bud scales ciliate. Stipules obscure, caducous; petiole 8–12 mm, adaxially narrowly and deeply sulcate, pubescent or glabrous; leaf blade adaxially brown or gray-brown when dry, shiny, elliptic-lanceolate or oblanceolate, 6–9 × 2–3 cm, leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 7–9 pairs, raised abaxially, obscure adaxially, anastomosing near margin, reticulate veins obscure on both surfaces, base cuneate, margin strongly serrate, teeth black and apiculate, apex acuminate, acumen 5–12 mm. Inflorescences: cymes, fasciculate, axillary on second year's branchlets, pubescent; bracts ovate, ciliate; flowers 4-merous. Male inflorescences: cymes of order 2, 3-flowered; peduncles 1–2 mm; pedicels ca. 4 mm; bracteoles 2, basal; calyx patelliform, shallowly 4-lobed, lobes orbicular or deltoid, sparsely ciliate; corolla ca. 6 mm in diam., petals oblong, basally slightly connate; stamens ca. as long as or slightly shorter than petals, anthers oblong-ovoid; rudimentary ovary subglobose-ovoid, apex obtuse. Female flowers not known. Infructescences: 1-fruited cymes; fruiting pedicels 1–2 mm; persistent bracteoles 2, basal. Fruit red, depressed globose, ca. 4 mm, ca. 5 mm in diam., apex depressed; persistent calyx explanate, ca. 2 mm in diam., ciliate; persistent stigma navel-like or thinly discoid; pyrenes 4, subglobose, ca. 3 mm, ca. 2.5 mm in diam., abaxially palmately striate and sulcate, laterally rugose, endocarp stony. Fl. Jul, fr. Oct–Nov.

• Dense forests along mountain rivers; 1600–1700 m. SW Guizhou (Zhenfeng), Yunnan.

**143. *Ilex syzygiophylla*** C. J. Tseng ex S. K. Chen & Y. X. Feng, Acta Phytotax. Sin. 37: 144. 1999.

蒲桃叶冬青 pu tao ye dong qing

Trees evergreen, 6–25 m tall. Current year's branchlets castaneous or brown, angular, glabrous; second year's branchlets gray, terete, thinly fissured, lenticels elliptic or circular. Petiole 1–1.5 cm, glabrous, adaxially sulcate; leaf blade brown when dry, rather shiny, elliptic, 7–10 × 3–5 cm, leathery, both surfaces glabrous, midvein adaxially proximally slightly raised, flattened or subimpressed toward distal half, lateral veins 6–11(–13) pairs, rather evident adaxially, reticulate veins obscure, base cuneate, rarely obtuse or rounded, margin entire, recurved, apex acuminate, acumen 7–10 mm. Male inflorescences: cymes of order 2 or 3, 3–7-flowered, fasciculate, axillary, glabrous; peduncles 3–5 mm; pedicels 2–2.5 mm; flowers

white, 5-merous; calyx patelliform, lobes suborbicular, margin erose; corolla rotate, ca. 6 mm in diam., petals oblong, ca. 3.5 mm; stamens ca. as long as petals; rudimentary ovary ovoid. Female flowers not known. Infructescences: cymes of order 2 or 3, 2–4-fruited, fasciculate, axillary or laterally at base on young branchlets; peduncle 4–5(–10) mm; fruiting pedicels 4–5 mm. Fruit red, globose, ca. 5 mm in diam.; persistent calyx 5-lobed, lobes broadly deltoid, ciliate; persistent stigma papillate, striate; pyrenes 5, ellipsoidal, ca. 3 mm, ca. 2 mm in diam., abaxially striate, not sulcate, laterally striate, endocarp leathery. Fl. Jun, fr. Aug–Nov.

• Sparse forests, streambanks in valleys; 600–1600 m. N Guangdong (Ruyuan, Yangshan).

**144. *Ilex omeiensis*** Hu & T. Tang, Bull. Fan Mem. Inst. Biol. 9: 245. 1940.

峨眉冬青 e mei dong qing

Shrubs or trees, evergreen, 2–11 m tall. Branchlets gray-brown or black when dry, stout, terete, glabrous; current year's branchlets longitudinally striate and plicate; second to third year's longitudinally minutely fissured, leaf scars slightly raised, semicircular, lenticels obscure; terminal buds subglobose, small, glabrous. Stipules persistent, deltoid, 0.7–1.5 mm, apically acute; petiole 1.2–2 cm, thick, abaxially rounded, transversely rugose, adaxially sulcate, glabrous; leaf blade abaxially green, adaxially deep green, shiny, broadly elliptic or oblong-elliptic, 8–20 × 3.5–7 cm, thickly leathery, both surfaces glabrous, midvein abaxially raised, adaxially impressed, lateral veins 6–8 pairs, slightly raised on both surfaces, arcuate, anastomosing near margin, reticulate veins obscure on both surfaces, base obtuse or subrounded, margin entire, apex shortly acuminate. Inflorescences: cymes, fasciculate, fascicles composed of 5–9 cymes, axillary on second to third year's branchlets or leaf scars, pubescent; bracts deltoid, ca. 2 × 1.7 mm, apex acute. Male inflorescences: cymes of order 3; peduncles 2–2.5 cm; secondary axis 2–3 mm; pedicels 6–8 mm; bracteoles basal, minute; flowers yellowish, 5(or 6)-merous; calyx patelliform, 3–4 mm in diam., puberulent, deeply 5- or 6-lobed, lobes deltoid, ca. 1.5 × 1.2 mm, apex obtuse, ciliate; corolla rotate, ca. 6 mm in diam., petals ovate-elliptic, ca. 2.5 × 1.7 mm, basally slightly connate; stamens shorter than petals, anthers ellipsoidal; rudimentary ovary subglobose, ca. 1 mm in diam. Female inflorescences: cymes of order 2; peduncles 7–12 mm; pedicels 4–7 mm; bracteoles 1 or 2, subbasal; flowers 6- or 7-merous; calyx ca. 3.5 mm in diam., deeply 6- or 7-lobed; corolla suberect, ca. 4 mm in diam., petals 6 or 7, ovate, ca. 1.5 mm, basally slightly connate; staminodes very small, ca. 1/2 as long as petals, sterile anthers cordate; ovary ovoid, ca. 2 mm, ca. 1.5 mm in diam. at base, stigma papillate, rarely cristate. Fruit red, globose, 3.5–4 mm in diam.; persistent calyx patelliform; persistent stigma thickly discoid; pyrenes 6 or 7, oblong, ca. 2 mm, ca. 1 mm in diam., trigonous in cross section, abaxially smooth, 3-striate, striae slightly impressed, sometimes anastomosing at both ends, endocarp leathery. Fl. May–Jun, fr. Aug–Oct.

• Mixed forests, mountain slopes; 500–1800 m. Sichuan (Emei Shan, Hongya, Pingshan).

**145. *Ilex venulosa*** J. D. Hooker, Fl. Brit. India 1: 602. 1875.

微脉冬青 wei mai dong qing

Trees or shrubs, evergreen, (2–)15 m tall, glabrous throughout; bark pale black-brown. Branchlets brown or black-brown, terete; current year's branchlets finely angular; second year's branchlets fissured, lenticels pale, elliptic; leaf scars semicircular, convex; terminal buds ovoid-conical, small. Stipules deltoid, ca. 1 mm, apically acute; petiole terete, 1.5–2.5 cm, rather thick, abaxially rugose, adaxially narrowly sulcate; leaf blade olivaceous or brown-olivaceous, oblong-elliptic or ovate, 9–19 × 3–6.5 cm, leathery, midvein narrowly impressed adaxially, lateral veins 15–22 pairs, raised on both surfaces, parallel, furcate and anastomosing near margin, reticulate veins raised abaxially, flattened and evident adaxially, base rounded or obtuse, margin entire, apex caudate-acuminate, acumen long, 2–3 cm. Inflorescences: cymes or compound cymes, pseudopaniculate or rarely fasciculate, axillary on second year's branchlets, very rarely solitary at base of new branchlets; rachis 4–30 mm. Male inflorescences: cymes of order 4, or compound cymes with cymules of order 3; peduncles 7–11 mm, slightly flattened, longitudinally rugose; basal bracts broadly deltoid; secondary axis 1–3 mm; pedicels 1–2 mm; bracteoles 2, basal; flowers white or yellow, 5- or 6-merous; calyx patelliform, 2–3 mm in diam., lobes ovate-deltoid, ca. 0.5 × 1 mm, margin slightly erose, ciliate, apex obtuse; corolla rotate, ca. 6 mm in diam., petals oblong, ca. 2.5 × 1.5 mm, basally slightly connate, apex rounded; stamens slightly shorter than petals, anthers oblong-ovoid; rudimentary ovary subglobose, apex obtuse. Female inflorescences: cymes of order 3, or compound cymes with cymules of order 2; peduncles (2–)5–7(–12) mm; pedicels 2–3 mm; calyx as in male flowers; corolla erect, 3–4 mm in diam., petals obovate, ca. 1.5 mm, basally slightly connate; staminodes ca. 1/3 as long as petals, sterile anthers cordate; ovary ovoid-globose, ca. 1.5 mm, stigma capitate, 5–7-lobed. Fruit red, globose, 3–4 mm in diam.; persistent calyx explanate, ca. 3 mm in diam.; persistent stigma navel-like or thinly discoid; pyrenes 5–7, oblong-ovoid, ca. 2 mm, ca. 1 mm in diam., trigonous in cross section, abaxially 3-striate, striae slightly raised, sometimes branched, laterally smooth, endocarp leathery. Fl. Feb–Apr, fr. Jun–Dec. *2n* = 40.

Forests, mountain slopes; 900–2700 m. S and SW Yunnan [Bangladesh, Bhutan, NE India, N Myanmar].

- 1a. Female inflorescences: peduncles  
5–12 mm ..... 145a. var. *venulosa*  
1b. Female inflorescences: peduncles  
ca. 2 mm ..... 145b. var. *simplicifrons*

**145a. *Ilex venulosa* var. *venulosa***

微脉冬青(原变种) wei mai dong qing (yuan bian zhong)

Female inflorescences: cymes; peduncles 5–12 mm.

Evergreen broad-leaved forests, mixed forests, mountain slopes; 1800–2700 m. S and SW Yunnan [Bangladesh, Bhutan, NE India, N Myanmar].

**145b. *Ilex venulosa* var. *simplicifrons*** S. Y. Hu, J. Arnold Arbor. 31: 217. 1950.

短梗微脉冬青 duan geng wei mai dong qing

Female inflorescences: more compact, much reduced cymes, fewer flowered; peduncles ca. 2 mm.

Forests; 900–1200 m. SW Yunnan (Tengchong) [NE India].

**146. *Ilex stewardii*** S. Y. Hu, J. Arnold Arbor. 31: 219. 1950.

黔桂冬青 qian gui dong qing

Shrubs or trees, evergreen, ca. 8 m tall. Current year's branchlets slender, longitudinally deeply sulcate, sparsely puberulent; second year's branchlets subquadrangular, ridged; third year's branchlets longitudinally plicate-rugose, minutely fissured, leaf scars slightly raised, subcrescent-shaped; terminal buds small, scales narrow, apically acute. Stipules persistent, callous, narrowly deltoid, apically acute; petiole 5–8 mm, abaxially rugose and glabrous, adaxially narrowly and deeply sulcate, puberulent; leaf blade brown-olivaceous, shiny when dry, lanceolate, elliptic, elliptic-lanceolate, or narrowly oblong-elliptic, 5–8 × 1.5–3 cm, papery, midvein raised and glabrous abaxially, impressed adaxially, lateral veins 9–11 pairs, raised abaxially, evident adaxially, reticulate veins evident abaxially, base cuneate or acute, rarely obtuse, margin entire or apically few serrate, apex long acuminate. Male flowers not known. Female inflorescences: cymes of order 1–3, 1–5-flowered, fasciculate or pseudopaniculate, axillary, puberulent, sessile; rachis 3–12 mm; basal bracts persistent, broadly deltoid, apex acute; peduncles 3–7 mm; pedicels 3–5 mm, bracteoles 2, basal; 1-flowered pedicels ca. 5 mm, bracteoles 2, submedian; flowers 6- or 7-merous; calyx patelliform, ca. 2 mm in diam., deeply lobed, lobes ovate-deltoid, margin erose, not ciliate, apex acute; corolla rotate, 4–5 mm in diam., petals oblong, 1.5–2 mm, basally slightly connate; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 1.5 mm, ca. 1 mm in diam., stigma thickly discoid. Fruit red, castaneous or black when dry, ovoid-subglobose, ca. 4 mm, ca. 3 mm in diam.; persistent calyx explanate, 2.5–3 mm in diam.; persistent style sometimes evident; persistent stigma thickly discoid; pyrenes 6, ellipsoidal, ca. 3 mm, ca. 1 mm in diam., abaxially rugose, 3-striate, not sulcate, laterally smooth, endocarp leathery. Fl. Jun–Jul, fr. Aug–Nov.

Evergreen broad-leaved forests, mountains; 500–800 m. Guangdong, Guangxi, Guizhou (Dushan), Hunan [Vietnam].

**147. *Ilex pubescens*** Hooker & Arnott, Bot. Beechey Voy. 176. 1833.

毛冬青 mao dong qing

Shrubs or small trees, evergreen, 3–8 m tall. Branchlets gray-brown, somewhat zigzag, subquadrangular, densely hirsute or villous, longitudinally ridged and rugose; leaf scars slightly raised, nearly crescent-shaped; lenticels absent; terminal buds often poorly developed or absent. Stipules persistent, deltoid, hirsute, apically acute; petiole 2.5–5 mm, densely hirsute; leaf blade olivaceous or deep olivaceous when dry, elliptic, oblong, obovate, or narrowly ovate, 2–6(–10) × 1–2.5(–7) cm, thickly papery, papery, or membranous, both surfaces hirsute, midvein flattened or slightly impressed adaxially, densely hirsute, lateral veins 4 or 5 pairs, evident abaxially, obscure adaxially, anas-

tomosing near margin, reticulate veins obscure on both surfaces, base obtuse, margin sparsely and sharply serrulate or subentire, apex acute or shortly acuminate, or abruptly acuminate. Inflorescences: cymes, fasciculate or pseudopaniculate, axillary on first to second year's branchlets, densely hirsute. Male inflorescences: cymes of order 1 or 2, 1- or 3-flowered; pedicels 1.5–2 mm; bracteoles 2, basal; peduncles when present 1–1.5 mm; flowers pink or white, 4- or 6-merous; calyx patelliform, ca. 2 mm in diam., hirsute, deeply 5- or 6-lobed, lobes ovate-deltoid, ciliate; corolla rotate, 4–5 mm in diam., petals 4–6, ovate-oblong or obovate, ca. 2 mm, basally slightly connate, apex rounded; stamens ca. 3/4 as long as petals, anthers oblong; rudimentary ovary pulvinate, rostellate. Female inflorescences: cymes of order 1 (or 2), 1(–3)-flowered; pedicels 2–3 mm, with basal bracteoles; flowers 5–8-merous; calyx patelliform, ca. 2.5 mm in diam., (5 or)6- or 7-lobed, hirsute, apex acute; corolla rotate, petals 5–8, oblong, ca. 2 mm, apex rounded; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 1.5 mm, ca. 1.3 mm in diam., glabrous, styles evident, stigma capitate or thickly discoid. Fruit red, globose, 3–4 mm in diam.; fruiting pedicel ca. 4 mm, densely hirsute; persistent calyx explanate, ca. 3 mm in diam., 5-lobed, lobes ovate, hirsute; persistent style evident, stigma thickly discoid or capitate; pyrenes (5 or)6(or 7), ellipsoidal, (2.3–)3 mm, (0.8–)1 mm in diam., pointed at both ends, abaxially longitudinally and broadly sulcate or not, 3-striate, laterally smooth, endocarp leathery or subwoody. Fl. Apr–May(–Jun), fr. Aug–Nov.  $2n = 40^*$ .

• Evergreen broad-leaved forests, forest margins, shrubby areas, streamsides, roadsides; (sea level to)100–1000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Taiwan, SE Yunnan, Zhejiang.

- 1a. Leaf blade  $2-6 \times 1-2.5(-3)$  cm, apex acute or shortly acuminate; flowers pink ..... 147a. var. *pubescens*  
 1b. Leaf blade  $4-10 \times 2-7$  cm, apex abruptly acuminate; flowers white ..... 147b. var. *kwangsiensis*

#### 147a. *Ilex pubescens* var. *pubescens*

毛冬青(原变种) mao dong qing (yuan bian zhong)

*Ilex pubescens* var. *glabra* H. T. Chang; *I. trichoclada* Hayata (1913), not Loesener (1901).

Branchlets densely hirsute. Leaf blade elliptic or narrowly ovate,  $2-6 \times 1-2.5(-3)$  cm, papery or membranous, apex acute or shortly acuminate. Inflorescences fasciculate; flowers pink. Fruit ca. 4 mm in diam.; pyrenes (5 or)6(or 7), ca. 3 mm, abaxially longitudinally and broadly sulcate, endocarp leathery or subwoody. Fl. Apr–May, fr. Aug–Nov.

• Evergreen broad-leaved forests, forest margins, shrubby areas, streamsides, roadsides; (sea level to)100–1000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Taiwan, Zhejiang.

147b. *Ilex pubescens* var. *kwangsiensis* Handel-Mazzetti, *Sinensia* 3: 189. 1933.

广西毛冬青 guang xi mao dong qing

Branchlets densely villous. Leaf blade oblong or obovate,  $4-10 \times 2-7$  cm, thickly papery, apex abruptly acuminate. Inflorescences pseudopaniculate; flowers white. Fruit ca. 3 mm in diam.; pyrenes 6 or 7, ca. 2.3 mm, ca. 0.8 mm in diam., abaxially not sulcate, endocarp leathery. Fl. Jun.

• Evergreen broad-leaved forests; 500–1000 m. W Guangxi (Bose, Lingyun), S Guizhou (Libo), SE Yunnan (Funing, Yanshan).

148. *Ilex hainanensis* Merrill, *Lingnan Sci. J.* 13: 60. 1934.

海南冬青 hai nan dong qing

*Ilex hainanensis* C. J. Qi & Q. Z. Lin; *I. rotunda* Thunberg var. *hainanina* Loesener.

Trees evergreen, 5–8 m tall. Branchlets brown or black, rather zigzag, slender; current year's branchlets longitudinally deeply sulcate and angular, sparsely puberulent; second to third year's branchlets subquadrangular, rugose, glabrescent, leaf scars raised, narrowly crescent-shaped, lenticels absent; terminal buds minute, often poorly developed. Petiole 5–10 mm, abaxially rounded, glabrous, adaxially deeply and narrowly longitudinally sulcate, puberulent in groove; leaf blade olivaceous or brown-olivaceous when dry, elliptic or obovate-oblong to ovate-oblong,  $5-9 \times 2.5-5$  cm, thinly leathery or papery, midvein raised and glabrous abaxially, impressed and puberulent adaxially, lateral veins (6 or 7 or)9 or 10 pairs, slightly raised on both surfaces, anastomosing near margin, reticulate veins evident on both surfaces, base obtuse or rounded, margin entire or undulate and shallowly serrate distally, apex abruptly acuminate or acute. Inflorescences: cymes, fasciculate or pseudopaniculate, axillary on second year's branchlets, sparsely shortly puberulent; bracts caducous, deltoid. Male inflorescences: cymes of order 1–3, 1–5-flowered; peduncles 1–3 mm; pedicels 1–2 mm; bracteoles 2, basal; flowers pink, 5- or 6-merous; calyx patelliform, ca. 2 mm in diam., glabrous, deeply 5- or 6-lobed, lobes ovate-deltoid, margin erose, not ciliate; corolla rotate, 5–6 mm in diam., petals ovate, ca.  $2 \times 1.5$  mm, basally slightly connate, apex rounded; stamens shorter than petals, anthers oblong; rudimentary ovary pulvinate, rostellate. Female inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles 1–3 mm; pedicels ca. 3 mm; bracteoles 2, basal; calyx and corolla as in male flowers; staminodes ca. 1/2 as long as petals; ovary ovoid, ca. 1.5 mm in diam., stigma thickly discoid, lobed. Fruit globose-ellipsoidal, ca. 4 mm, ca. 3 mm in diam., longitudinally striate and sulcate when dry; persistent calyx explanate, ca. 3 mm in diam., lobes deltoid; persistent stigma capitate or thickly discoid; pyrenes (4–)6, ellipsoidal, ca. 3 mm, ca. 1 mm in diam., ends pointed, abaxially rugose, longitudinally sulcate, laterally smooth, endocarp woody. Fl. Apr–May, fr. Jun–Nov.

• Dense forests, sparse forests, valleys, mountain slopes; 400–1000 m. Guangdong (Maoming, Yangjiang), Guangxi, Guizhou, E Hainan, Hunan (Suining, Tongdao, Zhangjiajie), SE Yunnan (Hekou, Jinping).

149. *Ilex mamillata* C. Y. Wu ex C. J. Tseng, *Acta Phytotax. Sin.* 22: 414. 1984.

乳头冬青 ru tou dong qing

Trees or shrubs evergreen, 3–10 m tall. Current year's branchlets slender, glabrous, with dense brownish rounded or

elliptic lenticels; second year's branchlets gray, subterete, with very dense lenticels. Petiole 3–7 mm, adaxially sulcate or subflat, puberulent or glabrescent; leaf blade narrowly elliptic, elliptic, or oblong-elliptic, rarely ovate-elliptic or oblong, 6–10 × 2–3.5 cm, leathery, abaxially glabrous, inconspicuously and minutely glandular punctate, adaxially glabrous except on midvein, midvein narrowly impressed and puberulent adaxially, lateral veins obscure abaxially, evident adaxially, base obtuse or cuneate, margin entire, apex acute or obtuse, rarely shortly acuminate or retuse. Male inflorescences: cymes of order 1 or 2 (or 3), 1–3 (or 4)-flowered, fasciculate, axillary on current year's branchlets or on leaf scars of second or third year's; peduncles 2–2.5 mm; pedicels 4.5–6 mm, puberulent; bracteoles basal, deltoid, puberulent; flowers 5-merous; calyx patelliform, 5-lobed, lobes deltoid-ovate, puberulent, ciliate; petals 5, broadly oblong, ca. 4 mm, basally slightly connate; stamens ca. as long as petals; rudimentary ovary ovoid. Female flowers not known. Infructescences: 1-fruited cymes, fasciculate, fascicles 3- or 4-fruited, axillary; fruiting pedicels 6–8 mm, puberulent; persistent bracteoles basal, deltoid, puberulent. Fruit red, globose, ca. 5 mm in diam.; persistent calyx 4- or 5-lobed, lobes broadly deltoid, puberulent, ciliate; persistent stigma mammilliform or cylindrical; pyrenes 5, ellipsoidal, ca. 3 mm, ca. 2 mm in diam., abaxially striate, endocarp leathery. Fl. May, fr. Nov.

- Forests on hill slopes; 200–300 m. Guangxi, Yunnan.

**150. *Ilex wuana*** T. R. Dudley, *Holly Soc. J.* 6(4): 14. 1988 [*"wuiana"*].

征鑑冬青 zheng yan dong qing

*Ilex mamillata* C. Y. Wu ex Y. R. Li, *Bull. Bot. Res.*, Harbin 5(1): 22. 1985, not C. Y. Wu ex C. J. Tseng (1984).

Shrubs evergreen, ca. 12 m tall. Current year's branchlets angular and sulcate, slightly puberulent or glabrous; second year's branchlets gray-white, with strongly raised semicircular leaf scars; terminal buds puberulent. Petiole 5–8 mm, abaxially rugose, puberulent, adaxially narrowly sulcate; leaf blade olivaceous when dry, shiny, oblong-elliptic, rarely elliptic or lanceolate-elliptic, 4–8 × 1.3–3.2 cm, leathery, glabrous except on midvein, midvein impressed adaxially, lateral veins 9 or 10 pairs, slightly evident on both surfaces, base obtuse or broadly cuneate, margin entire or inconspicuously serrate at apex, apex shortly acuminate or acute. Flowers not known. Infructescences: 1-fruited cymes, solitary or fasciculate, fascicles 2–4-fruited, axillary on first to second year's branchlets; fruiting pedicels 3–8 mm, puberulent, basal scales numerous, puberulent, ciliate. Fruit subglobose, 5–6.5 mm in diam.; persistent calyx patelliform, 6-lobed, lobes broadly deltoid, apex acute or obtuse, ciliate; persistent stigma mammilliform, very convex; pyrenes 6, ellipsoidal, 3–4 mm, 1.5–2 mm in diam., abaxially longitudinally 3-striate and 2-sulcate, laterally thinly striate, endocarp leathery. Fl. unknown, fr. Oct.

- Forests on mountain slopes; 1200–2200 m. Yunnan.

**151. *Ilex xiaojinensis*** Y. Q. Wang & P. Y. Chen, *J. Trop. Subtrop. Bot.* 3(1): 31. 1995.

小金冬青 xiao jin dong qing

Shrubs evergreen, 1–2 m tall. Branchlets gray-white, terete,

longitudinally angular. Petiole ca. 5 mm, abaxially rounded, adaxially longitudinally sulcate; leaf blade abaxially greenish, adaxially green, shiny, linear or narrowly lanceolate, 6–9 × ca. 0.8 cm, leathery, abaxially densely glandular punctate, midvein impressed adaxially, lateral veins obscure, base cuneate, margin minutely obtusely serrate, apex acuminate. Male inflorescences: 1-flowered cymes, fasciculate, fascicles 3–5-flowered, axillary; rachis very short or nearly absent; pedicels ca. 2 mm; flowers 4-merous, yellow-green; calyx cupular, 4-lobed, lobes ovate-deltoid, ca. 0.5 mm; petals free, ovate-oblong, ca. 3 mm; stamens 4, filaments ca. 2 mm, anthers oblong, ca. 1 mm; rudimentary ovary ovoid, apex rather flattened. Female flowers not known. Infructescences: 1-fruited cymes, solitary or few fascicled; fascicles 2-fruited, axillary; fruiting pedicels ca. 4 mm. Fruit (immature) subglobose, ca. 5 mm in diam., longitudinally 8-sulcate. Fl. Mar–May, fr. Jun–Oct.

- Dense forests, stream banks; 400–600 m. Guangdong (Xiaojin).

**152. *Ilex qingyuanensis*** C. Z. Zheng, *J. Hangzhou Univ.*, Nat. Sci. Ed. 2: 73. 1980.

庆元冬青 qing yuan dong qing

Trees evergreen, ca. 18 m tall; bark gray-brown. Current year's branchlets castaneous. Petiole ca. 1 cm, adaxially sulcate; leaf blade adaxially green, shiny, broadly ovate or ovate-elliptic, 5–10 × 2.5–5 cm, thickly leathery, abaxially glandular punctate, midvein distal half raised and proximal half impressed adaxially, lateral veins 10–13 pairs, evident abaxially, obscure adaxially, base broadly cuneate, margin entire, apex acuminate, acumen obtuse, retuse. Flowers not known. Infructescences: 1-fruited cymes, fasciculate; fascicles 4–6-fruited, axillary; fruiting pedicels 4–5 mm, pubescent. Fruit red, globose, ca. 5 mm in diam.; persistent calyx 5–7-lobed, lobes orbicular, pubescent, ciliate; persistent stigma discoid; pyrenes 6, ellipsoidal, ca. 7 mm, 3–4 mm in diam., abaxially 3-striate and 2-sulcate, endocarp subwoody. Fl. unknown, fr. Nov.

- Evergreen broad-leaved forests in valleys, mountain slopes; 600–1000 m. Fujian, Zhejiang (Qingyuan).

**153. *Ilex metabaptista*** Loesener, *Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur.* 78: 238. 1901.

河滩冬青 he tan dong qing

Shrubs or trees, evergreen, 4–5 m tall. Current year's branchlets castaneous, longitudinally angular and sulcate, hirsute or subglabrous; second to third year's branchlets gray, terete, longitudinally striate and lenticels obscure; leaf scars raised, semicircular; terminal buds conical-lanceolate, densely pilose. Stipules deltoid, minute, pilose; petiole 3–8 mm, abaxially rounded, adaxially pilose, sulcate, narrowly winged by decurrent leaf base; leaf blade lanceolate or oblanceolate, 3–6(–8) × 0.5–1.4 cm, subleathery, both surfaces pilose when young, glabrescent, or adaxially glabrous and midvein pilose, midvein impressed adaxially, lateral veins 6–8 pairs, slightly raised abaxially, obscure adaxially, anastomosing near margin, pilose abaxially, reticulate veins obscure, base acute or cuneate, margin subentire, often 1- or 2-serrulate near apex, recurved when dry, apex acute or obtuse, mucronate. Inflorescences: cymes, fasciculate, axillary on second year's branchlets, pilose or minutely

puberulent; basal scales of flower buds persistent, broadly deltoid, pilose. Male inflorescences: cymes of order 2, 3-flowered; peduncles 3–6 mm; pedicels 1.5–2.5 mm; bracteoles 1, basal, or absent; flowers white, 5- or 6-merous; calyx cupular, ca. 3 mm in diam., pilose or minutely puberulent, deeply 5- or 6-lobed, lobes deltoid-ovate, ciliate; corolla rotate, 5–6 mm in diam., petals ovate-oblong, ca. 2 mm; stamens slightly shorter than petals, anthers oblong; rudimentary ovary pulvinate or subglobose, apex acute or mucronate. Female inflorescences: cymes of order 1 (or 2), 1(–3)-flowered; pedicels 4–5 mm, densely pilose or minutely puberulent; bracteoles 2, submedian, pilose; peduncles of cymes 5–6 mm; pedicels ca. 3 mm; flowers 5–8-merous; calyx cyathiform, 3–4 mm in diam., lobes deltoid, pilose, ciliate; corolla ca. 6 mm in diam., petals oblong, ca. 3 mm, basally slightly connate; staminodes ca. 2/3 as long as petals, sterile anthers sagittate; ovary ovoid, style evident, stigma capitate, pubescent. Fruit red, ovoid-ellipsoidal, 5–6 mm, 4–5 mm in diam.; persistent calyx explanate or patelliform, ca. 4 mm in diam., pilose; persistent stigma capitate; pyrenes 5–8, ellipsoidal, 3.5–4 mm, ca. 1.5 mm in diam., ends pointed, abaxially and laterally longitudinally striate and sulcate, endocarp leathery. Fl. Apr–Jun, fr. Jul–Oct.

• Forests, stream banks, roadsides on mountains, shores, mountain slopes; 300–1200 m. Chongqing, Guangxi, Guizhou, Hubei, Hunan, Sichuan, NE Yunnan.

- 1a. Branchlets hirsute; both surfaces of young leaves and inflorescences pilose ..... 153a. var. *metabaptista*  
 1b. Branchlets nearly glabrous; adaxial surface of leaf blade glabrous except on midvein; inflorescences minutely puberulent ..... 153b. var. *bodinieri*

**153a. *Ilex metabaptista* var. *metabaptista***

河滩冬青(原变种) he tan dong qing (yuan bian zhong)

Branchlets hirsute. Leaf margin and midvein pilose. Inflorescences pilose. Rudimentary ovary pulvinate, apex shortly acute. Fl. Apr–Jun, fr. Jul–Oct.

• Forests, stream banks, roadsides on mountains; 300–1100 m. Chongqing, Guangxi, Guizhou, Hubei, Hunan, Sichuan, NE Yunnan (Yiliang).

**153b. *Ilex metabaptista* var. *bodinieri* (Loesener) G. Barriera, comb. nov.**

紫金牛叶冬青 zi jin niu ye dong qing

Basionym: *Ilex fargesii* Franchet var. *bodinieri* Loesener in H. Léveillé, Fl. Kouy-Tchéou, 199, 200. 1914–1915; *Embelia cavaleriei* H. Léveillé; *I. metabaptista* var. *myrsinoides* (H. Léveillé) Rehder; *Maesa myrsinoides* H. Léveillé; *Myrsine feddei* H. Léveillé.

Branchlets nearly glabrous. Leaf blade glabrous except on midvein adaxially. Inflorescences very sparsely and minutely puberulent. Rudimentary ovary subglobose, apex mucronate. Fl. May–Jun, fr. Oct.

• Shores, mountain slopes; 400–1200 m. Chongqing (Xiushan), S Guangxi (Shangsi), Guizhou.

**154. *Ilex elmerrilliana* S. Y. Hu, J. Arnold Arbor. 31: 229. 1950.**

厚叶冬青 hou ye dong qing

*Ilex subrotundifolia* C. J. Qi & Q. Z. Lin (1999), not Steyermark (1952).

Shrubs or small trees, evergreen, 2–7 m tall; bark gray-brown. Current year's branchlets red-brown, longitudinally angular and ridged, glabrous; second and third year's branchlets gray-brown, slightly stout, longitudinally fissured, lenticels elliptic, numerous but inconspicuous; leaf scars slightly raised, semicircular; terminal buds narrowly conical, bud scales loose, glabrous, ciliate. Stipules deltoid, minute, glabrous; petiole 4–8 mm, adaxially narrowly sulcate, glabrous; leaf blade adaxially deep green, shiny, elliptic or oblong-elliptic, 5–9 × 2–3.5(–6.5) cm, thickly leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins and reticulate veins obscure on both surfaces, base cuneate, obtuse, or rounded, margin entire, sometimes revolute, apex acuminate or shortly obtusely pointed. Inflorescences: cymes, fasciculate, axillary on second or current year's branchlets; bracts ovate, glabrous. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; pedicels 5–10 mm, glabrous; bracteoles 2, subbasal; flowers white, 5–8-merous; calyx patelliform, ca. 3.5 mm in diam., lobes deltoid, not ciliate; corolla rotate, 6–7 mm in diam., petals oblong, ca. 3.5 × 2.5 mm, not ciliate, basally slightly connate; stamens ca. as long as petals, anthers ovoid-oblong; rudimentary ovary conical, apex obscurely lobed. Female inflorescences: 1-flowered cymes; pedicels 4–6 mm, glabrous or puberulent, base bracteolate; calyx as in male flowers; petals free, oblong, ca. 2 mm; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary subglobose, ca. 1 mm in diam., style evident, stigma capitate. Fruit red, globose, 4–5 mm in diam.; fruiting pedicel 5–10 mm, glabrous or puberulent; persistent calyx explanate, ca. 4 mm in diam., lobes acute; persistent style evident, ca. 0.5 mm, stigma capitate; pyrenes 6 or 7, oblong, ca. 3.5 mm, ca. 1.5 mm in diam., smooth, abaxially with a single slender ridge, slightly branched toward lower end, endocarp leathery. Fl. Apr–May, fr. Jul–Nov.

• Evergreen broad-leaved forests, shrubby areas, forest margins; (200–)500–1500 m. S Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan (Junlian), Zhejiang.

**155. *Ilex dolichopoda* Merrill & Chun, Sunyatsenia 5: 107. 1940.**

长柄冬青 chang bing dong qing

Trees evergreen, ca. 7 m tall. Branchlets gray, terete, stout, puberulent when young, glabrescent, minutely fissured; lenticels minute, inconspicuous; leaf scars raised, subcircular; terminal buds puberulent. Stipules broadly deltoid, apically acute; petiole terete, 8–10 mm, thick, abaxially rugose, adaxially narrowly sulcate; leaf blade abaxially pale, adaxially gray-olivaceous, rather shiny when dry, oblong or obovate-oblong, proximal half nearly cuneate, 15–25 × 5–7 cm, thickly leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 12–15 pairs, raised abaxially, obscure adaxially, anastomosing near margin, reticulate veins evident abaxially, obscure adaxially, base rounded or obtuse, margin entire, recurved when dry, apex



broadly acute. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, fascicles 9–16-fruited, axillary on second year's branchlets; bracts broadly deltoid, apex acute; fruiting pedicels 2.5–3.2 cm, puberulent, bracteoles 1 or 2, inserted below middle on pedicels. Fruit shiny, brown when dry, subglobose, ca. 8 mm, smooth, densely yellow punctate; persistent calyx explanate, ca. 7 mm in diam., puberulent, 6-lobed, lobes suborbicular or reniform, ca. 1.5 × 3 mm, minutely ciliate or glabrous; persistent stigma mammilliform; pyrenes 5 or 6, ellipsoidal, ca. 5 mm, 1–2 mm in diam., abaxially longitudinally 3-striate, laterally reticulately striate, mature endocarp not seen. Fl. May, fr. Jun–Nov.

- Forests, valleys; ca. 600 m. Hainan (Baoting, Qiongzong).

**156. *Ilex shimeica*** K. F. Kwok, Acta Phytotax. Sin. 8: 357. 1963.

石枚冬青 shi mei dong qing

Trees evergreen, 5–11 m tall; bark gray-white, scabrous. Young branchlets brownish, terete; lenticels conspicuous; leaf scars raised, subcircular. Petiole black-brown when dry, ca. 1.2 cm, abaxially rounded, transversely rugose, adaxially longitudinally sulcate, glabrous; leaf blade abaxially slightly pale yellow, adaxially yellowish brown when dry, elliptic or broadly elliptic, 7.5–10 × 3.5–5.5 cm, leathery, abaxially not punctate when dry, both surfaces glabrous, midvein impressed adaxially, lateral veins 6–8 pairs, obliquely ascending, anastomosing near margin, slightly raised abaxially, evident adaxially, reticulate veins evident abaxially, base rounded, margin entire, apex obtuse. Flowers not known. Infructescences: 1-fruited cymes; fasciculate, fascicles 2–10-fruited, axillary; axis 3–8 mm, ca. 2 mm in diam.; bracts gray-white when dry, broadly deltoid, ca. 0.7 mm. Fruit subglobose, 4–5 mm in diam.; fruiting pedicel 5–7 mm; bracteole 1, deltoid, at middle to lower part; persistent calyx 3–4 mm in diam., 4- or 5-lobed, lobes orbicular; persistent stigma shortly cylindrical or narrowly mammilliform, papillate, ca. 1 mm tall; pyrenes 4 or 5, lanceolate, ca. 4.5 mm, abaxially 3-striate, laterally smooth, endocarp leathery. Fl. unknown, fr. Oct.

- Sandy ocean beaches; sea level. Hainan (Lingshi, Wanning).

**157. *Ilex jiaolingensis*** C. J. Tseng & H. H. Liu, Bull. Bot. Res., Harbin 1(1–2): 32. 1981.

蕉岭冬青 jiao ling dong qing

Trees evergreen, ca. 30 m tall. Current year's branchlets brownish, slender, longitudinally angular and sulcate, pubescent; second year's branchlets gray-brown, pubescent, lenticels circular, convex. Petiole 5–7 mm, adaxially longitudinally sulcate, puberulent; leaf blade olivaceous when dry, narrowly elliptic or elliptic-lanceolate, rarely narrowly oblong-elliptic, 4.5–6 × 1.4–2.1 cm, leathery, glabrous except on midvein adaxially, midvein impressed adaxially, lateral veins 7 or 8 pairs, slightly conspicuous abaxially, obscure adaxially, reticulate veins obscure on both surfaces, base cuneate, margin entire, apex acuminate, acumen 5–10 mm. Male flowers not known. Female inflorescences: 1-flowered cymes, fasciculate, axillary on first to third year's branchlets; flowers 4-merous; pedicels ca. 5 mm, pubescent; bracteoles basal, deltoid, pubescent; calyx patelliform, pubescent, lobes broadly deltoid; ovary ovoid, ca. 3 mm, ca. 2

mm in diam., 4-loculed, densely pubescent, persistent style evident, stigma capitate. Fruit not known. Fl. May, fr. unknown.

- Dense forests at summits of hills and in hilly areas; 600–700 m. Guangdong (Jiaoling).

**158. *Ilex memecylifolia*** Champion ex Benth, Hooker's J. Bot. Kew Gard. Misc. 4: 328. 1852.

谷木叶冬青 gu mu ye dong qing

*Ilex memecylifolia* var. *oblongifolia* Champion ex Benth.

Trees evergreen, 15–20 m tall, rarely shrubs, ca. 2 m tall. Young branchlets slender, longitudinally angular and sulcate, very shortly puberulent; third year's branchlets gray, smooth; lenticels absent; leaf scars raised, semicircular; terminal buds ovoid, puberulent. Stipules persistent, deltoid, minute; petiole 5–7 mm, abaxially rounded, adaxially narrowly sulcate, puberulent; leaf blade abaxially greenish, adaxially deep green, shiny or not, ovate-oblong or obovate, 4–8.5 × 1.2–3.3 cm, leathery to thickly leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 5 or 6 pairs, and reticulate veins obscure on both surfaces, base cuneate or obtuse, margin entire, apex acuminate or obtuse. Inflorescences: cymes, fasciculate, axillary on second year's branchlets, often with a dormant bud; flowers white, fragrant, 4- or 5-merous. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles 1–3 mm; bracts deltoid, puberulent; pedicels 3–6 mm, puberulent; bracteoles 2, basal or subbasal, or absent; calyx patelliform, ca. 2 mm in diam., lobes 5 or 6, deltoid, margin erose, apex obtuse, ciliate; corolla rotate, 5–6 mm in diam., petals 4 or 5, oblong, basally slightly connate; stamens ca. as long as petals, anthers ovoid; rudimentary ovary subglobose. Female inflorescences: 1-flowered cymes; pedicels 6–8 mm, puberulent; bracteoles 1 or 2, basal, puberulent; calyx and corolla as in male flowers; staminodes ca. 3/4 as long as petals, sterile anthers and filaments puberulent; ovary subovoid, 1.5–2 mm in diam., style evident, ca. 1 mm, stigma capitate. Fruit red, globose, 5–6 mm in diam.; fruiting pedicel 6–8(–10) mm, puberulent; persistent calyx explanate, ca. 3 mm in diam.; persistent stigma columnar, ca. 1 mm; pyrenes 4 or 5, ellipsoidal-oblong, 4–5 mm, ca. 2 mm in diam., reticulately striate, endocarp leathery, rugose, hairy. Fl. Mar–Apr, fr. Jul–Dec.

Dense forests, sparse forests, mixed forests, shrubby areas, roadsides; 300–600 m. Fujian, Guangdong, Guangxi, Guizhou, Jiangxi [N Vietnam].

**159. *Ilex sinica*** (Loesener) S. Y. Hu, J. Arnold Arbor. 31: 231. 1950.

中华冬青 zhong hua dong qing

*Ilex malabarica* Beddome var. *sinica* Loesener, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 89: 281. 1908.

Trees evergreen, 5–13(–20) m tall, or shrubs, ca. 2 m tall; bark gray. Branchlets gray-green, terete; current year's branchlets longitudinally angular and sulcate, densely downy-pilose; second and third year's branchlets with circular lenticels, leaf scars semicircular, small; terminal buds conical, apically acute, scales sparse, downy-pilose. Stipules drill-like, deltoid, 1–1.5 mm, puberulent, apex acuminate; petiole 5–9 mm, puberulent,

longitudinally sulcate; leaf blade oblong or oblong-elliptic, 5–11(–13) × 2.3–4 cm, leathery, abaxially sparsely puberulent or glabrescent, adaxially glabrous except on midvein, midvein raised and downy-pilose abaxially, deeply narrowly sulcate adaxially, lateral veins 10–14 pairs, obscure on both surfaces, rarely abaxially evident, reticulate veins obscure on both surfaces, base obtuse, margin entire, apex acuminate, acumen 5–20 mm. Inflorescences: cymes, fasciculate, axillary on first to second year's branchlets; bracts lanceolate, 1–2 mm, puberulent. Male inflorescences: cymes of order 2, 3-flowered; peduncles nearly as long as pedicels, 3–4 mm; bracteoles 2, basal, puberulent; flowers white, 4- or 5-merous; calyx cyathiform, 2–2.5 mm in diam., puberulent, 4–6-lobed, lobes deltoid, apex acute, rarely sparsely ciliate; corolla rotate, ca. 6 mm in diam., petals oblong, basally slightly connate; stamens ca. as long as or longer than petals; rudimentary ovary ovoid, ca. 1 mm in diam., rostellate. Female inflorescences: 1-flowered cymes; pedicels 4–6 mm, puberulent; bracteoles 2, basal, scalelike; flowers 6(–9)-merous; calyx 3–4 mm in diam., lobes deltoid, puberulent, ciliate; corolla rotate, ca. 6 mm in diam., petals 6(–9); stamens slightly shorter than petals, sterile anthers cordate, slightly puberulent; ovary globose, ca. 2 mm in diam., style evident, ca. 0.5 mm, stigma capitate. Fruit red, globose, 4–5 mm in diam.; fruiting pedicel 5–8 mm, glabrescent; persistent calyx explanate, ca. 3 mm in diam.; persistent style evident, stigma capitate; pyrenes 6, oblong, ca. 3 mm, 1–1.5 mm in diam., both ends obtuse, abaxially reticulately striate, endocarp leathery, smooth. Fl. Apr–May, fr. Jul–Oct.

• Sparse forests, dense forests; 500–1700 m. Guangxi, S and SE Yunnan.

**160. *Ilex tutcheri*** Merrill, Philipp. J. Sci., C, 13: 143. 1918.

罗浮冬青 *luo fu dong qing*

Trees small or shrubs, evergreen, ca. 4 m tall. Branchlets yellow-brown or castaneous, terete, glabrous; current year's branchlets longitudinally angular-sulcate; third year's branchlets smooth; lenticels absent; leaf scars raised, deltoid; terminal buds ovoid, scales sparse, glabrous. Stipules persistent, deltoid, ca. 1 mm, apically acuminate; petiole 4–8 mm, abaxially rounded and rugose, adaxially deeply sulcate, narrowly winged on distal half; leaf blade abaxially greenish, adaxially green, shiny, orbiculate, obovate, or rarely obovate-elliptic, 2.7–6 × 1.3–2.5 cm, thickly leathery, abaxially punctate, both surfaces glabrous, midvein abaxially raised, glabrous, adaxially deeply impressed, very sparsely puberulent, lateral and reticulate veins obscure on both surfaces, base cuneate or acute, margin recurved, entire, apex rounded and retuse, rarely obtuse. Inflorescences: cymes, fasciculate, axillary on second to third year's branchlets. Male inflorescences: cymes of order 2, 3-flowered; basal bracts tricuspidate, puberulent; peduncles 2–3 mm, sparsely puberulent; pedicels 3–4 mm; bracteoles absent, or 1 or 2, basal, deltoid, puberulent; calyx patelliform, ca. 3 mm in diam., puberulent, 5–7-lobed, lobes orbicular, sparsely ciliate or not ciliate; corolla rotate, ca. 7 mm in diam., petals 4 or 5, oblong, ca. 2.5 mm, not ciliate, basally slightly connate; stamens nearly as long as petals, anthers oblong-ovoid; rudimentary ovary globose, middle distinctly 4- or 5-lobed, apex papillose. Female flowers not known. Infructescences: 1-fruited cymes; fruiting pedicels 8–10 mm,

puberulent; bracteoles 1 or 2, basal. Fruit red, globose, ca. 5 mm in diam.; persistent calyx explanate, suborbicular, ca. 4 mm in diam.; persistent stigma capitate; pyrenes 5 or 6( or 7), ellipsoidal, 2–3 mm, 1–1.3 mm in diam., abaxially 2- or 3-striate, laterally smooth, endocarp leathery. Fl. Apr–May, fr. Jul–Dec.

• Forests, mountain slopes; 400–1600 m. Guangdong, Guangxi.

**161. *Ilex tamii*** T. R. Dudley in F. C. Galle, Hollies Gen. *Ilex*, 244. 1997.

卷边冬青 *juan bian dong qing*

*Ilex revoluta* P. C. Tam, Acta Phytotax. Sin. 8: 356. 1963, not Stapf (1893).

Trees evergreen, small, 4–8 m tall, glabrous throughout; bark gray-brown. Branchlets terete, longitudinally angular-sulcate; leaf scars slightly raised. Petiole 3–4 mm, adaxially longitudinally sulcate, distal end winged by decurrent leaf base; leaf blade obovate, 4–5.5 × 2–2.5 cm, leathery, adaxially small brown glandular punctate, midvein slightly impressed adaxially, lateral veins 6–8 pairs, obliquely ascendant, anastomosing near margin, slightly raised abaxially, evident adaxially, reticulate veins obscure, base cuneate, margin recurved, entire, apex rounded, or retuse. Flowers not known. Infructescences: 1-fruited cymes, solitary or few fascicled, fascicles 2-fruited, axillary on first to second year's branchlets; fruiting pedicels ca. 5 mm. Fruit brown-yellow or rarely brownish when dry, globose, 5–6 mm in diam.; exocarp leathery; persistent calyx cup-shaped, 4-lobed, lobes orbicular; persistent stigma papillate; pyrenes 4, ca. 5 mm, ca. 3 mm in diam., ovoid-ellipsoidal, abaxially 1–3-striate, not sulcate. Fl. unknown, fr. Jul–Aug.

• Dense forests on mountain summits; middle to high elevations. Guangdong (Hebao Dao), Hainan (Baoting, Wanning).

**162. *Ilex salicina*** Handel-Mazzetti, Sinensia 3: 187. 1933.

柳叶冬青 *liu ye dong qing*

Shrubs evergreen, 1–2.5 m tall; bark gray-white. Branchlets castaneous, slender; current year's branchlets longitudinally striate-sulcate, very sparsely puberulent; second to third year's glabrescent; lenticels numerous, evident; leaf scars semicircular; terminal buds conical, scales sparse, puberulent. Stipules minute, deltoid; petiole 6–10 mm, abaxially rugose, glabrous, adaxially longitudinally and deeply sulcate; leaf blade abaxially greenish, adaxially deep green, shiny, linear-lanceolate, 4.5–12 × 0.8–2.2 cm, leathery, abaxially punctate, both surfaces glabrous, midvein impressed adaxially, lateral veins 9–12 pairs, anastomosing near margin, evident abaxially, obscure adaxially, reticulate veins evident abaxially, base cuneate, margin entire, recurved, apex acuminate. Inflorescences: cymes, pseudofasciculate, axillary on second year's branchlets, often with abortive terminal buds, rarely with active ones, then cymes pseudoracemose or pseudopaniculate; central rachis ca. 6 mm, puberulent; bract ovate, puberulent, apex acute; flowers white, fragrant, 4–6-merous. Male inflorescences: cymes of order 1–3, 1–4-flowered; peduncles 8–10 mm, puberulent; pedicels 2–3 mm; bracteoles 2, basal, or absent; calyx cuplike, ca. 3 mm in diam., puberulent, shallowly 6-lobed, lobes orbicular, ciliate; corolla rotate, ca. 7 mm in diam., petals oblong, ca. 3 mm, basally slightly connate; stamens ca. as long as petals, anthers ovoid; rudimentary ovary

subovoid, apex obtuse, inconspicuously 6-lobed. Female inflorescences: cymes of order 1 (or 2), 1(–3)-flowered; pedicels 1–2 cm, puberulent; calyx as in male flowers; corolla choripetalous, petals oblong, ca. 3 mm; staminodes ca. 1/3 as long as petals, sterile anthers sagittate; ovary globose-ovoid, ca. 2 mm in diam., styles ca. 1 mm, stigma capitate, pubescent. Fruit red, globose, ca. 6 mm in diam.; fruiting pedicel 1–2 cm; persistent calyx explanate, ca. 5 mm in diam., lobes orbicular, ciliate; persistent stigma columnar-mammilliform; pyrenes 4–6, ellipsoidal, 4–5 mm, ca. 2 mm in diam., both ends pointed, abaxially longitudinally 3- or 4-ridged, not sulcate, laterally smooth or 1-ridged, endocarp leathery. Fl. Apr, fr. Jul–Oct.

Sparse forests, shrubby areas, mountain slopes; 200–300 m. S Guangxi [N Vietnam].

**163. *Ilex verisimilis*** C. J. Tseng ex S. K. Chen & Y. X. Feng, *Acta Phytotax. Sin.* 37: 144. 1999.

湿生冬青 shi sheng dong qing

Shrubs or small trees, evergreen, 3–7.5 m tall; bark gray-black. Terminal buds ovoid, scales rugose, puberulent or glabrescent. Petiole 1.3–1.5 cm, glabrous, longitudinally sulcate adaxially; leaf blade abaxially greenish, adaxially green, shiny, elliptic, elliptic-lanceolate, or oblong-lanceolate, (5–)8–15 × (2.5–)4.5 cm, leathery or thickly leathery, abaxially glandular punctate, both surfaces glabrous, midvein impressed and narrowly sulcate adaxially, lateral veins 10 or 11 pairs, obscure abaxially, evident adaxially, or, as reticulate veins, inconspicuous on both surfaces, base obtuse or acuminate and decurrent, margin entire, apex long acuminate, acumen 1–2 cm, rarely abruptly shortly acuminate or acute. Inflorescences: cymes, fasciculate, axillary at base of current year's branchlets. Male inflorescences: cymes of order 2, 3-flowered; flowers 6-merous; peduncles 4–5 mm, puberulent; pedicels 5–7 mm, flattened, puberulent; calyx puberulent, lobes deltoid or deltoid-ovate, ciliate; petals oblong-elliptic, ca. 4 mm, basally slightly connate; stamens ca. 3 mm; rudimentary ovary globose, punctate. Female flowers not known. Infructescences: 1-fruited cymes; fruiting pedicels 1.2–1.7 cm, puberulent, ciliate. Fruit ca. 5 mm in diam., minutely punctate; persistent calyx puberulent, 6-lobed, lobes deltoid; persistent stigma mammilliform or capitate; pyrenes 6, ellipsoidal, ca. 2.5 mm, ca. 1 mm in diam., abaxially feathery striate and sulcate, endocarp leathery. Fl. Apr–May, fr. Jun–Nov.

• Dense or sparse forests, forest margins, riversides, valleys; 800–1500 m. Guangdong, NE Guangxi (Longsheng), S Hunan (Yizhang).

**164. *Ilex cochinchinensis*** (Loureiro) Loesener, *Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur.* 78: 230. 1901.

越南冬青 yue nan dong qing

*Hexadica cochinchinensis* Loureiro, *Fl. Cochinch.* 2: 562. 1790; *Ilex ardisioides* Loesener; *I. cleyeroides* Hayata; *I. oligadenia* Merrill & Chun.

Trees evergreen, ca. 15 m tall; bark gray or gray-brown. Branchlets red-brown, terete, longitudinally rugose; current year's branchlets longitudinally striate-sulcate, puberulent along groove; second to third year's with slightly raised, light-colored lenticels; leaf scars slightly raised, circular; terminal buds subglobose, very sparsely puberulent. Stipules deltoid, minute;

petiole 7–10 mm, abaxially rounded, transversely plicate-rugose, glabrous, adaxially longitudinally broadly and shallowly sulcate; leaf blade abaxially greenish, adaxially deep green, shiny, elliptic, oblong-elliptic, oblong-lanceolate, or oblanceolate, 6–16 × 3–4.5 cm, leathery, abaxially punctate, both surfaces glabrous, midvein impressed, narrowly and shallowly sulcate adaxially, lateral veins 7–12 pairs, curved, furcate and anastomosing near margin, slightly raised abaxially, flattened and evident adaxially, reticulate veins evident abaxially, obscure adaxially, base obtuse or cuneate, margin entire, apex acuminate. Inflorescences: cymes, fasciculate, axillary on second year's branchlets. Male inflorescences: cymes of order 2, 3-flowered; bracts broadly deltoid, thickly leathery, apex acute; peduncles 6–10 mm; pedicels 2–3 mm, glabrous or minutely puberulent; flowers white, 4-merous; calyx patelliform, deeply 4-lobed, rarely 5-lobed, lobes orbicular, ciliate; corolla rotate, petals ovate, basally slightly connate, ciliate; stamens shorter than petals, anthers oblong-ovoid; rudimentary ovary rostrate. Female flowers not known. Infructescences: 1-fruited cymes, fascicles 3–7-fruited; fruiting pedicels 8–13(–15) mm, puberulent; bracteoles 1 (or 2), subbasal, deltoid. Fruit red, globose, 5–7 mm in diam.; persistent calyx shallowly cup-shaped, ca. 4 mm in diam., puberulent, shallowly 4-lobed, lobes orbicular, ciliate; persistent stigma mammilliform, apex retuse, slightly 4-lobed; pyrenes 4 or 5, oblong-trigonal, 5–6 mm, ca. 2.5 mm in diam., smooth, endocarp leathery. Fl. Feb–Apr, fr. May–Dec.

Dense forests, mixed forests, stream banks, valleys; middle elevations. Guangdong, Guangxi, Hainan, S Taiwan [Cambodia, N Vietnam].

**165. *Ilex retusifolia*** S. Y. Hu, *J. Arnold Arbor.* 31: 238. 1950.

微凹冬青 wei ao dong qing

Shrubs evergreen. Branchlets castaneous when dry, terete, slender, puberulent, older ones with elliptic lenticels; terminal buds ovoid-conical, puberulent. Stipules persistent, deltoid, apically acute; petiole 8–12 mm, abaxially rounded and rugose, adaxially puberulent, broadly and shallowly sulcate; leaf blade brown-olivaceous when dry, broadly elliptic, 5–7 × 2–3 cm, leathery, abaxially punctate, glabrous except on midvein, midvein raised on both surfaces, lateral veins 7–9 pairs, and reticulate veins obscure on both surfaces, base obtuse, margin entire, apex shortly acuminate, acumen retuse. Male flowers not known. Female inflorescences: 1-flowered cymes, fasciculate, axillary on second year's branchlets; bracts broadly deltoid, puberulent, tricuspidate; pedicels 4–5 mm, puberulent; bracteoles 2, subbasal, deltoid, puberulent; flowers yellowish, 4-merous, rarely 5-merous; calyx patelliform, ca. 2.5 mm in diam., puberulent, deeply 4-lobed, lobes obtuse, apex retuse or rounded, ciliate; corolla rotate, ca. 5 mm in diam., petals free, ovate, ca. 2.5 mm, not ciliate; staminodes ca. 1/2 as long as petals, sterile anthers ovoid-cordate, glabrous; ovary ovoid-subglobose, ca. 1 mm in diam., style evident, very short, stigma discoid. Fruit not known. Fl. Jun, fr. unknown.

• Evergreen broad-leaved forests, mountains; 500–2000 m. S Guangxi (Xing'an).

**166. *Ilex kobuskiana*** S. Y. Hu, *J. Arnold Arbor.* 31: 236. 1950.

凸脉冬青 tu mai dong qing

Shrubs or trees, evergreen, 6–15 m tall. Current year's

branchlets subterete, longitudinally angular, glabrous; second to third year's branchlets longitudinally fissured; lenticels numerous, conspicuous; leaf scars narrowly crescent-shaped, flattened; terminal buds broadly ovoid, puberulent. Stipules deltoid, apically acute; petiole 1–1.2 cm, glabrous, abaxially rugose, adaxially longitudinally and deeply sulcate; leaf blade brown, shiny when dry, ovate, elliptic, or oblong, 6–9 × 1.5–4.5 cm, thickly leathery, abaxially punctate, both surfaces globose, midvein flattened or slightly raised adaxially, lateral veins 9 or 10 pairs, anastomosing near margin, conspicuous abaxially, obscure adaxially, reticulate veins evident abaxially only, base rounded or obtuse, rarely cuneate, margin entire, apex abruptly and shortly acuminate, acumen 5–7 mm, retuse or obtuse. Inflorescences: cymes, fasciculate, axillary on second year's branchlets, bracts puberulent. Male inflorescences: cymes of order 2, 3-flowered; peduncles 1.5–3 mm; pedicels ca. 2 mm, glabrescent; bracteoles 2, basal; flowers 5- or 6-merous; calyx patelliform, ca. 3.5 mm in diam., shallowly 6-lobed, lobes orbicular, ciliate; corolla rotate, 6–7 mm in diam., petals obovate-elliptic, ca. 3 mm, basally slightly connate; stamens ca. as long as petals, anthers oblong; rudimentary ovary pulvinate, apex obtuse. Female inflorescences: 1-flowered cymes; pedicels 5–8 mm, puberulent; bracteoles 2, median; calyx ca. 4 mm in diam., 6-lobed, lobes orbicular, ciliate; petals 6–8, ovate-oblong, ca. 3 mm, basally slightly connate; staminodes ca. 3/4 as long as petals, sterile anther sagittate; ovary ovoid, stigma navel-like. Fruit red, ovoid, 4–6 mm in diam.; persistent calyx explanate, orbicular, lobes ciliate; persistent stigma navel-like; pyrenes 6, ellipsoidal, ca. 4 mm, 1.8–2 mm in diam., both ends pointed, longitudinally striate, not sulcate, endocarp leathery. Fl. May–Jul, fr. Jun–Nov.

Evergreen broad-leaved forests, mountain slopes; 500–1600 m. E and N Guangdong (Dabu, Ruyuan), Hainan [Vietnam].

**167. *Ilex strigillosa*** T. R. Dudley, Acta Bot. Yunnan. 6: 43. 1984.

粗毛冬青 *cu mao dong qing*

Trees evergreen, small, ca. 8.5 m tall. Branchlets, terminal buds, petioles, inflorescence bracts, and calyx densely gray-white villous-strigose; branchlets ashy white, terete, striate; terminal buds shortly conical, outer scales rostrate-curved. Stipules minute and thinly membranous, or caducous; petiole 7–10 mm, adaxially deeply sulcate; leaf blade elliptic, 4–7.5 × 1–2 cm, subleathery, amber punctate abaxially, midvein glabrous, deeply impressed adaxially, lateral veins 6–8 pairs, slightly raised abaxially, obscure adaxially, base acute to attenuate, margin entire or subentire, shallowly undulate, on distal half with glandular black tips, apex acuminate or caudate-acuminate, acumen 5–10(–15) mm, mucronate. Flowers not known. Infructescences: 1-fruited cymes, solitary or fasciculate, fascicles 2–4-fruited, axillary on current year's branchlets; axis ca. 1 mm, or absent; bracts ovate, ca. 0.5 mm, apex acute; fruiting pedicels 2–4 mm. Fruit red, globose-quadrangular, 2.5–3 mm, 1.5–2 mm in diam., deeply 4–8-sulcate; exocarp very thin, rugose and sulcate, villous-strigose with dense, rigid, erect and appressed, gray-white trichomes; persistent calyx explanate, patelliform, 1–2 mm in diam., 4-lobed, lobes broadly ovate, apex obtuse; persistent stigma black, thickly discoid, shallowly 4-lobed; pyrenes 4, broadly ovate, trigonous, 2–2.5 mm, 1.5–2 mm in diam., both ends obtuse or rounded, abaxially 1-sulcate, 3–5-striate, striae

parallel or curved, laterally ridged, not sulcate, 2- or 3-striate and reticulate-pitted, endocarp leathery. Fl. unknown, fr. Jul.

• Forests, mountains; 600–1400 m. Guangdong (Xinfeng).

**168. *Ilex longicaudata*** H. F. Comber, Notes Roy. Bot. Gard. Edinburgh 18: 54. 1933.

长尾冬青 *chang wei dong qing*

Trees or shrubs, evergreen, (1–)3–10 m tall. Branchlets gray to brownish when dry, terete, slender; second to third year's branchlets with conspicuous, circular lenticels; leaf scars semi-circular, convex; current year's branchlets longitudinally plicate-sulcate, puberulent or glabrous; terminal buds conical, small, bud scales puberulent, ciliate. Stipules persistent, subuliform-deltoid; petiole 6–10 mm, abaxially longitudinally plicate, adaxially longitudinally sulcate, puberulent; leaf blade adaxially green, slightly shiny or opaque, ovate-elliptic or elliptic, 4–9 × 1–2.5 cm, leathery or thickly leathery, abaxially minutely, deeply colored glandular punctate, adaxially glabrous except on midvein, midvein impressed and puberulent adaxially, lateral veins 7–9 pairs, slightly evident abaxially or obscure on both surfaces, reticulate veins absent, base obtuse or rounded, margin entire, apex caudate-acuminate, acumen long, 8–20 mm, narrow. Inflorescences: cymes, pseudopaniculate, fasciculate, or pseudoracemose, axillary on second year's branchlets. Male inflorescences: cymes of order (1 or)2, (1 or)3-flowered, pseudopaniculate; rachis 4–15 mm, puberulent or glabrous; bracts oblong-ovate, thickly leathery, sparsely puberulent, ciliate, apex acute; peduncles ca. 4 mm; pedicels ca. 2 mm, puberulent or glabrous; bracteoles 2, basal, or absent; flowers milky white, 4- or 5-merous; calyx patelliform, ca. 2.5 mm, deeply 4-lobed, lobes eroded, apex obtuse, minutely ciliate; corolla rotate, petals obovate, basally slightly connate; stamens 4, slightly shorter than petals, anthers ovoid-oblong; rudimentary ovary subglobose, apex truncate, 4-sulcate. Female inflorescences: 1-flowered cymes, fasciculate or pseudoracemose, densely puberulent or glabrous; pedicels 2–4 mm, puberulent or glabrous; flowers 4- or 5(or 6)-merous; calyx lobes deltoid, apex acute, ciliate or glabrous; corolla erect, petals ovate, ca. 2 × 1 mm; staminodes ca. 3/4 as long as petals, sterile anthers ovoid; ovary subglobose, ca. 2 mm in diam., stigma thickly discoid, convex. Fruit red, globose, 3–4 mm in diam.; persistent calyx explanate, 2–3 mm in diam.; persistent stigma subcolumnar or discoid, convex, style evident; pyrenes 4 or 5, ellipsoidal, ca. 2.5 mm, 1–3 mm in diam., smooth, abaxially 3-striate, not sulcate, endocarp leathery. Fl. Jul, fr. Sep–Oct.

• Evergreen broad-leaved forests, mixed forests, mountain slopes, mountain valleys; 1300–2800 m. Yunnan.

1a. Branchlets and pedicels puberulent

..... 168a. var. *longicaudata*

1b. Branchlets and pedicels glabrous ..... 168b. var. *glabra*

**168a. *Ilex longicaudata* var. *longicaudata***

长尾冬青(原变种) *chang wei dong qing* (*yuan bian zhong*)

Shrubs or trees. Branchlets puberulent. Leaf blade leathery, lateral veins slightly evident abaxially. Pedicels puberulent. Fruit: persistent calyx ca. 3 mm in diam.; pyrenes 5.

• Evergreen broad-leaved forests, mixed forests, mountain valleys; 1300–2800 m. Yunnan.

**168b. *Ilex longicaudata* var. *glabra*** S. Y. Hu, *J. Arnold Arbor.* 31: 246. 1950.

无毛长尾冬青 wu mao chang wei dong qing

Shrubs glabrous. Branchlets glabrous. Leaf blade thickly leathery, lateral veins obscure on both surfaces. Pedicels glabrous. Fruit: persistent calyx ca. 2 mm in diam.; pyrenes 4.

• Evergreen broad-leaved forests, mountain slopes; 1400–2000 m. NW and SE Yunnan.

**169. *Ilex kengii*** S. Y. Hu, *J. Arnold Arbor.* 31: 244. 1950.

皱柄冬青 zhou bing dong qing

*Ilex kengii* f. *tiantangshanensis* C. J. Tseng & H. H. Liu; *I. yanlingensis* C. J. Qi & Q. Z. Lin.

Trees evergreen, 4–13(–15) m tall; bark gray. Branchlets brown, slender, glabrous or sparsely puberulent; third year's branchlets longitudinally fissured, with numerous, rounded lenticels; leaf scars raised, semicircular; current year's branchlets longitudinally angular and sulcate; terminal buds conical, glabrous, apically acute, bud scales ciliate. Stipules broadly deltoid; petiole 7–15(–18) mm, abaxially transversely rugose, adaxially glabrous or sparsely puberulent, narrowly and deeply sulcate; leaf blade abaxially greenish, adaxially green, shiny, elliptic, broadly elliptic, or ovate-elliptic, 4–11 × 2–4.5 cm, thinly leathery or leathery, abaxially brown glandular punctate, rarely not punctate, both surfaces glabrous, midvein slightly raised or flat adaxially, lateral veins 6–9 pairs, raised abaxially, evident or obscure adaxially, anastomosing near margin, reticulate veins obscure, base obtuse, rounded, or broadly cuneate, margin entire, sometimes slightly revolute, apex (shortly or) long acuminate, acumen to 1–1.5 cm. Male flowers not known. Female inflorescences: cymes of order 1–3, 1–5-flowered, fasciculate, axillary on second year's branchlets; peduncles 3–8 mm; pedicels 4–5 mm; 1-flowered pedicels 3–6 mm, glabrous or sparsely puberulent at base; bracteoles 2, submedian, glabrous; flowers 4-merous. Infructescences: peduncles 1–1.5 cm; fruiting pedicels 0.6–1 cm. Fruit red, globose, 3–5 mm in diam.; persistent calyx explanate, patelliform, ca. 2 mm in diam., shallowly 4-lobed, lobes orbicular, ciliate; persistent stigma thickly discoid, shallowly 4-lobed; pyrenes 4, broadly ellipsoidal, 2.5–3 mm, ca. 1.5 mm in diam., ends obtuse, abaxially (4 or) 5- or 6-striate, not sulcate, striae easily detached from endocarp, endocarp leathery. Fl. unknown, fr. Jun–Nov.

• Sparse forests, mixed forests on mountain slopes; 200–1500 m. Fujian, Guangdong, Guangxi, Guizhou (Dushan), Hunan (Yanling), Zhejiang.

**170. *Ilex goshiensis*** Hayata, *J. Coll. Sci. Imp. Univ. Tokyo* 30(1): 54. 1911.

海岛冬青 hai dao dong qing

*Ilex hanceana* Maximowicz f. *goshiensis* Yamamoto, nom. illeg. superfl.; *I. hanceana* f. *rotundata* Makino.

Shrubs or trees, evergreen, to 12 m tall; bark gray-brown.

Branchlets slender, puberulent; third year's branchlets longitudinally rugose; leaf scars raised, semicircular; lenticels conspicuous; current year's branchlets longitudinally ridged; terminal buds conical, small, puberulent. Stipules deltoid, puberulent, apically acute; petiole 4–8 mm, adaxially longitudinally broadly and shallowly sulcate, puberulent; leaf blade brown-green when dry on both surfaces, adaxially slightly shiny, broadly elliptic or subrhombic-elliptic, 3–5 × 1.5–2.5 cm, leathery, abaxially minutely black glandular punctate, adaxially glabrous except on midvein, midvein slightly raised abaxially, slightly impressed or flattened and puberulent adaxially, lateral veins 4–6 pairs, obscure on both surfaces, reticulate veins obscure, base broadly cuneate or acute, margin entire, apex abruptly shortly acuminate, tip obtuse and retuse. Inflorescences: cymes, fasciculate, axillary. Male inflorescences: cymes of order 2 or 3, 3–7-flowered, puberulent or rarely glabrescent; bracts puberulent, tricuspidate; peduncles 4–5 mm; pedicels 2–3 mm; bracteoles minute, puberulent; flowers 4- or 5-merous; calyx patelliform, ca. 2 mm in diam., puberulent, shallowly 4-lobed, rarely 5-lobed, lobes orbicular, densely ciliate; corolla rotate, 4–5 mm in diam., petals 4, oblong, ca. 1.7 mm, basally slightly connate; stamens shorter than petals, anthers oblong; rudimentary ovary subglobose, central part slightly retuse. Female flowers not known. Infructescences: cymes of order 1(or 2), 1(or 3)-fruited; fruiting pedicels 3–5(–8) mm; cymes of order 2: peduncles ca. 5 mm. Fruit globose, ca. 4 mm in diam.; persistent calyx explanate, 4- or 5-lobed, ciliate; persistent stigma slightly raised, discoid, 4-lobed; pyrenes 4(or 5), subglobose, 1.7–2 mm, 1.2–1.8 mm in diam., abaxially 3-striate, not sulcate, laterally smooth, endocarp leathery. Fl. and fr. Aug–Oct.

Dense forests; 100–1800 m. SW Fujian (Shanghang), Guangdong, Hainan (Baoting, Ledong), Taiwan (Taizhong, Xinzhu) [Japan (Ryukyu Islands)].

**171. *Ilex buxoides*** S. Y. Hu, *J. Arnold Arbor.* 31: 242. 1950.

黄杨冬青 huang yang dong qing

Trees, rarely shrubs, evergreen, ca. 9 m tall; bark brown. Current year's branchlets slender, longitudinally rugose, pubescent; third year's branchlets terete, pubescent; leaf scars raised, linear; lenticels obscure; terminal buds conical, densely pubescent. Stipules persistent, deltoid, pubescent; petiole ca. 5 mm, pubescent, longitudinally and shallowly sulcate adaxially; leaf blade adaxially olivaceous, slightly shiny when dry, elliptic, obovate-elliptic, or subrhombic, 2–4.5 × 1–2 cm, leathery, abaxially glandular punctate, both surfaces sparsely puberulent, impressed adaxially, lateral veins 4 or 5 pairs, slightly evident abaxially, obscure adaxially, reticulate veins obscure, base cuneate, margin entire, apex shortly acuminate or obtuse, acumen retuse. Inflorescences: cymes, fasciculate, axillary on second year's branchlets. Male inflorescences: cymes of order (1 or) 2, (1 or) 3-flowered; bracts ovate, pubescent; peduncles 3–5 mm; pedicels 2–3 mm; bracteoles pubescent; flowers white, 4- or 5-merous; calyx patelliform, ca. 2 mm in diam., pubescent, 4- or 5-lobed, lobes deltoid, apex obtuse, ciliate; corolla rotate, ca. 5 mm in diam., petals ovate, ca. 2 mm, basally slightly connate; stamens 4, rarely 5, shorter than petals, anthers oblong; rudimentary ovary subglobose, minutely lobed at center. Female flowers not known. Infructescences: 1-fruited cymes; fruiting

pedicels ca. 5 mm, densely puberulent; bracteoles 2, submedian, persistent. Fruit red, globose, 4–5 mm in diam.; persistent calyx explanate, ca. 3 mm in diam., pubescent, 4-lobed, lobes suborbicular, ciliate; persistent stigma rather raised, thinly discoid; pyrenes 4, oblong, 3–3.5 mm, ca. 2 mm in diam., abaxially and laterally reticulately striate, striae raised, easily detached from endocarp, endocarp leathery. Fl. Apr–May, fr. Jul–Oct.

• Dense or sparse forests, mountains; 800–1500 m. Fujian, Guangdong, S Guangxi (Shangsi).

**172. *Ilex liangii*** S. Y. Hu, J. Arnold Arbor. 31: 246. 1950.

保亭冬青 bao ting dong qing

Shrubs or trees, evergreen, 3–8 m tall, glabrous throughout; bark gray-black. Branchlets gray-white, slender, leaf scars raised, circular; terminal buds when present globose, glabrous. Stipules often obscure; petiole 4–5 mm, adaxially longitudinally sulcate; leaf blade abaxially greenish, adaxially green, slightly shiny, oblong-elliptic or elliptic-lanceolate, 4–5.5 × 1.5–2.5 cm, leathery, abaxially brown punctate, midvein impressed adaxially, lateral veins 4 or 5 pairs, evident or obscure abaxially, obscure adaxially, reticulate veins sometimes evident abaxially, base obtuse or cuneate, often decurrent, margin entire, apex obtuse, rounded, or sometimes retuse. Male inflorescences: cymes of order 2, 3-flowered, fasciculate, axillary on second year's branchlets; peduncles 3–4 mm; pedicels ca. 1 mm, glabrous; flowers white, 4-merous; calyx ca. 2 mm in diam., glabrous, deeply 4-lobed, lobes erose at margin, apex rounded or obtuse, ciliate; corolla ca. 5 mm in diam., petals obovate, ca. 2 mm, basally slightly connate; stamens ca. 2/3 as long as petals; rudimentary ovary subovoid, papillate, rostrate. Female flowers not known. Infructescences: 1-fruited cymes, solitary or few fascicled, fascicles 3-fruited, axillary; fruiting pedicels 3–5 mm; bracteoles 2, median. Fruit red, globose, ca. 5 mm in diam.; persistent calyx explanate, ca. 2.5 mm in diam., glabrous, 4-lobed, lobes orbicular or deltoid, ciliate; persistent style evident, stigma capitate; pyrenes 4, broadly ellipsoidal, ca. 3.7 mm, ca. 2.3 mm in diam., abaxially longitudinally 3- or 4-striate, not sulcate, striae adhering to endocarp, not easily deciduous, endocarp leathery. Fl. Oct–Dec, fr. Nov–Jan.

• Dense forests, sparse forests of mountain valleys; 800–1000 m. Hainan.

**173. *Ilex saxicola*** C. J. Tseng & H. H. Liu, Bull. Bot. Res., Harbin 1(1–2): 33. 1981.

石生冬青 shi sheng dong qing

Shrubs evergreen, ca. 3 m tall. Current year's branchlets slender, longitudinally ridged, gray-brown, puberulent; second year's branchlets gray, terete, lenticellate. Petiole 4–6 mm, abaxially rounded, rugose, adaxially flattened or slightly longitudinally sulcate; leaf blade abaxially brownish, adaxially olivaceous, shiny when dry, broadly elliptic, 4–5.5 × 2–3.5 cm, leathery, abaxially glabrous, adaxially puberulent or glabrescent, midvein sulcate adaxially, lateral veins 4 or 5 pairs, slightly evident and rugose abaxially, obscure adaxially, reticulate veins obscure on both surfaces, base obtuse, margin entire, apex obtuse or rounded. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, axillary or lateral at base of young branch-

lets; fruiting pedicels 5–9 mm, puberulent, median or above; bracteoles 2, ovate, puberulent. Fruit (immature) globose, ca. 4 mm in diam.; persistent calyx puberulent, (4 or)5-lobed, lobes broadly deltoid-ovate or suborbicular, unequal, 3 larger, 2 smaller, ciliate; persistent stigma capitate; pyrenes 4 or 5, ovoid, ca. 3 mm, ca. 2 mm in diam., abaxially palmately striate and sulcate, laterally smooth, neither striate nor sulcate, endocarp leathery. Fl. unknown, fr. Aug.

• Sparse forests, rocky mountain areas; 500–600 m. SW Guangxi (Longzhou).

**174. *Ilex guizhouensis*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 36. 1981.

贵州冬青 gui zhou dong qing

Trees or shrubs evergreen. Current year's branchlets brown, subterete, slender, smooth and shiny, longitudinally sulcate, punctate, glabrous; second year's branchlets gray, terete. Petiole 5–8 mm, adaxially narrowly sulcate or subflattened, glabrous; leaf blade abaxially brownish, adaxially olivaceous-brown when dry, elliptic-oblong, 5–9 × 2–2.5 cm, papery, both surfaces glabrous, midvein raised on both surfaces, lateral veins 9–12 pairs, slightly raised on both surfaces, reticulate veins evident on both surfaces, base obtuse, margin subentire, apex acuminate or long acuminate, acumen 8–13 mm. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, fascicles 3–5-fruited, axillary; fruiting pedicels 2–3 mm, longitudinally angular and sulcate, puberulent or glabrescent; bracteoles 2, basal or subbasal, deltoid. Fruit black when dry, globose, ca. 4 mm in diam.; persistent calyx glabrous, 4-lobed, lobes suborbicular; persistent stigma discoid; pyrenes 4, ellipsoidal, ca. 3 mm, ca. 1 mm in diam., abaxially palmately striate and slightly sulcate, endocarp woody. Fl. and fr. unknown.

• Guizhou.

**175. *Ilex oligodonta*** Merrill & Chun, Sunyatsenia 1: 67. 1930.

疏齿冬青 shu chi dong qing

Shrubs evergreen, 1–3(–5) m tall. Branchlets gray or yellowish, terete, puberulent; lenticels numerous and conspicuous; leaf scars circular, convex; current year's branchlets slender, longitudinally angular; terminal buds conical, densely puberulent. Stipules deltoid, minute, puberulent; petiole 3–6 mm, puberulent, longitudinally and broadly sulcate adaxially; leaf blade brown-olivaceous when dry, shiny or opaque adaxially, oblong-elliptic or oblong-lanceolate, 2.5–7.5 × 1–2 cm, leathery, abaxially puberulent or glabrescent, adaxially slightly puberulent or only midvein puberulent, midvein slightly raised abaxially, glabrous or puberulent, flat or slightly impressed adaxially, lateral veins 5–7 pairs, obscure on both surfaces, reticulate veins absent, base obtuse or broadly cuneate, margin entire or with 1 or 2 bristly teeth at distal end, apex long acuminate, acumen 7–15 mm. Inflorescences: cymes, fasciculate, axillary on leaves or scales, puberulent. Male inflorescences: cymes of order 2 or 3, 3–7-flowered; peduncles 3–6 mm; secondary axis 1–2 mm; pedicels 1–3 mm; bracteoles 1 or 2, basal, ciliate; flowers white, fragrant, 4-merous; calyx patelliform, puberulent, shallowly 4-lobed, lobes ovate, ciliate; corolla rotate, ca. 5 mm in diam., petals ovate-oblong, ca. 2 mm, basally slightly connate; stamens

ca. as long as petals, anthers oblong, ca. 1 mm; rudimentary ovary pulvinate, rostellate. Female inflorescences: 1-flowered cymes; calyx and corolla as in male flowers; staminodes ca. 2/3 as long as petals, sterile anthers sagittate, apex truncate; ovary ovoid, ca. 1.8 mm, ca. 1.5 mm in diam., stigma discoid, convex, 4-lobed. Fruit red, globose; persistent calyx explanate, lobes orbicular, ciliate; persistent stigma discoid, convex; pyrenes unknown. Fl. May, fr. Jul–Oct.  $2n = 40^*$ .

• Dense forests, thickets, mountains; 800–1200 m. Fujian, Guangdong, S Hunan (Yizhang).

**176. *Ilex nitidissima*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 35. 1981.

亮叶冬青 liang ye dong qing

Trees evergreen, small, ca. 6 m tall. Current year's branchlets longitudinally angular, puberulent or glabrescent; second year's branchlets gray, glabrous. Petiole 6–8 mm, puberulent, longitudinally sulcate adaxially; leaf blade abaxially brown, adaxially dark olivaceous, very nitid or nitid when dry, elliptic or oblong-elliptic, rarely ovate-elliptic, 5.5–9 × 2.7–4 cm, leathery, abaxially glabrous except on midvein, midvein proximal half adaxially raised, distal half gradually flat or impressed, puberulent, lateral veins 8–10 pairs, evident or obscure adaxially, reticulate veins obscure on both surfaces, base obtuse or cuneate, rarely subrounded, margin subentire, sometimes sparsely inconspicuously serrulate, apex acuminate. Flowers not known. Inflorescences: 1-fruited cymes, fasciculate, fascicles 2–4-fruited, axillary; fruiting pedicels 8–10 mm. Fruit red, globose; persistent calyx patelliform, glabrous, 4-lobed, lobes suborbicular or broadly deltoid-ovate, not ciliate; persistent stigma discoid or capitate; pyrenes 4, ovoid, ca. 4 mm, ca. 2.5 mm in diam., abaxially slightly convex, neither striate nor sulcate, endocarp leathery. Fl. unknown, fr. Aug–Oct.

• Dense or sparse forests, mixed forests, mountain slopes; 800–1300 m. Guangxi, S Hunan (Yizhang), NE Jiangxi (Guangfeng).

**177. *Ilex jinyunensis*** Z. M. Tan, J. Sichuan Univ., Nat. Sci. Ed. 1983(2): 81. 1983.

缙云冬青 jin yun dong qing

Trees evergreen, ca. 6 m tall. Current year's branchlets longitudinally ridged and sulcate, sparsely puberulent or subglabrous; second to third year's branchlets terete, smooth, glabrous, lenticellate. Stipules deltoid, minute; petiole 4–6 mm, abaxially rugose, glabrous, adaxially sulcate; leaf blade abaxially greenish, adaxially deep green, shiny, oblong or obovate-elliptic, 6–12 × 3–4.5 cm, leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 10–14 pairs, obscure abaxially, slightly raised adaxially, reticulate veins obscure, base broadly cuneate to subrounded, margin entire on proximal half, serrulate with 1 or 2 pairs of teeth on distal half, apex acuminate. Flowers not known. Inflorescences 1-fruited cymes, fasciculate, rarely solitary, fascicles 3–7-fruited, axillary; fruiting pedicels 6–7 mm, puberulent. Fruit red, globose, 4–5 mm in diam.; persistent calyx 4- or 5-lobed, lobes deltoid, puberulent; persistent stigma capitate or mammilliform; pyrenes 4, oblong, ca. 2.5 mm, 1–1.2 mm in diam., smooth, abaxially slightly convex, 3-striate, endocarp leathery. Fl. unknown, fr. Nov.

• Evergreen broad-leaved forests, mountains; 700–800 m. Chongqing.

**178. *Ilex sublongicaudata*** C. J. Tseng & S. Liu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 23. 1985.

拟长尾冬青 ni chang wei dong qing

Shrubs evergreen, ca. 2 m tall. Branchlets yellowish brown or gray; old branchlets terete, leaf scars convex, semicircular; lenticels convex, elliptic; current year's branchlets longitudinally angular and sulcate, puberulent; terminal buds narrowly conical, small, densely puberulent. Petiole 4–6 mm, abaxially transversely rugose and glabrous, adaxially longitudinally broadly sulcate, puberulent; leaf blade adaxially olivaceous when dry, elliptic or oblong-elliptic, 4–6 × 1.5–2.2 cm, leathery, abaxially glabrous, not punctate, adaxially glabrous except on midvein, midvein flat or slightly raised adaxially, lateral veins 7–10 pairs, evident abaxially, obscure adaxially, reticulate veins obscure on both surfaces, base obtuse, margin entire, apex long acuminate, acumen 5–10 mm. Flowers not known. Inflorescences: 1-fruited cymes, solitary or few fascicled, fascicles 3-fruited, axillary on current year's branchlets; fruiting pedicels 2.5–4.5 mm, quadrangular, glabrous. Fruit globose, 3.5–4 mm in diam.; persistent calyx patelliform, deeply 4- or 5-lobed, lobes broadly deltoid, minutely ciliate; persistent stigma thickly discoid, shallowly lobed; pyrenes 4 or 5, oblong-ellipsoidal, ca. 3.5 mm, ca. 1.5 mm in diam., abaxially shallowly 3- or 4-striate, not sulcate or shallowly sulcate, endocarp leathery. Fl. unknown, fr. Aug.

• Mountain forests; ca. 2600 m. W Yunnan (Longling).

**179. *Ilex hayatana*** Loesener, Repert. Spec. Nov. Regni Veg. 50: 333. 1941 [*“hayataiana”*].

早田氏冬青 zao tian shi dong qing

Trees evergreen, ca. 12 m tall; bark pale gray-black. Branchlets slender, puberulent; second to third year's branchlets with numerous large raised lenticels and leaf scars; current year's branchlets longitudinally ridged and sulcate; terminal buds conical, puberulent, apically acute. Stipules narrowly deltoid, apically acute; petiole 4–7 mm, pubescent, longitudinally shallowly sulcate adaxially, narrowly winged by decurrent leaf base on distal half; leaf blade adaxially olivaceous when dry, elliptic or ovate-elliptic, 3–5 × 1–2 cm, leathery, adaxially glabrous except on midvein, midvein raised on both surfaces, puberulent adaxially, lateral veins 7 or 8 pairs, obscure on both surfaces, base obtuse or acute, margin entire, apex long acuminate, acumen 5–10 mm, tip obtuse or retuse. Flowers not known. Inflorescences: 1-fruited cymes, fasciculate or pseudofasciculate, axillary on second year's branchlets; central axis ca. 4 mm; bracts narrowly deltoid, pubescent; fruiting pedicels 5–7 mm, longitudinally striate and sulcate, pubescent; bracteoles 2, median. Fruit red, globose, 4(–7) mm in diam.; persistent calyx horizontally stretched, subexplanate-patelliform, ca. 2 mm in diam., quadrangular, 4-lobed, lobes orbicular, ciliate; persistent stigma capitate; pyrenes 4, ellipsoidal, ca. 4 mm, 1.5–2 mm in diam., abaxially convex, longitudinally 3-striate, laterally smooth, endocarp leathery. Fl. summer, fr. autumn to Feb.

Forests; 200–300 m. Taiwan (Nantou, Taizhong, Yilan) [Japan].

**180. *Ilex wilsonii*** Loesener, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 89: 287. 1908.

尾叶冬青 wei ye dong qing

Shrubs or trees, evergreen, 2–10 m tall; bark gray-white, smooth. Branchlets gray-brown, terete, smooth, glabrous; lenticels absent; leaf scars slightly raised, semicircular; current year's branchlets longitudinally angular and sulcate, glabrous; terminal buds convex, scales glabrous, ciliate. Stipules deltoid, minute, apically acute; petiole 5–9 mm, rugose abaxially, glabrous, longitudinally sulcate adaxially; leaf blade abaxially greenish, adaxially olivaceous-brown, shiny, ovate or obovate-oblong, 3–7(–8) × (1–)1.5–3.5(–4) cm, thickly leathery, both surfaces glabrous, midvein slightly raised abaxially, flat adaxially, lateral veins 7 or 8 pairs, slightly raised, evident or obscure on both surfaces, anastomosing near margin, reticulate veins absent, base obtuse, rarely rounded, margin entire, apex abruptly caudate-acuminate, acumen 6–13 mm, often falcate. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; bracts deltoid, often tricuspidate; flowers white, 4-merous. Male inflorescences: cymes of order 2 or 3, 3–5-flowered, glabrous; peduncles 3–8 mm; secondary axis 1–2 mm or shorter; pedicels 2–8(–15) mm; bracteoles 2, basal, or absent; calyx patelliform, ca. 1.5 mm in diam., deeply 4-lobed, lobes deltoid, ciliate; corolla rotate, 4–5 mm in diam., petals oblong, ca. 2 × 1.5 mm, basally slightly connate, margin entire or erose, ciliate or not; stamens shorter than petals, anthers oblong; rudimentary ovary subglobose, ca. 1 mm in diam., apex slightly lobed. Female inflorescences: 1-flowered cymes; pedicels (2–)4–7 mm, glabrous; bracteoles 2, submedian; calyx and corolla as in male flowers; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 1.5 mm in diam., stigma thickly deltoid, puberulent. Fruit globose, ca. 4 mm in diam.; persistent calyx explanate, ca. 2.5 mm in diam., 4-lobed, lobes ciliate; persistent stigma thickly discoid; pyrenes 4, ovoid-trigonal, ca. 2.5 mm, ca. 1.5 mm in diam., abaxially slightly longitudinally raised, 3-striate, not sulcate, laterally smooth, endocarp leathery. Fl. May–Jun, fr. Aug–Oct.

• Mountain forests, broad-leaved forests in valleys, thickets, hills; 400–1900 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, NE Yunnan, Zhejiang.

- 1a. Pedicels of male flowers 2–8 mm, margin of petals entire; pedicels of female flowers 4–7 mm ..... 180a. var. *wilsonii*  
 1b. Pedicels of male flowers 8–15 mm, margin of petals erose; pedicels of female flowers 2–3 mm ..... 180b. var. *handel-mazzettii*

**180a. *Ilex wilsonii* var. *wilsonii***

尾叶冬青(原变种) wei ye dong qing (yuan bian zhong)

*Ilex memecylifolia* Champion ex Bentham var. *plana* Loesener.

Leaf blade 3–4(–6) × 1–2(–2.6) cm, with longer acumen. Male flowers: pedicels 2–8 mm; petal margin not ciliate, entire. Female flowers: pedicels 4–7 mm.

- Broad-leaved forests in valleys, thickets, hills; 400–1900 m.

Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, NE Yunnan, Zhejiang.

**180b. *Ilex wilsonii* var. *handel-mazzettii*** T. R. Dudley, Acta Bot. Yunnan. 6: 51. 1984.

武冈尾叶冬青 wu gang wei ye dong qing

Leaf blade 6–8 × (2–)2.5–4 cm, with shorter acumen. Male flowers: pedicels 8–15 mm; petal margin erose, minutely ciliate. Female flowers: pedicels 2–3 mm.

- Mountain forests; 900–1300 m. SW Hunan (Wugang).

**181. *Ilex fukienensis*** S. Y. Hu, J. Arnold Arbor. 31: 253. 1950.

福建冬青 fu jian dong qing

Shrubs evergreen, 3–4 m tall, glabrous throughout or puberulent on current year's branchlets and pedicels. Branchlets gray, terete, slender, longitudinally fissured and rugose, lenticels absent; current year's branchlets longitudinally striate and sulcate; terminal buds conical, glabrous. Stipules deltoid, minute, apically acute; petiole 5–7 mm, shallowly sulcate, distal half rugose, winged by decurrent leaf blade; leaf blade brown-olivaceous when dry, opaque on both surfaces, ovate, ovate-oblong, ovate-elliptic, or elliptic-lanceolate, 5–10 × 1.5–3.5 cm, leathery, both surfaces glabrous, midvein deeply impressed adaxially, lateral veins 9 or 10 pairs, anastomosing near margin, obscure on both surfaces, reticulate veins obscure abaxially, evident adaxially, base rounded, rarely obtuse, margin entire, apex caudate-acuminate, acumen 8–15 mm. Inflorescences: cymes, fasciculate, axillary on second year's branchlets; basal bracts leathery, tricuspidate; flowers 4-merous. Male inflorescences: cymes of order 2 or 3, 3–5-flowered; peduncles 3–5 mm; pedicels ca. 3 mm; bracteoles 2, basal, or absent; calyx patelliform, ca. 2.5 mm in diam., glabrous, 4-lobed, lobes deltoid-ovate, margin erose, ciliate; corolla rotate, ca. 4 mm in diam., petals ovate, 2–2.5 mm, basally rather connate; stamens nearly as long as petals; rudimentary ovary pulvinate, rostellate. Female inflorescences: 1-flowered cymes; pedicels ca. 5 mm; bracteoles 2, basal, apex acute, ciliate; calyx and corolla as in male flowers; staminodes ca. 1/3 as long as petals, sterile anthers sagittate, glabrous, apex apiculate; ovary subglobose, styliiferous, stigma capitate, 4-lobed. Fruit globose, ca. 5 mm in diam.; persistent calyx explanate, ca. 3 mm in diam.; persistent stigma discoid; pyrenes 2, ovoid, ca. 2.5 mm, ca. 2 mm in diam., abaxially reticulately striate, not sulcate. Fl. Apr–Jun, fr. Aug–Oct.

- Forests, thickets on mountains; 600–900 m. Fujian.

There are two forms distinguishable by the indumentum of the current year's branchlets: f. *fukienensis* has glabrous branchlets, while f. *puberula* C. J. Tseng & H. H. Liu (Bull. Bot. Res., Harbin 1(1–2): 34. 1981) has puberulent branchlets.

**182. *Ilex forrestii*** H. F. Comber, Notes Roy. Bot. Gard. Edinburgh 18: 46. 1933.

滇西冬青 dian xi dong qing

Shrubs or trees, evergreen, ca. 7 m tall. Young branchlets thick, longitudinally angular and sulcate, puberulent or glabrous; older branchlets longitudinally fissured, rugose; lenticels conspicuously raised; leaf scars deltoid, very convex; terminal buds



conical, small, puberulent. Stipules narrowly deltoid, apically acute; petiole 5–12 mm, adaxially narrowly sulcate, puberulent; leaf blade abaxially greenish, opaque, adaxially deep green, shiny, ovate, oblong, oblong-oblongate, elliptic, or obovate-elliptic, (5–)7–9(–11) × (1.5–)2–3(–4) cm, leathery, midvein impressed, puberulent or glabrous adaxially, lateral veins 10–12 pairs, evident abaxially, obscure adaxially, base rounded, obtuse, or rarely cuneate, margin serrulate or serrate on distal 1/2–2/3, apex acuminate. Inflorescences: cymes, pseudopaniculate or pseudoracemose, axillary on first to second year's branchlets; rachis 3–8 mm, puberulent. Male inflorescences: cymes of order (1 or)2(or 3), (1 or)3(or 5)-flowered, pseudopaniculate; rachis 5–8 mm; peduncles ca. 3 mm; bracts ovate, puberulent, apex acute; pedicels 2–3 mm, puberulent; bracteoles 2, basal, ciliate; flowers white or greenish, 4- or 5-merous; calyx ca. 2 mm in diam., deeply 4- or 5-lobed, lobes ovate-deltoid, ciliate; corolla rotate, ca. 6 mm in diam., petals ovate-oblong, ca. 2 × 1 mm, ciliate, basally rather connate; stamens ca. 2/3 as long as petals, anthers oblong; rudimentary ovary small, apex obtuse, inconspicuously lobed. Female inflorescences: cymes of order 1 or 2, 1–3-flowered, pseudopaniculate or pseudoracemose; rachis 3–5 mm; peduncles ca. 2 mm; pedicels ca. 1.5 mm; 1-flowered pedicels 3–3.5 mm, puberulent; bracteoles basal, ovate-deltoid, puberulent; calyx deeply 5-lobed, lobes ovate-deltoid, sparsely puberulent and ciliate; petals ovate-oblong, ca. 2 × 1.2 mm, basally slightly connate; staminodes ca. 2/3 as long as petals, sterile anthers sagittate; ovary ovoid, stigma capitate, shallowly 4- or 5-lobed. Infructescences: cymes 1(or 3)-fruited; rachis 5–8 mm; fruiting pedicels 3–5 mm, puberulent. Fruit red, globose, 3–5 mm in diam.; persistent calyx explanate, ca. 2 mm in diam.; persistent stigma thickly discoid or nearly capitate; pyrenes 5–7, ellipsoidal, ca. 2 mm, ca. 1 mm in diam., abaxially smooth, not sulcate, not striate, endocarp leathery. Fl. Jun–Jul, fr. Sep–Nov.

• Evergreen and deciduous broad-leaved forests, thickets, valleys, mountain slopes; 1800–2900(–3500) m. S and W Sichuan, Xizang, Yunnan.

- 1a. Branchlets and midvein adaxially  
puberulent ..... 182a. var. *forrestii*  
1b. Branchlets and midvein adaxially  
glabrous ..... 182b. var. *glabra*

**182a. *Ilex forrestii* var. *forrestii***

滇西冬青(原变种) dian xi dong qing (yuan bian zhong)

?*Ilex forrestii* var. *multiflora* H. F. Comber.

Shrubs or trees. Branchlets puberulent. Leaf blade oblong-oblongate, elliptic, or obovate-elliptic, midvein puberulent adaxially.

• Evergreen broad-leaved forests, thickets, valleys; 1800–2900(–3500) m. W Sichuan (Mianning), Xizang, NW Yunnan.

**182b. *Ilex forrestii* var. *glabra*** S. Y. Hu, J. Arnold Arbor. 31: 256. 1950.

无毛滇西冬青 wu mao dian xi dong qing

Trees, to 6 m tall. Branchlets glabrous. Leaf blade ovate, elliptic, or oblong, midvein glabrous adaxially.

• Deciduous and evergreen broad-leaved mixed forests, thickets, mountain slopes; 2500–2900 m. S Sichuan (Huili), Yunnan (Gongshan, Luquan, Weixi).

**183. *Ilex cauliflora*** H. W. Li ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 24. 1985 [*"cauliflora"*].

茎花冬青 jing hua dong qing

Shrubs evergreen, ca. 5 m tall. Branchlets gray-brown, shiny, thick, glabrous; lenticels pale, circular, convex; leaf scars semicircular, convex; terminal buds narrowly conical, 8–10 mm, apex acuminate, bud scales ciliate. Stipules inconspicuous or caducous; petiole 1.5–2.4 cm, abaxially rugose, adaxially shallowly sulcate, glabrous; leaf blade elliptic or oblong-elliptic, 6–9.5 × 2–4 cm, thinly leathery or thickly papery, both surfaces glabrous, midvein slightly impressed adaxially, lateral veins 8 or 9 pairs, furcate and anastomosing near margin, slightly raised on both surfaces, reticulate veins evident abaxially, obscure adaxially, base obtuse or subrounded, margin crenulate, apex long acuminate. Flowers not known. Infructescences 1-fruited cymes, fasciculate, fascicles 5–10-fruited, axillary on second year's branchlets; axis ca. 2 mm, ca. 1.5 mm in diam., black-brown, shiny, glabrous; fruiting pedicels ca. 4 mm, nearly glabrous; bracteoles basal, deltoid. Fruit (immature) globose, ca. 3 mm in diam.; persistent calyx explanate, patelliform, ca. 2 mm in diam., 4-lobed, lobes deltoid-suborbicular, glabrous, not ciliate; persistent stigma thickly discoid to capitate, shallowly 4-lobed; pyrenes 4, ellipsoidal, 2–2.5 mm, abaxially 4- or 5-striate, not sulcate, endocarp leathery. Fr. Feb–Mar.

• Shrub forests on mountains; 2000–2600 m. SE Yunnan (Malipo).

**184. *Ilex wardii*** Merrill, Brittonia 4: 102. 1941.

滇缅冬青 dian mian dong qing

Shrubs evergreen, ca. 2 m tall. Branchlets gray, terete, thick, puberulent, longitudinally angular and rugose; leaf scars semicircular or crescent-shaped, convex; lenticels absent; terminal buds globose-conical, puberulent. Stipules persistent, narrowly deltoid, ca. 1 mm; petiole 5–7 mm, abaxially glabrous, adaxially longitudinally sulcate, puberulent; leaf blade adaxially olivaceous when dry, shiny, elliptic or obovate-elliptic, (2–)4–6(–9) × 1–3 cm, leathery, adaxially glabrous except on midvein, lateral veins 7 or 8 pairs, conspicuous abaxially, slightly impressed adaxially, reticulate veins obscure on both surfaces, base rounded or obtuse, margin sparsely serrate, teeth black, apex caudate-acuminate, acumen 1–1.5 cm. Inflorescences: cymes, fasciculate, axillary on second year's branchlets, puberulent; flowers olive-yellow, fragrant, 5- or 6-merous. Male inflorescences: cymes of order 2, 3-flowered; peduncles 2–3.5 mm; basal bracts ovate, puberulent, ciliate, with 2 basal appendages, apex acute; pedicels 1.5–2 mm, longitudinally striate; bracteoles 2, median, or absent; calyx patelliform, 2.5–3 mm in diam., deeply 5- or 6-lobed, lobes deltoid, puberulent, ciliate, apex acute; corolla rotate, 5–6 mm in diam., petals oblong, 1.7–2 mm, basally slightly connate, margin erose, not ciliate; stamens shorter than petals, anthers ovoid; rudimentary ovary pulvinate. Female inflorescences: 1-flowered cymes; pedicels 3–4 mm; calyx and corolla as in male flowers; staminodes ca. 2/3 as long

as petals, sterile anthers sagittate; ovary subglobose, ca. 1.5 mm in diam. Fruiting pedicel 3–4 mm. Fruit red, globose, 3–4 mm in diam.; exocarp membranous; mesocarp fleshy; persistent calyx explanate, patelliform, ca. 3 mm in diam., ciliate; persistent stigma mammilliform; pyrenes 5 or 6, oblong, ca. 1.5 mm, ca. 0.5 mm in diam., both ends obtuse, smooth, abaxially and laterally longitudinally 1-striate, endocarp leathery. Fl. Jul, fr. Sep–Nov.

Shrub forests on mountain slopes; (1800–)2600–3000 m. Yunnan [N Myanmar].

**185. *Ilex estriata*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 37. 1981.

平核冬青 ping he dong qing

Shrubs evergreen. Second year's branchlets gray-brown, terete, longitudinally fissured; current year's branchlets gray-brown, ridged, puberulent or glabrescent; terminal buds conical, puberulent. Petiole 5–6 mm, puberulent or glabrescent; leaf blade abaxially brownish, adaxially olivaceous, shiny when dry, elliptic or oblong-elliptic, rarely ovate-elliptic, 7–8.5 × ca. 3 cm, papery, both surfaces glabrous, midvein raised on both surfaces, lateral veins 8–10 pairs, conspicuous abaxially, obscure adaxially, base obtuse, margin entire, apex abruptly caudate-acuminate, acumen 1–1.5 cm. Flowers not known. Infructescences: 1-fruited cymes, fasciculate, fascicles 4- or 5-fruited, axillary; fruiting pedicels 4–6 mm, puberulent; persistent bracteoles 2, basal, deltoid-ovate, puberulent. Fruit (immature) black when dry, globose, ca. 3 mm in diam.; persistent calyx 4-lobed, lobes deltoid or deltoid-ovate, puberulent, ciliate; persistent stigma thickly discoid or discoid; pyrenes 4, oblong, ca. 3 mm, ca. 1.5 mm in diam., abaxially smooth, not striate or sulcate, endocarp leathery. Fl. and fr. unknown.

- Forest margins or thickets on mountain slopes. Sichuan.

**186. *Ilex tsiangiana*** C. J. Tseng, Bull. Bot. Res., Harbin 1(1–2): 36. 1981.

蒋英冬青 jiang ying dong qing

Trees evergreen. Branchlets brown, glabrous, longitudinally angular and sulcate; second year's branchlets with sparse lenticels; terminal buds pubescent or glabrescent, bud scales unwrinkled. Petiole 7–10 mm, narrowly sulcate adaxially, glabrous; leaf blade abaxially brownish, adaxially olivaceous when dry, narrowly oblong or elliptic-oblong, 3.5–5.5 × 1.5–2 cm, leathery, both surfaces glabrous, midvein impressed adaxially, lateral veins 8–10 pairs, slightly evident abaxially, obscure adaxially, reticulate veins inconspicuous on both surfaces, base obtuse, margin serrulate, apex shortly acuminate, rarely obtuse. Flowers not known. Infructescences: 1-fruited cymes, solitary or few fascicled, fascicles 2- or 3-fruited, axillary; fruiting pedicels 4–5 mm, puberulent; persistent bracteoles 2, deltoid near base. Fruit red or deep purple when dry, globose, 3–4 mm in diam.; persistent calyx 5-lobed, lobes deltoid; persistent stigma crested or thinly discoid when mature; pyrenes 5, ellipsoidal-oblong, ca. 2 mm, ca. 1 mm in diam., abaxially longitudinally 1-striate, not sulcate, endocarp leathery. Fl. and fr. unknown.

- Mixed forests; 3000–4000 m. W Yunnan (Diancang Shan).

**187. *Ilex lohfauiensis*** Merrill, Philipp. J. Sci., C, 13: 144. 1918.

矮冬青 ai dong qing

*Ilex hanceana* Maximowicz var. *anhweiensis* Loesener; *I. hanceana* var. *lohfauiensis* (Merrill) Chun.

Shrubs or trees, evergreen, 2–6 m tall. Branchlets gray-black or dark castaneous, slender, densely pubescent; old branchlets with lenticels nearly absent; leaf scars semicircular, convex; terminal buds narrowly conical, densely pubescent. Stipules persistent, narrowly deltoid, ca. 1 mm, densely pubescent; petiole 1–2 mm, densely pubescent, flat or shallowly sulcate adaxially; leaf blade abaxially greenish, adaxially deep green, shiny, oblong or elliptic, rarely obovate or rhombic, 1–2.5 × 0.5–1.2 cm, thinly leathery or papery, both surfaces glabrous except on midvein, midvein pubescent on both surfaces, lateral veins 7–9 pairs, slightly evident on both surfaces, reticulate veins obscure on both surfaces, base cuneate, margin entire, slightly reflexed, apex retuse. Inflorescences: cymes, fasciculate, axillary on second year's branchlets, pubescent; bracts deltoid, pubescent. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles ca. 1 mm; pedicels ca. 1 mm; flowers pink, 4(or 5)-merous; calyx patelliform, ca. 1.5 mm in diam., pubescent, shallowly 4-lobed, lobes orbicular, margin erose, ciliate; corolla rotate, ca. 4.5 mm in diam., petals elliptic, basally slightly connate, not ciliate; stamens ca. 1/2 as long as petals, anthers oblong; rudimentary ovary rostellate. Female inflorescences: 1-flowered cymes, fascicles 2- or 3-flowered; pedicels ca. 1 mm, bracteoles 2, above middle; calyx and corolla as in male flowers; staminodes ca. 3/4 as long as petals, sterile anthers cordate; ovary ovoid, ca. 0.7 mm in diam.; style evident, stigma discoid, convex. Fruit red, globose, ca. 3.5 mm in diam.; fruiting pedicel ca. 1 mm, pubescent; persistent calyx cup-shaped, pubescent, ciliate; persistent stigma thickly discoid or capitate, 4(or 5)-lobed; pyrenes 4, broadly ellipsoidal, ca. 3 mm, ca. 2 mm in diam., both ends acute, cross section trigonous, abaxially 3-striate, not sulcate, laterally smooth, endocarp leathery. Fl. Apr–Aug, fr. Aug–Dec.

- Evergreen broad-leaved forests, sparse forests, shrub forests, mountain slopes; (100–)200–1000(–1300) m. S Anhui (Qimen, Xiuning), Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Zhejiang.

**188. *Ilex bidens*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 25. 1985.

双齿冬青 shuang chi dong qing

Trees evergreen, ca. 15 m tall. Branchlets gray, terete; leaf scars semicircular, raised; lenticels sparse, slightly scabrous, glabrous; current year's branchlets longitudinally angular and sulcate, densely puberulent; terminal buds conical, puberulent. Petiole 2–4 mm, puberulent, shallowly sulcate adaxially; leaf blade abaxially greenish, adaxially deep green, obovate or obovate-oblong, 1.5–2.8 × 1–1.5 cm, leathery, both surfaces glabrous except on midvein adaxially, midvein flat or slightly raised abaxially, raised and puberulent adaxially, lateral veins 5–7 pairs, anastomosing near margin, distinct or obscure abaxially, obscure adaxially, reticulate veins obscure, base obtuse-rounded, margin entire except 1(or 2) pair(s) of teeth at apex, apex truncate-rounded, retuse, or emarginate, with triangular

acumen extended at center. Inflorescences: cymes of order 1 or 2, 1–3-flowered, fasciculate, axillary on first to second year's branchlets; pedicels quadrangular, sparsely puberulent or glabrous, base with ovate-triangular, puberulent bracteoles; flowers very small, calyx 5-lobed, lobes deltoid, puberulent, ciliate; petals, stamens, and ovary not known. Fruit not known. Fl. Dec, fr. unknown.

• Forests at mountain summits; 2400–2500 m. SE Yunnan (Jinping).

**189. *Ilex chamaebuxus*** C. Y. Wu ex Y. R. Li, Bull. Bot. Res., Harbin 5(1): 26. 1985.

矮杨梅冬青 ai yang mei dong qing

Trees evergreen, small, ca. 3 m tall. Branchlets gray-brown, terete, longitudinally angular and sulcate, densely puberulent; older branchlets longitudinally fissured, with raised, semicircular leaf scars, glabrescent; terminal buds conical, densely puberulent. Petiole 2–4 mm, abaxially glabrous, adaxially puberulent and shallowly sulcate; leaf blade abaxially greenish, adaxially green and opaque, obovate, 1–1.8 × 0.6–1.2 cm, thickly leathery, abaxially glabrous, adaxially glabrous except on midvein, midvein slightly raised abaxially, impressed and puberulent adaxially, lateral veins inconspicuous on both surfaces, reticulate veins obsolete on both surfaces, base obtuse or broadly cuneate, margin recurved, entire, apex cordate, retuse. Male inflorescences: cymes of order 1 or 2, 1–3-flowered, fasciculate, axillary on second year's branchlets; peduncles 2–3 mm; pedicels 0.5–1.5 mm, puberulent; bracteoles 1 or 2, basal, ovate-deltoid, densely puberulent, ciliate; flowers white, 4-merous; calyx patelliform, ca. 1.5 mm in diam., puberulent, 4(or 5)-lobed, lobes broadly ovate, ciliate; corolla rotate, ca. 3 mm in diam., petals elliptic, ca. 2 × 1.5 mm, basally slightly connate; stamens ca. 3/4 as long as petals, anthers oblong; rudimentary ovary globose, ca. 0.7 mm in diam., apex flat. Female flowers and fruit not known. Fl. May, fr. unknown.

• Forests on limestone mountains; ca. 1100 m. SE Yunnan (Malipo, Xichou).

**190. *Ilex championii*** Loesener, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 349. 1901.

凹叶冬青 ao ye dong qing

*Ilex memecylifolia* Champion ex Bentham var. *nummularia* Champion ex Bentham.

Shrubs or trees, evergreen, 8–13(–15) m tall; bark gray-white or gray-brown. Young branchlets purple-brown, longitudinally ridged and sulcate, puberulent; older branchlets brown, subterete, slightly puberulent or glabrescent, longitudinally fissured; lenticels absent; terminal buds conical, puberulent, apically acute. Stipules persistent, deltoid, ca. 1 mm; petiole 4–5 mm, sulcate, sparsely minutely puberulent; leaf blade abaxially greenish, adaxially green, shiny, ovate or obovate, rarely obovate-elliptic, 2–4 × 1.5–2.5 cm, leathery, abaxially deeply colored punctate, both surfaces glabrous, midvein slightly raised or flat on both surfaces, lateral veins 8–10 pairs, evident abaxially, obscure adaxially, reticulate veins sometimes evident abaxially, base obtuse, margin entire, apex retuse or emarginate,

or shortly and abruptly acuminate. Inflorescences: cymes, fasciculate, axillary on first to second year's branchlets. Male inflorescences: cymes of order 1 or 2, 1–3-flowered, puberulent; bracts deltoid, puberulent; peduncles 1–1.5 mm; pedicels 0.5–1 mm; bracteoles 1, basal, or absent; flowers white, 4-merous; calyx patelliform, ca. 1.8 mm in diam., puberulent, deeply 4-lobed, lobes orbicular, ciliate; corolla rotate, ca. 4 mm in diam., petals oblong-ovate, basally slightly connate; stamens shorter than petals, anthers oblong; rudimentary ovary pulvinate, rostellate. Female flowers not known. Infructescences: 1-fruited cymes, few fascicled; fruiting pedicels 1.5–2 mm, puberulent, bracteoles 2, basal or median. Fruit red, compressed globose, 3–4 mm in diam.; persistent calyx explanate, subquadrangular, puberulent, 4-lobed, lobes ovate, ciliate; persistent stigma discoid, convex; pyrenes 4, ellipsoidal-obovoid, ca. 3.5 mm, ca. 1.5 mm in diam., abaxially slightly raised 3-striate, not sulcate, smooth, endocarp leathery. Fl. Jun–Jul, fr. Aug–Nov.

• Dense forests, valleys; 600–1900 m. Fujian (Liancheng), Guangdong, Guangxi, Guizhou, S Hunan (Yizhang), Jiangxi.

**191. *Ilex hanceana*** Maximowicz, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 29(3): 33. 1881.

青茶香 qing cha xiang

*Ilex buxifolia* Hance, J. Bot. 14: 364. 1876, not Gardner (1845).

Shrubs or trees, evergreen, 2–10 m tall. Young branchlets slender, longitudinally angular and sulcate, puberulent; older branchlets with raised, crescent-shaped leaf scars, lenticels absent; terminal buds conical, puberulent. Stipules persistent, deltoid, apically acute; petiole 2–5 mm, puberulent, sulcate or flat adaxially; leaf blade abaxially greenish, adaxially green, slightly shiny, obovate or obovate-oblong, 2.5–3.5 × 1–2 cm, thickly leathery, both surfaces glabrous except on midvein adaxially, midvein flat or slightly impressed adaxially, lateral veins 7 or 8 pairs and reticulate veins obscure on both surfaces, base obtuse or cuneate, margin entire, apex shortly acuminate, obtuse, or rounded, sometimes retuse. Inflorescences: cymes, solitary or fasciculate, axillary on second year's branchlets, puberulent, bracts deltoid, puberulent. Male inflorescences: cymes of order 2, 2- or 3-flowered, fasciculate; peduncles 1–2 mm; pedicels 1–1.5 mm; bracteoles 1 or 2, basal; flowers white, 4-merous; calyx patelliform, ca. 2 mm in diam., pubescent, shallowly 4-lobed, lobes orbicular, ciliate; corolla ca. 3 mm in diam., petals ovate, basally slightly connate; stamens shorter than petals; rudimentary ovary conical, center depressed. Female inflorescences: 1-flowered cymes, solitary; pedicels ca. 1.5 mm, puberulent; bracteoles 2, basal, lanceolate; calyx and corolla as in male flowers; staminodes ca. 3/4 as long as petals, sterile anthers cordate; ovary subglobose-ovoid, ca. 1.3 mm in diam., stigma broadly discoid. Fruit red, globose, ca. 5 mm in diam.; fruiting pedicel ca. 2.5 mm, puberulent; persistent calyx explanate, quadrangular, 4-lobed, lobes deltoid, ciliate; persistent stigma thinly discoid, shallowly 4- or 5-lobed; pyrenes 4, broadly ellipsoidal or ovoid-ellipsoidal, ca. 4 mm, ca. 3 mm in diam., abaxially longitudinally raised and furcate-striate, laterally smooth, endocarp leathery. Fl. May–Jul, fr. Jul–Dec.

• Shrub forests, mountain slopes; 900–1800 m. SW Fujian (Shanghang), Guangdong, Guangxi, Hainan (Ledong), Hunan.

**192. *Ilex lihuaensis*** T. R. Dudley, *Holly Soc. J.* 9(4): 9. 1991 [*“lihuaensis”*].

溪畔冬青 xi pan dong qing

*Ilex rivularis* Y. K. Li, *Acta Phytotax. Sin.* 24: 399. 1986, not Gardner (1842).

Shrubs evergreen, ca. 2 m tall. Young branchlets dark brown; older branchlets gray-black, glabrescent. Petiole 3–9 mm, adaxially longitudinally sulcate, puberulent or glabrous; leaf blade abaxially greenish, adaxially green, elliptic or obovate-elliptic, (0.7–)1–3.5 × (0.4–)0.7–1.7 cm, thickly leathery, abaxially punctate, glabrous except at base, adaxially puberulent at base when young, midvein flat abaxially, deeply impressed, puberulent adaxially, lateral veins very inconspicuous on both surfaces, base cuneate, margin entire, apex retuse, not obtuse. Inflorescences: cymes, fasciculate or solitary, axillary, puberulent. Male inflorescences: cymes of order 1 or 2, 1–3-flowered; peduncles 3–6 mm; pedicels 4–8 mm; bracteoles 2, above middle; flowers 5- or 6-merous, rarely 7-merous; calyx patelliform, ca. 2 mm in diam., glabrous, lobes suborbicular, not ciliate; corolla white, rotate, ca. 5 mm in diam., petals 5 or 6, rarely 7, oblong, 4.5–5.5 mm, glabrous, apex rounded; stamens 5 or 6, rarely 7, ca. 1/2 as long as petals; rudimentary ovary subglobose. Female inflorescences: 1-flowered cymes, solitary or few fascicled, fascicles 2-flowered; pedicels 6–9 mm; bracteoles 2, below middle; calyx and corolla as in male flowers; staminodes 5–7, globose; ovary globose, stigma discoid. Fruit red, compressed globose, ca. 3 mm in diam.; fruiting pedicel 6–9 mm; persistent calyx explanate, ca. 2 mm in diam.; persistent stigma discoid; pyrenes 5 or 6, rarely 7, ellipsoidal, ca. 1.5 mm, abaxially raised striate, not sulcate, endocarp leathery. Fl. May, fr. unknown.

• Stream banks, mountains. S Guizhou (Libo).

**193. *Ilex fragilis*** J. D. Hooker, *Fl. Brit. India* 1: 602. 1875.

薄叶冬青 bo ye dong qing

*Ilex burmanica* Merrill; *I. fragilis* f. *kingii* Loesener; *I. fragilis* f. *subcoriacea* C. J. Tseng; *I. opienensis* S. Y. Hu.

Shrubs or small trees, deciduous, 3–5 m tall. Branchlets castaneous, glabrous; older branchlets subterete, longitudinally striate-sulcate, lenticels conspicuous, ovate or orbicular, raised; spur branchlets 1–1.5 cm, very rugose, with persistent leaf scars and bud scales; terminal buds ovoid, bud scales ovate, ciliate. Stipules deltoid, minute; petiole purplish, 5–15 mm, glabrous; leaf blade abaxially greenish, adaxially deep green, ovate or elliptic, 4–8 × 3–5 cm, membranous, papery, or subleathery, both surfaces glabrous or hirsute-pubescent, midvein impressed adaxially, lateral veins 8–10 pairs, reticulate veins evident only abaxially, base rounded to obtuse, margin serrate, apex acuminate. Male inflorescences: 1-flowered cymes, fasciculate or solitary, axillary on scales or basal leaves; pedicels 3–6 mm, glabrous; flowers 6–8-merous; calyx patelliform, ca. 4 mm in diam., deeply lobed, lobes unequal in shape and size, often ovate or deltoid-ovate to broadly ovate, ciliate; petals yellow-green, oblong, 2–2.5 × ca. 1.5 mm, basally slightly connate; stamens ca. 1/2 as long as petals; rudimentary ovary pulvinate, depressed at

center. Female inflorescences: 1-flowered cymes, solitary, axillary on scales, rarely to leaves; pedicels 2–3 mm, glabrous; flowers 6–8(–16)-merous; calyx patelliform, ca. 4 mm in diam., deeply lobed, lobes ovate to broadly ovate, ciliate; petals as in male flowers; staminodes ca. 1/3 as long as petals, sterile anthers cordate; ovary depressed globose, style present, ca. 1.5 mm, stigma capitate or crested. Fruit red, depressed globose, 4–6 mm in diam.; persistent calyx explanate; persistent stigma discoid; fruiting pedicel ca. 5 mm; pyrenes 6–8(–13), ellipsoidal, 2–2.5 mm, ca. 1.5 mm in diam., abaxially longitudinally striate, laterally striate or not, endocarp woody. Fl. May–Jun, fr. Sep–Oct.  $n = 18$ ,  $2n = 36$ .

Sparse forests, broad-leaved, *Tsuga*, or shrub forests, mountains, grazing land; 1500–3000 m. Guizhou (Weining), Sichuan, S and SE Xizang, Yunnan [Bhutan, India, N Myanmar, Nepal].

Further research is needed on the distributional range of this taxon.

**194. *Ilex micrococca*** Maximowicz, *Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér.* 7, 29(3): 39. 1881.

小果冬青 xiao guo dong qing

*Ilex micrococca* var. *longifolia* Hayata; *I. micrococca* f. *luteocarpa* H. Ohba & S. Akiyama; *I. micrococca* f. *pilosa* S. Y. Hu; *I. micrococca* f. *tsangii* T. R. Dudley; *I. pseudogodajam* Franchet.

Trees deciduous, 12–20 m tall. Branchlets thick, glabrous or pubescent, with conspicuous, large, circular or oblong, often coalescent white lenticels. Stipules broadly deltoid, small; petiole 1.5–3.2 cm, slender, glabrous, abaxially plicate-rugose, adaxially flat; leaf blade abaxially greenish, adaxially deep green, ovate, ovate-elliptic, or ovate-oblong, 7–13 × 3–5 cm, membranous or papery, both surfaces glabrous or abaxially pubescent, midvein slightly impressed adaxially, lateral veins 5–8 pairs, reticulate veins raised on both surfaces, base rounded or broadly cuneate, often oblique, margin subentire or aristate-serrate, apex long acuminate. Inflorescences: compound cymes, cymules of order 3 or 4, solitary, axillary on current year's branchlets, glabrous; peduncles 9–12 mm, plicate, rugose; secondary axis 2–7 mm; bracts absent; tertiary axis with bracts broadly deltoid, acute; pedicels 2–3 mm, glabrous or pilose; bracteole 1, basal, deltoid. Male flowers 5- or 6-merous; calyx patelliform, shallowly 5- or 6-lobed, lobes obtuse, glabrous or ciliate, or abaxially pilose; corolla rotate, petals oblong, 1.2–1.5 mm, basally slightly connate; stamens ca. as long as petals, anthers ovoid-oblong; rudimentary ovary subglobose and rostellate. Female flowers 6–8-merous; calyx deeply 6-lobed, lobes obtuse, ciliate; petals oblong, ca. 1 mm, basally slightly connate; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary conical-ovoid, ca. 1 mm in diam., stigma discoid. Fruit red or yellow, globose, ca. 3 mm in diam.; persistent calyx explanate; persistent stigma thickly discoid, convex, 6–8-lobed; pyrenes 6–8, ellipsoidal, ca. 2 mm, ca. 1 mm in diam., ends obtuse, abaxially slightly rugose, longitudinally 1-sulcate, laterally smooth, endocarp leathery. Fl. May–Jun, fr. Jul–Oct.

Evergreen broad-leaved forests, mountains; 500–1900 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Japan, Vietnam].

**195. *Ilex polyneura*** (Handel-Mazzetti) S. Y. Hu, J. Arnold Arbor. 30: 263. 1949.

多脉冬青 duo mai dong qing

*Ilex micrococca* Maximowicz var. *polyneura* Handel-Mazzetti, Symb. Sin. 7: 654. 1933; *I. polyneura* var. *glabra* S. Y. Hu.

Trees deciduous, ca. 20 m tall. Current year's branchlets castaneous, shiny, with conspicuous elliptic lenticels, glabrous; second year's branchlets gray-brown, longitudinally angular and sulcate, raised, semicircular. Stipules scale-form, ca. 1.5 × 1 mm; petiole 1.5–3 cm, abaxially rounded, glabrous, adaxially deeply sulcate, puberulent in groove; leaf blade oblong-elliptic or ovate-elliptic, 8–15 × 3.5–6.5 cm, papery or thinly leathery, abaxially minutely puberulent, especially on lateral veins, adaxially glabrous, midvein impressed adaxially, anastomosing near margin, lateral veins 10–20 pairs, reticulate veins evident on both surfaces, base rounded or obtuse, rarely oblique, margin finely sharply serrate, apex long acuminate. Inflorescences: cymes umbelliform, solitary, axillary on current year's branchlets; secondary axis usually absent or shorter than pedicels; peduncles 6–9 mm, slightly compressed, sparsely puberulent; bracts absent; pedicels 2.5–4 mm, sparsely puberulent; bracteoles 2, basal; flowers white, 6- or 7-merous. Male flowers: calyx patelliform, ca. 2 mm in diam., deeply 6- or 7-lobed, lobes deltoid, glabrous, margin erose; corolla rotate, ca. 4 mm in diam., petals ovate, ca. 2 mm, basally slightly connate; stamens ca. as long as or slightly shorter than petals, anthers oblong, ca. 1 mm; rudimentary ovary pyramidal and rostellate, apex lobed. Female flowers: calyx and corolla as in male flowers; petals oblong, ca. 1.5 mm, basally slightly connate; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm in diam., stigma discoid. Fruit globose, ca. 4 mm in diam.; fruiting pedicel 4–5 mm; persistent calyx ca. 3 mm in diam.; persistent stigma discoid, convex; pyrenes 6 or 7, ellipsoidal, 2–2.5 mm, ca. 1 mm in diam., abaxially longitudinally narrowly 1-sulcate, endocarp leathery. Fl. May–Jun, fr. Oct–Dec.

• Forests, shrub forests in valleys; 1000–2600 m. Guizhou (Bijie), SW Sichuan, Xizang, Yunnan.

**196. *Ilex serrata*** Thunberg in Murray, Syst. Veg., ed. 14, 168. 1784.

落霜红 luo shuang hong

*Ilex serrata* var. *sieboldii* (Miquel) Rehder; *I. serrata* f. *subtilis* (Miquel) Ohwi; *I. serrata* var. *subtilis* (Miquel) Loesener; *I. sieboldii* Miquel; *I. sieboldii* var. *subtilis* (Miquel) Yatabe; *I. subtilis* Miquel.

Shrubs deciduous, 1–3 m tall; bark gray. Current year's branchlets longitudinally rugose and sulcate; second year's branchlets subterete, hirsute or glabrescent; lenticels present. Petiole 6–8 mm, adaxially deeply sulcate, hirsute or glabrescent; leaf blade gray-olivaceous when dry, elliptic, rarely ovate or obovate-elliptic, 2–9 × 1–4 cm, membranous, both surfaces hirsute or glabrescent on veins, midvein raised on both surfaces, lateral veins 6–8 pairs, raised abaxially, obscure adaxially, reticulate veins evident on both surfaces, base cuneate, margin densely sharply serrate, apex acuminate. Male inflorescences:

cymes or compound cymes, 9–21-flowered, solitary, axillary; peduncles ca. 3 mm; secondary axis ca. 1.5 mm; pedicels 2–2.5 mm, puberulent; bracteoles basal, deltoid; flowers 4- or 5-merous; calyx 1.5–2 mm in diam., lobes deltoid, hirsute, ciliate; corolla rotate, ca. 4.5 mm in diam., petals oblong, basally slightly connate, margin erose, not ciliate; stamens shorter than petals, anthers oblong; rudimentary ovary conical, glabrous, apex acute. Female inflorescences: cymes of order 1 or 2, 1–3-flowered, solitary, rarely fasciculate, axillary; peduncles ca. 1.5 mm; pedicels 2–3 mm; flowers 4–6-merous; calyx as in male flowers; petals ovate, margin erose; staminodes ca. 1/2 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 1.5 mm in diam., stigma discoid. Fruit red, globose, ca. 5 mm in diam.; fruiting pedicel 2–2.5 cm, hirsute; persistent calyx explanate, suborbicular, 5- or 6-lobed, lobes orbicular, hirsute, ciliate; persistent stigma discoid, shallowly 5- or 6-lobed; pyrenes 4 or 5, rarely 6, broadly ellipsoidal, 2–2.5 mm, 1–1.2 mm in diam., smooth, not striate, not sulcate, endocarp leathery. Fl. May, fr. Oct.

Forest margins, shrub forests, mountain slopes; 500–1600 m. Fujian (Nanping), Hunan, Jiangxi, Sichuan, Zhejiang [Japan].

**197. *Ilex macrocarpa*** Oliver, Hooker's Icon. Pl. 18: t. 1787. 1888.

大果冬青 da guo dong qing

Trees deciduous, 5–10(–17) m tall. Branchlets castaneous or gray-brown; lenticels conspicuous, glabrous or pubescent; spur branchlets 4–10 cm. Stipules very minute, often obscure; petiole 1–1.2 cm, adaxially narrowly sulcate, sparsely minutely puberulent; leaf blade abaxially greenish, adaxially deep green, ovate or ovate-elliptic, rarely oblong-elliptic, (3–)4–13(–15) × (2–)4–6 cm, papery, both surfaces glabrous or sparsely and minutely puberulent when young, or pubescent, midvein abaxially raised, glabrous or sometimes sparsely and minutely puberulent, adaxially flat or impressed, sparsely and minutely puberulent or glabrous, lateral veins 8–10 pairs, raised abaxially, flat or slightly raised adaxially, anastomosing near margin, reticulate veins evident on both surfaces, base rounded or obtuse, margin shallowly serrate, apex acuminate to shortly acuminate. Male inflorescences: cymes of order 1–3, 1–5-flowered, solitary or fasciculate, axillary on first to second year's branchlets; peduncles 2–3 mm; pedicels 3–7 mm, glabrous or pubescent; flowers white, 5- or 6-merous; calyx patelliform, shallowly 5- or 6-lobed, lobes deltoid-ovate, ciliate; corolla ca. 7 mm in diam., petals obovate-oblong, ca. 3 × 1.5–2 mm, basally slightly connate; stamens ca. as long as petals, anthers oblong; rudimentary ovary pulvinate, apex slightly retuse. Female inflorescences: 1-flowered cymes, solitary, axillary on leaves or scales; pedicels 6–18 mm, glabrous or pubescent; bracteoles 2, basal; flowers 7–9-merous; calyx ca. 5 mm in diam., shallowly 7–9-lobed, lobes ovate-deltoid, apex obtuse or rounded, ciliate; corolla 1–1.2 cm in diam.; staminodes ca. 2/3 as long as petals, sterile anthers sagittate, apex obtuse; ovary conical-ovoid, base ca. 3 mm in diam., style present, stigma columnar, glabrous. Fruit black, globose, 1–1.4 cm in diam.; fruiting pedicel 1–3.3 cm; persistent calyx explanate; persistent stigma columnar; pyrenes 7–9, oblong, laterally compressed, abaxially 3-striate, 2-sulcate, laterally reticulately striate and sulcate, endocarp stony. Fl. Apr–May, fr. Oct–Nov.

• Forests, mountains, valleys, roadsides; 400–4500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Yunnan, Zhejiang.

- 1a. Fruiting pedicels 1.4–3.3 cm, often more than  $2 \times$  as long as petioles ..... 197c. var. *longipedunculata*  
 1b. Fruiting pedicels ca. as long as or slightly longer than petioles.  
 2a. Branchlets, leaves, and inflorescences glabrous ..... 197a. var. *macrocarpa*  
 2b. Branchlets, leaves, and inflorescences pubescent ..... 197b. var. *reevesiae*

**197a. *Ilex macrocarpa* var. *macrocarpa***

大果冬青(原变种) da guo dong qing (yuan bian zhong)

*Celastrus salicifolius* H. Léveillé; *Diospyros bodinieri* H. Léveillé; *Ilex dubia* (G. Don) Britton et al. var. *hupehensis* Loesener; *I. henryi* Loesener; *I. macrocarpa* var. *brevipedunculata* S. Y. Hu; *I. macrocarpa* var. *trichophylla* Loesener; *I. montana* Torrey & A. Gray var. *hupehensis* (Loesener) Fernald.

Branchlets glabrous. Leaf blade ovate or ovate-elliptic, rarely oblong-elliptic, 4–13(–15)  $\times$  (3–)4–6 cm, both surfaces glabrous, or midvein sparsely puberulent. Inflorescences glabrous. Fruiting pedicels ca. as long as or slightly longer than petioles.

• Forests, mountains; 400–4500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Yunnan, Zhejiang.

**197b. *Ilex macrocarpa* var. *reevesiae*** (S. Y. Hu) S. Y. Hu, J. Arnold Arbor. 30: 274. 1949 [*“reevesae”*].

柔毛冬青 rou mao dong qing

*Ilex reevesiae* S. Y. Hu, J. W. China Border Res. Soc., Ser. B, 15: 92. 1945 [*“reevesae”*].

Branchlets puberulent. Leaf blade ovate, 3–10  $\times$  2–5.5 cm, both surfaces pubescent. Inflorescences pubescent. Fruiting pedicels ca. as long as or slightly longer than petioles.

• Forests in valleys, roadsides; 500–900 m. S Shaanxi (Lueyang), Sichuan (Chengdu, Guanghan, Guanxian).

**197c. *Ilex macrocarpa* var. *longipedunculata*** S. Y. Hu in W. P. Fang, Icon. Pl. Omei. 2: t. 171, 6. 1946.

长梗冬青 chang geng dong qing

Branchlets glabrous. Leaf blade ovate or ovate-elliptic, pubescent at least on midvein adaxially. Fruiting pedicels 1.4–3.3 cm, often more than  $2 \times$  as long as petioles.

• Forests on mountain slopes; 600–2200 m. S Anhui, Guangxi, Guizhou, Hubei, Hunan, Jiangsu (Yixing), Sichuan, Yunnan, Zhejiang.

**198. *Ilex chapaensis*** Merrill, J. Arnold Arbor. 21: 373. 1940.

沙坝冬青 sha ba dong qing

*Ilex howii* Merrill & Chun; *I. megistocarpa* Merrill.

Trees deciduous, 9–16 m tall. Branchlets castaneous, minutely sparsely puberulent or glabrescent, with numerous con-

spicuous lenticels and raised leaf scars; spur branchlets 3–5 mm, with scales and raised leaf scars. Stipules persistent, deltoid, minute; petiole 1.2–3 cm, adaxially deeply and narrowly sulcate, distal ends narrowly winged by decurrent leaf base, glabrous; leaf blade brown-olivaceous when dry, ovate-elliptic or oblong-elliptic to elliptic, 5–11  $\times$  3–3.5 cm, papery or thinly leathery, both surfaces glabrous, rarely puberulent on both surfaces when young, midvein impressed adaxially, lateral veins 8–10 pairs, raised abaxially, slightly impressed or flat adaxially, glabrous, anastomosing near margin, reticulate veins evident abaxially, base obtuse or acute, rarely rounded, margin crenulate-serrulate, apex shortly acuminate or obtuse, rarely rounded. Male inflorescences: cymes of order 1–3, 1–5-flowered, pseudofasciculate; peduncles 1–2 mm; pedicels 2–4 mm; 1-flowered pedicels ca. 3 mm, puberulent; bracteoles 2, basal; flowers 6–8-merous; calyx ca. 4 mm in diam., glabrous or puberulent, 6–8-lobed, lobes orbicular, ciliate; petals obovate-oblong, 4–5 mm, basally slightly connate, ciliate; stamens ca. as long as petals, anthers ovoid-oblong; rudimentary ovary conical, rostellate, apex shallowly lobed. Female inflorescences: 1-flowered cymes, solitary, axillary at scales of spur branchlets, rarely at leaf axis; pedicels 6–10 mm, puberulent; bracteoles 2, basal; calyx 6- or 7-lobed, as in male flowers; corolla suberect, ca. 8 mm in diam., petals ca. 4 mm; staminodes ca.  $2/3$  as long as petals, sterile anthers sagittate; ovary ovoid, ca. 2 mm, style present, puberulent, stigma capitate, ca. 2 mm, conspicuously lobed. Fruit green when mature (black when drying), globose, 1.2–2 cm in diam.; persistent calyx explanate; persistent stigma columnar; pyrenes 6 or 7, oblong, ca. 1.3 cm, ca. 4 mm in diam., abaxially 3-striate, 2-sulcate, laterally 1- or 2-striate and sulcate, endocarp bony. Fl. Apr. fr. Oct–Nov.

Sparse forests, mixed forests on mountains; 500–3000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, SE Yunnan [N Vietnam].

**199. *Ilex asprella*** (Hooker & Arnott) Champion ex Benth, Hooker’s J. Bot. Kew Gard. Misc. 4: 329. 1852.

秤星树 cheng xing shu

Shrubs deciduous, ca. 3 m tall. Branchlets castaneous, slender, glabrous; lenticels light colored; spur branchlets rugose, with persistent scales and leaf scars. Stipules persistent, deltoid, minute; petiole 3–8 mm, abaxially subrounded, glabrous, adaxially sulcate; leaf blade abaxially greenish, adaxially green, ovate or ovate-elliptic, (3–)4–6(–8)  $\times$  (1.5–)2–3.5 cm, membranous, abaxially glabrous, adaxially puberulent, midvein impressed adaxially, lateral veins 5 or 6 pairs, raised abaxially, flat adaxially, anastomosing near margin, reticulate veins evident on both surfaces, base obtuse to subrounded, margin serrate, apex caudate-acuminate, acumen (3–)6–10(–15) mm. Male inflorescences: 1-flowered cymes, solitary or fasciculate, fascicles 2–5-flowered, axillary on leaves or scales; pedicels 4–6(–9) mm; flowers white, 4- or 5-merous; calyx patelliform, 2.5–3 mm in diam., glabrous, 4- or 5-lobed, lobes broadly deltoid or orbicular, margin erose, ciliate; corolla rotate, ca. 6 mm in diam., petals suborbicular, ca. 2 mm in diam., basally slightly connate, rarely ciliate; stamens ca.  $3/4$  as long as petals, filaments ca. 1.5 mm, anthers oblong, ca. 1 mm; rudimentary ovary pulvinate, rostell-

late. Female inflorescences: 1-flowered cymes, solitary, axillary on leaves or scales; pedicels 1–2 cm, glabrous; flowers 4–6-merous; calyx deeply 4–6-lobed, ca. 3 mm in diam., lobes ciliate; corolla rotate, petals suborbicular, ca. 2 mm in diam., basally slightly connate; staminodes ca. 1 mm, sterile anthers sagittate; ovary ovoid, ca. 1.5 mm in diam., style present, stigma thickly discoid. Fruit black, globose or ellipsoidal, 5–7(–8) mm in diam., longitudinally striate and sulcate; fruiting pedicel 2–3 cm; persistent calyx explanate, lobes ciliate; persistent stigma capitate or thickly discoid, style evident; pyrenes 4–6, obovoid-ellipsoidal, ca. 5(or 8) mm, ca. 2(or 3) mm in diam., abaxially 3-striate and sulcate, laterally striate, nearly smooth or sulcate, adaxial keel sharp, endocarp stony. Fl. Mar, fr. Apr–Oct.

Sparse forests on slopes, shrubby areas, roadsides; 400–1000 m. Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Taiwan, Zhejiang [Philippines, ?Vietnam].

- 1a. Fruit globose, 5–7 mm in diam., pyrenes 4–6 ..... 199a. var. *asprella*  
 1b. Fruit ellipsoidal, ca. 8 mm in diam., pyrenes 6 ..... 199b. var. *tapuensis*

**199a. *Ilex asprella* var. *asprella***

秤星树(原变种) cheng xing shu (yuan bian zhong)

*Prinos asprellus* Hooker & Arnott, Bot. Beechey Voy. 176. 1833; *Ilex asprella* var. *gracilipes* (Merrill) Loesener; *I. gracilipes* Merrill; *I. merrillii* Briquet; *I. oxyphylla* Miquel.

Leaf blade ovate or ovate-elliptic, (3–)4–6(–7) × (1.5–)2–3.5 cm, acumen 6–10 mm. Fruiting pedicel ca. 3 cm; fruit globose, 5–7 mm in diam.; persistent stigma capitate; pyrenes 4–6, ca. 5 mm, ca. 2 mm in diam., laterally nearly smooth and striate.

Sparse forests on slopes, shrubby areas, roadsides; 400–1000 m. Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Taiwan, Zhejiang [Philippines].

**199b. *Ilex asprella* var. *tapuensis*** S. Y. Hu, J. Arnold Arbor. 30: 271. 1949.

大埔秤星树 da bu cheng xing shu

Leaf blade ovate-elliptic, 4–8 × 1.5–3.5 cm, acumen 3–15 mm. Fruiting pedicel ca. 2 cm; fruit ellipsoidal, ca. 8 mm in diam.; persistent stigma thickly discoid; pyrenes 6, ca. 8 mm, ca. 3 mm in diam., laterally striate and sulcate.

• Sparse forests on mountain slopes; 500–1000 m. Guangdong (Dabu, Dinghu Shan, Yingde).

**200. *Ilex kusanoi*** Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 55. 1911.

兰屿冬青 lan yu dong qing

*Ilex poneantha* Koidzumi; *I. taiwaniana* Hayata.

Trees deciduous, glabrous throughout. Second year's branchlets castaneous when dry, shiny, lenticels conspicuous; spur branchlets ca. 1 cm, ca. 2.5 mm in diam., rugose with scales and leaf scars. Stipules deltoid, minute; petiole 5–14 mm, adaxially sulcate, distal end narrowly winged by decurrent leaf base; leaf blade olivaceous when dry, ovate, 4–8.5 × 2.5–5 cm,

thickly papery, midvein slightly impressed adaxially, lateral veins 5–7 pairs, evident abaxially, obscure adaxially, reticulate veins evident abaxially, base acute, margin sparsely crenulate-serrate, apex obtuse or shortly and broadly acuminate. Inflorescences: cymes of order 1 or 2, 1- or 3-flowered, solitary or fasciculate, axillary on scales and leaves. Male inflorescences: cymes of order 1 or 2, 1- or 3-flowered; peduncles ca. 3 mm; pedicels 3–4 mm; bracteoles basal, glabrous, ciliate; calyx patelliform, shallowly 4–6-lobed, lobes ovate, margin erose, ciliate; corolla rotate, ca. 1 cm in diam., petals oblong, ca. 4 × 2.5 mm, basally slightly connate; stamens shorter than petals, anthers oblong; rudimentary ovary pulvinate, depressed at center. Female inflorescences: 1-flowered cymes, fascicles 3-flowered; pedicels 1.2–1.7 cm; calyx patelliform, ca. 2.5 mm in diam., 5- or 6-lobed, lobes orbicular, ciliate; corolla rotate, ca. 5 mm in diam., petals ovate, ca. 2 × 1.5 mm, basally slightly connate; staminodes ca. 2/3 as long as petals, sterile anthers sagittate; ovary globose, ca. 1 mm in diam., stigma mammilliform. Fruit globose, ca. 6 mm in diam., endocarp woody. Fl. Jul, fr. unknown.

Forests; sea level to 400 m. Taiwan (Huoshao Dao, Lan Yu) [Japan].

**201. *Ilex aculeolata*** Nakai, Bot. Mag. (Tokyo) 44: 13. 1930.

满树星 man shu xing

*Ilex rhamnifolia* Merrill.

Shrubs deciduous, 1–3(–4) m tall. Branchlets slender, pubescent at base, thickened, lenticels numerous and conspicuous; spur branchlets 3–5 mm, rugose with persistent scales and leaf scars. Stipules persistent, deltoid, minute; petiole 5–11 mm, adaxially narrowly sulcate, pubescent; leaf blade abaxially greenish, adaxially green, obovate, 2–5(–6) × 1–3(–3.5) cm, membranous or thinly papery, both surfaces sparsely pubescent, or glabrescent except on veins puberulent, midvein impressed adaxially, lateral veins 4 or 5 pairs, raised abaxially, flat adaxially, anastomosing near margin, reticulate veins obscure on both surfaces, base cuneate and attenuate, margin serrate, apex acute or very shortly acuminate, rarely obtuse. Inflorescences: cymes, solitary, axillary on scales or leaves; flowers white, fragrant, 4- or 5-merous. Male inflorescences: cymes of order 2, 3-flowered; peduncles 0.5–2 mm; pedicels 1.5–3 mm, glabrous; bracteoles 2, basal, deltoid, ciliate; calyx patelliform, ca. 2.5 mm in diam., deeply 4-lobed, lobes broadly deltoid, ciliate; corolla rotate, ca. 7 mm in diam., petals orbicular-ovate, ca. 3 mm in diam., basally slightly connate, margin erose, sparsely ciliate; stamens 4 or 5, anthers oblong; rudimentary ovary ovoid, rostellate, apex lobed. Female inflorescences: 1-flowered cymes; pedicels 3–4 mm; bracteoles 2, basal, ciliate; calyx and corolla as in male flowers; staminodes ca. 2/3 as long as petals, sterile anthers sagittate; ovary ovoid, ca. 1.5 mm in diam., stigma thickly discoid, shallowly 4-lobed. Fruit black, globose, ca. 7 mm in diam., longitudinally angular and sulcate when dry; persistent calyx explanate, subquadrangular; persistent stigma discoid, 4-lobed; pyrenes 4, ellipsoidal, ca. 6 mm, ca. 2.5 mm in diam., ends acute, abaxially deeply rugose and reticulately striate and sulcate, endocarp bony. Fl. Apr–May, fr. Jun–Sep.

• Sparse forests, shrub forests in valleys, roadsides; 100–1200 m.

Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Zhejiang (Taishun).

**202. *Ilex kiangsiensis*** (S. Y. Hu) C. J. Tseng & B. W. Liu, Bull. Bot. Res., Harbin 1(1-2): 39. 1981.

江西满树星 jiang xi man shu xing

*Ilex aculeolata* Nakai var. *kiangsiensis* S. Y. Hu, J. Arnold Arbor. 30: 278. 1949.

Shrubs or small trees, deciduous, 3–5 m tall. Current year's branchlets castaneous or purple-brown, sparsely puberulent or glabrescent, longitudinally angular, with pale lenticels; second year's branchlets gray, with dense lenticels; spur branchlets ca. 5 mm, with scales and leaf scars. Petiole 1–2 cm, adaxially sulcate, glabrous; leaf blade olivaceous when dry, obovate-elliptic or elliptic, 5–8 × 1.8–3.3 cm, papery, both surfaces puberulent or glabrous except on veins puberulent, midvein slightly raised abaxially, flat or impressed adaxially, lateral veins 6–8 pairs, evident on both surfaces, reticulate veins obscure, base cuneate or attenuate, margin serrate on distal half, apex shortly acuminate, acumen 5–8 mm. Flowers not known. Inflorescences: 1-fruited cymes, solitary, axillary on leaves or scales of spur branchlets; fruiting pedicels 4–8(–10) mm. Fruit black when dry, ellipsoidal, 1–1.5 cm, 6–8 mm in diam., longitudinally angular and sulcate; persistent calyx discoid, 5-lobed, lobes deltoid-ovate, slightly obtuse; persistent stigma mammilliform or capitate; pyrenes 4 or 5, ellipsoidal, 7–9 mm, 1.5–2.5 mm in diam., abaxially 3-striate and 2-sulcate, laterally striate, endocarp stony. Fl. unknown, fr. Jun–Oct.

• Sparse forests, thickets, mixed forests on mountain slopes; 700–1000 m. N Guangdong (Ruyuan), Hunan (Xinhuang, Zhijiang), Jiangxi.

**203. *Ilex macropoda*** Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 105. 1867.

大柄冬青 da bing dong qing

*Ilex dubia* Britton et al. var. *macropoda* (Miquel) Loesener; *I. dubia* var. *pseudomacropoda* Loesener; *I. macropoda* f. *pseudomacropoda* (Loesener) H. Hara; *I. macropoda* var. *pseudomacropoda* (Loesener) Nakai; *I. montana* Torrey & A. Gray var. *macropoda* (Miquel) Fernald; *I. monticola* A. Gray var. *macropoda* (Miquel) Rehder.

Trees deciduous, 10–13(–17) m tall; bark gray-brown, smooth. Branchlets gray or brown, longitudinally angular, with conspicuous lenticels, glabrous; spur branchlets 4–30 mm, rugose with persistent bud scales and leaf scars. Stipules deltoid, minute; petiole 1–2 cm, adaxially narrowly and deeply sulcate, hirsute; leaf blade adaxially green, ovate or broadly elliptic, 4–8 × 2.5–4.5 cm, papery or membranous, abaxially glabrous or sparsely puberulent, adaxially glabrous except on veins, midvein flat, puberulent adaxially, lateral veins 6–8 pairs, raised abaxially, flat adaxially, anastomosing near margin, reticulate veins evident abaxially, base cuneate or obtuse, margin sharply serrate, apex acuminate or acute. Male inflorescences: 1-flowered cymes, fasciculate; fascicles 2–5-flowered; pedicels 4–7 mm, pubescent; calyx patelliform, ca. 2.5 mm in diam., shallowly

5-lobed, lobes ca. 1 × 1 mm, margin erose, ciliate; corolla reflexed, rotate, ca. 5 mm in diam., petals oblong, ca. 2 × 1.5 mm, minutely ciliate; stamens 5, shorter than petals, anthers oblong; rudimentary ovary pulvinate, depressed at center. Female inflorescences: 1-flowered cymes, solitary, or fasciculate, axillary to scales or rarely to leaves of spur branchlets, or to leaves; pedicels 6–7 mm, glabrous; flowers 5- or 6-merous; calyx and corolla as in male flowers; staminodes ca. 3/4 as long as petals, sterile anthers cordate; ovary ovoid, ca. 1.7 mm, ca. 1.5 mm in diam., glabrous, stigma thickly discoid. Fruit red, globose, ca. 5 mm in diam.; fruiting pedicel 6–7 mm; persistent calyx explanate, persistent stigma discoid, convex, shallowly 5- or 6-lobed; pyrenes 5, oblong, 4–5.5 mm, ca. 2 mm in diam., abaxially longitudinally reticulately striate and sulcate, endocarp bony. Fl. May–Jun, fr. Oct–Nov.

Mixed forests, forest margins, thickets, roadsides, mountains; 500–1900(–2100) m. Anhui, Fujian (Chong'an), Henan, Hubei, Hunan, Jiangxi, Zhejiang [Japan, Korea].

**204. *Ilex tsoi*** Merrill & Chun, Sunyatsenia 1: 66. 1930 [*"tsoi"*].

紫果冬青 zi guo dong qing

Shrubs or small trees, deciduous, 4–8 m tall; bark gray-black. Branchlets castaneous, yellowish brown, or dark gray, glabrous, lenticels elliptic, conspicuous; spur branchlets rugose, with bud scales and leaf scars, glabrous. Stipules persistent, broadly deltoid, minute; petiole 6–10 mm, adaxially sulcate, glabrous; leaf blade abaxially greenish, adaxially dark green, ovate or ovate-elliptic, (2.5–)5–10 × (1–)3–5 cm, papery, abaxially glabrous, adaxially puberulent, midvein impressed adaxially, lateral veins 8–10 pairs, slightly raised on both surfaces, anastomosing near margin, or nearly obscure or inconspicuous on both surfaces, reticulate veins evident on both surfaces, base rounded or obtuse, margin finely sharply serrate, apex acuminate. Male inflorescences: 1-flowered cymes, solitary or fasciculate, fascicles 2- or 3-flowered, axillary on leaves of current year's branchlets or on scales of spur branchlets; pedicels 3–4 mm, glabrous, 6-merous; calyx patelliform, ca. 4 mm in diam., deeply 6-lobed, lobes deltoid or ovate, unequal in size, ca. 1 × 1 mm, apex acute, rarely rounded, ciliate; corolla rotate, 6–7 mm in diam., petals oblong, ca. 2 × 1.5 mm, basally slightly connate, apex rounded, very minutely ciliate; stamens shorter than petals, anthers oblong; rudimentary ovary pulvinate, center flat. Female inflorescences: 1-flowered cymes, solitary, axillary to scales or rarely leaves; pedicels 1–3 mm, glabrous; calyx and corolla as in male flowers; staminodes very minute, ca. 1/5 as long as petals, sterile anthers cordate; ovary ovoid, ca. 2 mm in diam., stigma thickly discoid, convex. Fruit purple-black, globose, 6–8 mm in diam.; persistent calyx explanate, stellate; persistent stigma thickly discoid or capitate, convex; fruiting pedicel 1–3 mm; pyrenes 6, oblong, ca. 5 mm, ca. 2.5 mm in diam., abaxially longitudinally striate and sulcate, laterally reticulately striate and sulcate, endocarp bony. Fl. May–Jun, fr. Jun–Aug.

• Dense or sparse forests, thickets in valleys, roadsides; 300–2000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Zhejiang.