

## 8. ACTINODAPHNE Nees in Wallich, Pl. Asiat. Rar. 2: 61, 68. 1831.

黄肉楠属 *huang rou nan shu*

Huang Puhua (黄普华 Huang Pu-hwa); Henk van der Werff

Evergreen trees or shrubs, dioecious. Leaves usually clustered or nearly verticillate, rarely alternate or opposite, unlobed, pinnately, rarely triplinerved. Umbels solitary or clustered or arranged in a panicle or raceme; involucre bracts imbricate, caducous. Perianth tube short; perianth segments usually 6 in 2 whorls of 3 each, nearly equal, rarely persistent. Flowers unisexual. Male flowers: fertile stamens usually 9 in 3 whorls of 3 each; filaments of 1st and 2nd whorls eglandular, of 3rd whorls 2-glandular at base; anthers all introrse and 4-celled, cells opening by lids; rudimentary pistil small or lacking. Female flowers: staminodes as many as stamens of male flowers; ovary superior; stigma shield-shaped or dilated. Fruit seated on shallow or deep cup-shaped or discoid perianth tube.

About 100 species: tropical and subtropical regions of Asia; 17 species (13 endemic) in China.

*Actinodaphne sessilifructa* C. J. Qi & K. W. Liu (Guihaia 7: 215. 1987) was described from SW Hunan (Tongdao) but could not be treated here because no material was seen by the present authors.

- 1a. Leaf blade triplinerved.
  - 2a. Buds, branchlets, and leaf blade densely ferruginous pubescent; fruit 2.5–4.5 × 1–2 cm, fruiting pedicel robust, 0.5–0.6 cm × 3–4 mm ..... 1. *A. obovata*
  - 2b. Buds, branchlets, and leaf blade glabrous; fruit ca. 2.5 × 1.5 cm, fruiting pedicel slender, ca. 1 cm × 2 mm ..... 2. *A. menghaiensis*
- 1b. Leaf blade pinninerved.
  - 3a. Bud scales persistent, surrounding bases of branchlets.
    - 4a. Bud scales smaller, 3–8 × 2–6 mm, densely arranged.
      - 5a. Leaf blade narrowly lanceolate, thickly leathery, lateral veins 18–26 pairs, obscure or nearly obscure abaxially; fruit glabrous ..... 3. *A. obscurinervia*
      - 5b. Leaf blade oblanceolate or oblong, leathery, lateral veins 6–10 pairs, conspicuously prominent abaxially; fruit yellow appressed tomentose ..... 4. *A. trichocarpa*
    - 4b. Bud scales larger, 10–22 × 6–10 mm, sparsely arranged.
      - 6a. Petiole less than 7 mm; lateral veins 7–9 pairs; leaf base rounded or broadly cuneate ..... 5. *A. koshepangii*
      - 6b. Petiole more than 11 mm; lateral veins 11–15 pairs; leaf base cuneate.
        - 7a. Petiole glabrous; leaf blade glabrous abaxially (only gray puberulent when young, soon glabrous) ..... 6. *A. omeiensis*
        - 7b. Petiole and leaf blade abaxially densely tomentose.
          - 8a. Leaf blade elliptic, oblong-elliptic, or obovate-elliptic, broader, mostly more than 5 cm in diam.; petiole up to 4 cm; fruit subglobose, fruiting pedicel 4–5 mm ..... 7. *A. kweichowensis*
          - 8b. Leaf blade elliptic-lanceolate, narrower, mostly less than 5 cm in diam.; petiole up to 2 cm; fruit oblong, fruiting pedicel 11–15 mm ..... 8. *A. Forrestii*
    - 3b. Bud scales caducous.
      - 9a. Lateral veins 30–40 pairs or more ..... 9. *A. lecomtei*
      - 9b. Lateral veins less than 15 pairs.
        - 10a. Inflorescence or fruiting inflorescence paniculiform.
          - 11a. Branchlets, young leaves, and inflorescence ferruginous tomentose; leaf blade obovate, rarely elliptic; fruiting tube subflat disciform ..... 15. *A. pilosa*
          - 11b. Branchlets with dense grayish appressed tomentum, leaf blade pubescent along midrib and veins abaxially, and inflorescence white sericeous; leaf blade lanceolate; fruiting tube shallowly cup-shaped ..... 14. *A. henryi*
        - 10b. Inflorescence or fruiting inflorescence umbellate.
          - 12a. Young branchlets glabrous ..... 16. *A. acuminata*
          - 12b. Young branchlets hairy.
            - 13a. Petiole shorter, 3–8 mm.
              - 14a. Leaf blade oblanceolate or obovate-lanceolate; filaments longer, ca. 6.5 mm, villous ..... 10. *A. tsaii*
              - 14b. Leaf blade not as above; filaments shorter, ca. 4 mm, glabrous.
                - 15a. Leaf blade oblong-ovate, base rounded or broadly cuneate, lateral veins 7–9 pairs ..... 5. *A. koshepangii*
                - 15b. Leaf blade oblong-lanceolate to oblong, base acuminate or acute, lateral

- veins 8–13 pairs ..... 11. *A. cupularis*
- 13b. Petiole longer, usually 10–40 mm.
- 16a. Leaf blade oblanceolate, obovate-lanceolate, occasionally oblong, thinner.
- 17a. Leaves 5–7-verticillate, leaf blade 14–20.5 × 3.5–6.5 cm, appressed pubescent abaxially; fertile stamens 9–15, filaments glabrous ..... 12. *A. paotingensis*
- 17b. Leaves scattered, leaf blade 6–12 × 1.8–3 cm, densely gray-yellow villous abaxially; fertile stamens 9, filaments villous ..... 17. *A. mushaensis*
- 16b. Leaf blade long lanceolate, lanceolate, elliptic to oblong-elliptic, thicker.
- 18a. Midrib prominent on both surfaces of leaf blade; fruit globose, smaller ..... 13. *A. glaucina*
- 18b. Midrib concave on leaf blade adaxially; fruit oblong or subglobose.
- 19a. Leaf blade abaxially and petiole glabrous; fruit subglobose, to 20 mm in diam. .... 6. *A. omeiensis*
- 19b. Leaf blade abaxially and petiole hairy; fruit oblong, 6–8 mm in diam. .... 8. *A. forrestii*

**1. *Actinodaphne obovata*** (Nees) Blume, Mus. Bot. 1: 342. 1851.

倒卵叶黄肉楠 dao luan ye huang rou nan

*Tetradenia obovata* Nees in Wallich, Pl. Asiat. Rar. 2: 64. 1831; *Litsea obovata* (Nees) Nees (1836), not Hayata (1911).

Trees, 10–18 m tall, ca. 20 cm d.b.h. Branchlets stout, densely ferruginous pubescent. Leaves 3–5-clustered at apex of branchlet, subverticillate; petiole 3–7 cm, yellowish brown pubescent; leaf blade shiny adaxially, obovate, obovate-oblong, or elliptic-oblong, 15–50 × 5.5–22 cm, ferruginous pubescent or glabrate abaxially when old, glabrous adaxially, triplinerved, lateral veins 6 or 7 pairs, lowermost pair arising 1–2 cm from base, base cuneate or rotund, apex acuminate or acute, tip obtuse. Racemes composed of umbels, 5-flowered; peduncle 1.2–2.5 cm. Pedicel ca. 3 mm. Perianth segments 6, yellow, ovate. Male flowers: fertile stamens 9; filaments short, villous at base, of 3rd whorls each with 2 oblate glands at base; rudimentary ovary pilose. Female flowers: ovary subglobose, villous. Fruit oblong or ellipsoid, 2.5–4.5 × 1–2 cm, seated on flat discoid perianth tube. Fl. Apr–May, fr. to Mar of next year.

Valleys, streamsides, moist mixed forests; 1000–2700 m. SE Xizang, S and SE Yunnan [Bhutan, India, Nepal].

This species is characterized by its large fruit. The seeds may be used for their oil. The bark is used medicinally to treat fractures.

**2. *Actinodaphne menghaiensis*** J. Li, Novon 15: 555. 2005.

勐海黄肉楠 meng hai huang rou nan

Trees, up to 8 m tall. Branchlets terete, 0.8–1.2 cm thick, glabrous. Terminal buds brownish, subglobose, glabrous. Leaves 5- or 6-verticillate at apex of branchlet; petiole 2–4(–6) cm, glabrous; leaf blade pale green abaxially, shiny adaxially, obovate or elliptic, 15–30(–40) × 6–12(–15) cm, thinly coriaceous, both surfaces glabrous, triplinerved, midrib prominently raised on both surfaces, lateral veins 7 or 8 pairs, basal lateral veins arising 0.2–1.2(–1.5) cm from base, transverse veins slightly raised abaxially, base cuneate, apex acuminate. Flowers unknown. Inflorescences racemiform, to 4 cm, yellow-brown pubescent. Fruit becoming purple-red when mature, ellipsoid, to 2.5 × 1.5 cm; cupule flat, to 1 cm in diam.; fruiting pedicel slender, to 1 cm × ca. 2 mm. Fr. Sep.

- Dense humid valley forests; ca. 1500 m. S Yunnan (Menghai).

**3. *Actinodaphne obscurinervia*** Yen C. Yang & P. H. Huang, Acta Phytotax. Sin. 16(4): 61. 1978.

隐脉黄肉楠 yin mai huang rou nan

Small trees, up to 3 m tall. Branchlets appressed pubescent when young and becoming glabrous or nearly so. Bud scales ovate, 3–8 × 2–6 mm, persistent, surrounding bases of branchlets. Leaves 3–5-verticillate; petiole ca. 5 mm, brown appressed pubescent; leaf blade green, glaucous abaxially, shiny adaxially, narrowly lanceolate, 6.5–9 × 1.5–2.3 cm, thickly leathery, gray appressed tomentose abaxially, glabrous adaxially, pinninerved, midrib prominent abaxially, impressed adaxially, lateral veins 18–26 pairs, fine, arising ca. 60° from midrib, obscure or nearly so abaxially, slightly prominent adaxially, base rotund, apex acuminate. Fruiting inflorescences umbellate; peduncle lacking. Fruit subglobose, 1–1.2 cm in diam., glabrous, seated on cup-shaped perianth tube; fruiting pedicel ca. 7 mm, slightly enlarged, villous. Fr. Jun–Jul.

- Evergreen broad-leaved forests; ca. 1200 m. E Sichuan.

**4. *Actinodaphne trichocarpa*** C. K. Allen, Ann. Missouri Bot. Gard. 25: 402. 1938.

毛果黄肉楠 mao guo huang rou nan

Small trees or shrubs, up to 8 m tall, to 20 cm d.b.h. Young branchlets appressed pubescent. Bud scales persistent, surrounding bases of branchlets. Leaves 3–5-subverticillate; petiole 5–10 mm, appressed pubescent; leaf blade glaucous abaxially, oblanceolate or oblong, 5–14 × 1.4–3 cm, appressed pubescent abaxially, pinninerved, lateral veins 6–10 pairs, prominent abaxially, base cuneate or rotund, apex acuminate or shortly acute. Umbel solitary or clustered, 4-flowered; peduncle lacking. Pedicel villous. Perianth segments ovate, 4–4.5 × ca. 3 mm, pilose. Male flowers: fertile stamens 9; filaments glabrous, of 3rd whorls each with 2 reniform stipitate glands near base; rudimentary ovary shortly tomentose. Female flowers: staminodes linear, flat; ovary subglobose, densely shortly tomentose. Fruit globose, 1.2–1.6 cm in diam., densely yellow appressed tomentose, seated on flat shallowly discoid perianth tube. Fl. Mar–Apr, fr. Jul–Aug.

- Mountain slopes, roadsides, thickets; 1000–2600 m. Guizhou, Sichuan, NE Yunnan.

**5. *Actinodaphne koshepangii*** Chun ex Hung T. Chang, Acta Sci. Nat. Univ. Sunyatseni 1960(1): 24. 1960.

广东黄肉楠 *guang dong huang rou nan*

Small trees, up to 10 m tall, to 20 cm d.b.h. Branchlets grayish brown pubescent. Bud scales sometimes persistent, sparsely surrounding bases of branchlets. Leaves subverticillate; petiole 5–7 mm, grayish brown pubescent; leaf blade oblong-ovate or oblong, 9–13 × 3–5 cm, grayish brown pubescent when young and becoming glabrous abaxially, glabrous adaxially, pinninerved, lateral veins 7–9 pairs, base rounded or broadly cuneate, apex acuminate. Umbels 1–4, axillary or lateral on leafless current year branchlets, sessile, male umbel 4-flowered. Pedicel short. Perianth segments 6–8, oblong-ovate, pubescent on midrib outside. Male flowers: fertile stamens 9; filaments glabrous, of 3rd whorls each with 2 stipitate glands at base; rudimentary ovary subglobose, glabrous; style linear; stigma 2-lobed. Female flowers and fruit not seen. Fl. Nov.

• Dense forests, forests of rocky slopes. NW Guangdong, W Hunan.

**6. *Actinodaphne omeiensis*** (H. Liu) C. K. Allen, Ann. Missouri Bot. Gard. 25: 411. 1938.

峨眉黄肉楠 *e mei huang rou nan*

*Actinodaphne reticulata* Meisner var. *omeiensis* H. Liu, Laurac. Chine & Indochine, 158. 1932.

Shrubs or small trees, 3–5 m tall. Young branchlets villous and becoming glabrous. Bud scales sometimes persistent, 11–22 × 6–10 mm, surrounding bases of branchlets. Leaves often 4–6-clustered at apex of branchlet, subverticillate; petiole 11–30 mm, glabrous; leaf blade glaucous abaxially, lanceolate to elliptic, 12–27 × 2.1–6 cm, pubescent soon becoming glabrous abaxially, glabrous adaxially, pinninerved, lateral veins 12–15 pairs, base cuneate, apex acuminate. Umbels solitary or 2 in leaf axils or lateral side of branchlet, sessile, 7- or 8-flowered. Pedicel ca. 5 mm. Perianth segments 6, pubescent outside. Male flowers: fertile stamens 9–12; filaments ca. 4 mm, of 3rd whorls each with 2 shortly stipitate glands at upper middle; rudimentary pistil small, ca. 2.2 mm. Fruit subglobose, ca. 2 cm in diam., apex apiculate, seated on undulate-dentate, shallowly disciform perianth tube; fruiting pedicel slightly stout, pubescent. Fl. Feb–Mar, fr. Aug–Sep.

• Valleys, roadsides, thickets, mixed forests; 500–1700 m. Guizhou, Sichuan.

**7. *Actinodaphne kweichowensis*** Yen C. Yang & P. H. Huang, Acta Phytotax. Sin. 16(4): 61. 1978.

黔桂黄肉楠 *qian gui huang rou nan*

Small trees or trees, 3–10 m tall. Branchlets densely tomentose. Bud scales sometimes persistent, 8–12 × 6–10 mm, sparsely surrounding bases of branchlets. Leaves clustered at apex of branchlet, subverticillate; petiole up to 4 cm, stout, densely tomentose; leaf blade elliptic, oblong-elliptic, or obovate-elliptic, 11–27 × 3.2–10 cm, densely gray-yellow tomentose abaxially, glabrous adaxially, pinninerved, lateral veins 6–13 pairs, base broadly cuneate or subrounded, apex shortly acuminate. Umbels solitary or 2 or 3 in leaf axils or lateral side of branchlet, sessile, 5- or 6-flowered. Pedicel ca. 2 mm, densely yellow pubescent. Perianth segments 6. Male flowers: fertile

stamens 9; filaments pubescent at base, of 3rd whorls each with 2 long stipitate rounded glands near base; rudimentary pistil clavate, densely pubescent. Fruit subglobose, 1.5–1.7 cm in diam., seated on entire disk-shaped perianth tube; fruiting pedicel 4–5 mm. Fl. May–Jun, fr. Oct.

• Mixed mountain forests; 1000–1300 m. SW Guangxi, SW Guizhou.

**8. *Actinodaphne forrestii*** (C. K. Allen) Kostermans, Reinwardtia 9: 97. 1974.

毛尖树 *mao jian shu*

*Actinodaphne reticulata* Meisner var. *forrestii* C. K. Allen, Ann. Missouri Bot. Gard. 25: 412. 1938.

Trees, 8–15 m tall. Young branchlets yellow-brown appressed tomentose. Bud scales sometimes persistent, sparsely surrounding bases of branchlets. Leaves 6- or 7-clustered at apex of branchlet, subverticillate; petiole up to 2 cm, shortly appressed tomentose; leaf blade elliptic-lanceolate, 9–27 × 2–5 cm, pubescent abaxially when young, glabrous adaxially, pinninerved, lateral veins 11–15 pairs, base attenuate or broadly cuneate, apex acuminate or long acuminate. Umbels clustered on lateral side of branchlet, 5- or 6-flowered. Pedicel ca. 1.5 mm. Perianth segments 6, elliptic. Male flowers: fertile stamens 9; filaments glabrous, of 3rd whorls each with 2 stipitate glands at base; rudimentary pistil glabrous. Fruit oblong, 14–16 × 6–8 mm, seated on entire cup-shaped perianth tube; fruiting pedicel 11–15 mm, pilose. Fl. Nov–Mar, fr. Aug–Sep.

• Thickets on calcareous rocks, mixed mountain forests; 1000–2700 m. Guangxi, Guizhou, Yunnan.

**9. *Actinodaphne lecomtei*** C. K. Allen, Ann. Missouri Bot. Gard. 25: 413. 1938.

柳叶黄肉楠 *liu ye huang rou nan*

*Litsea hupehana* Hemsley var. *longifolia* Lecomte, Nouv. Arch. Mus. Hist. Nat., sér. 5, 5: 8. 1913.

Trees or small trees, up to 10 m tall. Young branchlets pubescent and becoming glabrous. Leaves subverticillate or alternate; petiole 7–20 mm, pubescent or glabrate; leaf blade glaucous abaxially, lanceolate to linear-lanceolate, 10–20 × 1.5–3 cm, appressed pubescent abaxially, glabrous or along midrib pubescent adaxially, pinninerved, lateral veins dense, 30–40 or more pairs, base cuneate, apex acute or narrowly acute. Umbels often 2–5 in leaf axils or lateral side of branchlet, sessile, 4- or 5-flowered. Pedicel villous. Perianth segments 6, oblong or elliptic, ca. 4 × 1.8–2 mm, villous outside. Male flowers: fertile stamens 9; filaments glabrous, of 3rd whorls each with 2 shield-shaped stipitate glands at base; rudimentary pistil glabrous. Fruit obovoid, ca. 10 × 8 mm, glabrous, seated on entire or shallowly undulate cup-shaped perianth tube; fruiting pedicel 7–8 mm, slightly enlarged at apex, pubescent. Fl. Aug–Sep, fr. Oct–Nov.

• Mountain slopes, roadsides, streamsides, mixed forests; 600–1800 m. N Guangdong, Guizhou, Sichuan.

The wood is used for furniture. Aromatic oil may be extracted

from the branchlets and leaves. Oil may be extracted from the seeds and used in making soap and lubricant.

**10. *Actinodaphne tsaii*** Hu, Bull. Fan Mem. Inst. Biol. 5: 307. 1934.

马关黄肉楠 ma guan huang rou nan

Trees, 8–20 m tall. Young branchlets gray-brown pubescent. Leaves 4–6-crowded at apex of branchlet, subverticillate; leaf blade oblanceolate or obovate-lanceolate, 10–15 × 2–3.5 cm, gray-brown pubescent abaxially, glabrous adaxially, except hairy on midrib, pinninerved, lateral veins 8–10 pairs, base acute, apex acuminate. Umbels in leaf axils, sessile, 6–8-flowered. Pedicel 2–3 mm, densely villous. Perianth segments 6, elliptic, 5–6 × 2–5 mm, densely sericeous outside. Male flowers: fertile stamens 9; filaments ca. 6.5 mm, villous, of 3rd whorls each with 2 shield-shaped stipitate large glands at base; rudimentary pistil glabrous; style slender, pubescent; stigma shield-shaped. Immature fruit oblong, ca. 9 mm, seated on entire shallowly cup-shaped perianth tube; fruiting pedicel 6–8 mm, pubescent. Fl. Mar–Apr, fr. Jun–Jul.

• Evergreen broad-leaved forests, ditch sides; 1300–2000 m. S and SE Yunnan.

This species is closely related to *Actinodaphne sikkimensis* Meisner, from India (Sikkim), but differs in having leaves gray-brown pubescent abaxially, flowers larger, and filaments and style of male flowers villous.

**11. *Actinodaphne cupularis*** (Hemsley) Gamble in Sargent, Pl. Wilson. 2: 75. 1914.

红果黄肉楠 hong guo huang rou nan

*Litsea cupularis* Hemsley, J. Linn. Soc., Bot. 26: 380. 1891; *Fiwa cupularis* (Hemsley) Nakai.

Shrubs or small trees, 2–10 m tall. Young branchlets puberulent. Leaves usually 5- or 6-crowded on top branchlets, subverticillate; petiole 3–8 mm, pubescent; leaf blade oblong to oblong-lanceolate, 5.5–13.5 × 1.5–2.7 cm, pubescent and gradually becoming glabrous abaxially, glabrous adaxially, pinninerved, lateral veins 8–13 pairs, slender, base and apex acuminate or acute. Umbel solitary or numerous in lateral side of branchlet, sessile, male umbel 6- or 7-flowered. Pedicel villous. Perianth segments 6(–8), ovate, ca. 2 × 1.5 mm. Male flowers: fertile stamens 9; filaments ca. 4 mm, glabrous, of 3rd whorls each with 2 glands at base. Fruit ovoid, 12–14 × ca. 10 mm, apiculate, glabrous, red at maturity, seated on entire or deeply undulate cup-shaped perianth tube. Fl. Oct–Nov, fr. Aug–Sep.

• Mountain slopes, dense forests, streamsides, thickets; 300–1300 m. Guangxi, Guizhou, Hubei, Hunan, Sichuan, Yunnan.

The seeds may be processed for their oil, which is used for making soap and lubricant. The roots and leaves are used medicinally for curing hemorrhoids, athlete's foot, etc.

**12. *Actinodaphne paotingensis*** Yen C. Yang & P. H. Huang, Acta Phytotax. Sin. 16(4): 63. 1978.

保亭黄肉楠 bao ting huang rou nan

Shrubs or small trees, 4–6 m tall. Young branchlets yellow-brown pubescent and becoming glabrous. Leaves 5–7-ver-

ticillate; petiole 1.7–2.5 cm, densely yellow-brown pubescent; leaf blade slightly glaucous abaxially, obovate-lanceolate or oblong, 14–20.5 × 3.5–6.5 cm, gray appressed pubescent abaxially, glabrous adaxially, pinninerved, lateral veins 7–9 pairs, base cuneate or obtusely rounded, apex acute. Umbels in leaf axils, sessile, male umbel 3- or 4-flowered. Pedicel 3–4 mm, densely sericeous-villous. Perianth segments 6–8, oblong or lanceolate, unequal. Flowers 7–8 mm in diam. Male flowers: fertile stamens 9–15; filaments glabrous, of 3rd whorls each with 2 shield-shaped stipitate glands near base; anthers 4-celled, upper 2 cells introrse, lower 2 cells lateral-introrse; rudimentary pistil ca. 4 mm, glabrous. Fruit not seen; fruiting pedicel stout and short, ca. 5 mm, pubescent; perianth tube cup-shaped, entire, ca. 1 cm in diam. Fl. Dec.

• Foot of mountains, mountaintops, shady places in valleys or sparse forests. Hainan.

**13. *Actinodaphne glaucina*** C. K. Allen, Ann. Missouri Bot. Gard. 25: 410. 1938.

白背黄肉楠 bai bei huang rou nan

Trees, up to 10 m tall. Young branchlets ferruginous tomentose and becoming glabrous. Leaves 5–9-crowded at apex of branchlet, nearly verticillate; petiole 12–20 mm, ferruginous tomentose; leaf blade long lanceolate, 13–28(–34) × 2.5–4(–8) cm, pubescent abaxially when young and gradually becoming glabrous, ferruginous tomentose along midrib adaxially when young, pinninerved, midrib prominent on both surfaces, lateral veins 10 pairs, transverse veins slender, base attenuate or acute, apex acute or acuminate. Fruiting inflorescences umbelliform, solitary, with 4 or 5 fruits at each fruiting inflorescence; peduncles 2–6 mm, appressed pubescent. Fruit globose, 7–10 mm in diam., black at maturity, seated on slightly flat shallowly disciform perianth tube; fruiting pedicel ca. 5 mm, slightly enlarged at apex, appressed pubescent. Fr. Oct.

• Mixed forests (rarely collected). Hainan.

**14. *Actinodaphne henryi*** Gamble, Bull. Misc. Inform. Kew 1913: 265. 1913.

思茅黄肉楠 si mao huang rou nan

Trees, up to 25 m tall. Branchlets with grayish appressed tomentum. Leaves 4–6-crowded at apex of branchlet, nearly verticillate; petiole 2–3 cm, stout, densely tomentose; leaf blade glaucous abaxially, lanceolate, 17–40 × 3.7–13 cm, pubescent along midrib and lateral veins abaxially, glabrous adaxially, pinninerved, lateral veins 9–12 pairs, base cuneate, apex acuminate or long acuminate. Umbels mostly arranged in racemes, white sericeous, 5-flowered; peduncle ca. 1.5 cm. Pedicel 2–3 mm. Perianth tube obconical; perianth segments 6, ovate, 3-nerved. Male flowers: fertile stamens 9; filaments glabrous, of 3rd whorls each with 2 small globose glands at base. Female flowers: staminodes 9; ovary ovoid, glabrous. Fruit subglobose, 6–8 mm in diam., seated on shallowly entire or undulate cup-shaped perianth tube; fruiting pedicel 5–8 mm, pubescent. Fl. Dec–Feb of next year, fr. Jul–Aug.

Evergreen broad-leaved forests; 600–1300 m. S Yunnan [N Thailand].

The wood is used for construction, furniture, and industrial timber.

**15. *Actinodaphne pilosa*** (Loureiro) Merrill, Trans. Amer. Philos. Soc., n.s., 24(2): 165. 1935.

毛黄肉楠 mao huang rou nan

*Laurus pilosa* Loureiro, Fl. Cochinch. 1: 253. 1790; *Actinodaphne cochinchinensis* Meisner; *Machilus hainanensis* Merrill; *M. pilosa* (Loureiro) Nees; *Tetranthera pilosa* (Loureiro) Sprengel.

Trees or shrubs, 4–12 m tall. Young branchlets, bud scales, young leaf blades on both surfaces, and petioles densely ferruginous tomentose. Leaves alternate or in clusters of 3–5; petiole stout, 1.5–3 cm; leaf blade obovate, rarely elliptic, 12–24 × 5–12 cm, pinninerved, lateral veins 5–7(–10) pairs, transverse veins conspicuous abaxially, base cuneate, apex abruptly acute. Umbels clustered in a panicle, 5-flowered; peduncle 1–2 cm. Pedicel ca. 4 mm. Perianth segments 6, elliptic, villous outside. Male flowers: fertile stamens 9; filaments villous, of 3rd whorls each with 2 sessile or shortly stipitate glands at base; rudimentary pistil small or lacking. Female flowers slightly smaller than male flowers; ovary villous; staminodes spatulate, villous at base. Fruit globose, 4–6 mm in diam., seated on subflat disciform perianth tube; fruiting pedicel 3–4 mm, pubescent. Fl. Aug–Dec, fr. Feb–Mar.

Mixed forests, open thickets; ca. 500 m. Guangdong, Guangxi, Hainan [Laos, Vietnam].

Allen (Ann. Missouri Bot. Gard. 25: 404. 1938) recorded this species also from Yunnan, citing *A. Henry 13588*, but neither this gathering nor others from Yunnan have been seen by the present authors.

The wood may be used for making hair and paper glues. The bark and leaves are used medicinally to treat, for example, coughs, furunculosis, rheumatism, and swelling.

**16. *Actinodaphne acuminata*** (Blume) Meisner in A. Candolle, Prodr. 15(1): 211. 1864.

南投黄肉楠 nan tou huang rou nan

*Iozoste acuminata* Blume, Mus. Bot. 1: 364. 1851; *Actinodaphne longifolia* (Blume) Nakai; *A. morrisonensis* (Hayata) Hayata var. *nantoensis* (Hayata) Yamamoto; *A. nantoensis* (Hayata) Hayata; *Fiwa longifolia* (Blume) Nakai; *F. nantoensis* (Hayata) Nakai; *Litsea acuminata* (Blume) Kurata (1968), not (Teschner) Kostermans (1968); *L. dolichocarpa* Hayata; *L. nantoensis* Hayata; *Machilus longifolia* Blume; *Tetradenia dolichocarpa* (Hayata) Makino & Nemoto.

Trees. Branchlets glabrous. Leaves alternate; petiole 5–20 mm, glabrous; leaf blade lanceolate, 7.5–13 × 1.5–3 cm, pubescent abaxially, glabrous adaxially, pinninerved, lateral veins 12 pairs, reticulate-veined, base acute or broadly cuneate, apex acuminate. Umbels axillary, 3- or 4-flowered; involucre bracts 5, imbricate. Pedicel densely villous. Perianth segments 6, ovate or oblong, ca. 2.5 × 1–1.2 mm. Male flowers: fertile stamens 9; filaments villous at base, of 3rd whorls each with 2 shield-shaped sessile or subsessile glands at base; rudimentary pistil lacking. Female flowers: staminodes 9; ovary ovoid, ovary, style, and stigma glabrous; style slender; stigma 2-lobed. Fruit ellipsoid, seated on cup-shaped perianth tube. Fl. Feb–Mar.

Evergreen broad-leaved forests; low to medium elevations. Taiwan [Japan].

Liu (Woody Fl. Taiwan, 155. 1972) recorded this species from the forest of Congaing, Yong'an, Fujian Province, at 700 m, but the specimen has not been seen by the present authors.

This species and *Actinodaphne mushaensis* have been treated under both *Actinodaphne* and *Litsea*. However, based on the number and imbricate arrangement of their involucre bracts, they do not belong to *Litsea* and so are retained here under *Actinodaphne*.

The wood is used for construction and furniture.

**17. *Actinodaphne mushaensis*** (Hayata) Hayata, Icon. Pl. Formosan. 5: 171. 1915.

雾社黄肉楠 wu she huang rou nan

*Litsea mushaensis* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 250. 1911; *Fiwa mushaensis* (Hayata) Nakai; *L. elongata* (Nees) J. D. Hooker var. *mushaensis* (Hayata) J. C. Liao.

Trees. Branchlets densely yellowish brown villous. Leaves alternate; petiole 8–12 mm, yellowish brown villous; leaf blade obovate-lanceolate, oblanceolate, or oblong, 6–12 × 1.8–3 cm, densely gray-yellow villous abaxially, nearly glabrous or pubescent along midrib adaxially, pinninerved, lateral veins 5–7 pairs, base attenuate or cuneate, apex shortly acuminate. Umbel axillary or terminal, 4–6-flowered; peduncle 0.6–1 cm; involucre bracts 5, imbricate. Pedicel ca. 2 mm, densely villous. Perianth segments 6, oblong or ovate, 2.2–3 × 1–2 mm, villous outside, glabrous inside. Male flowers: fertile stamens 9; filaments villous, of 3rd whorls each with 2 shield-shaped or reniform glands at base; rudimentary pistil ca. 1.8 mm. Fruit globose or nearly long ellipsoid, black at maturity, seated on cup-shaped perianth tube. Fl. Sep.

• Evergreen broad-leaved forests; 1300–2300 m. Taiwan.

Liu (Woody Fl. Taiwan, 154. 1972) recorded this species from the forest of Yu-jing mountain, Yong'an, Fujian Province, but the specimen has not been seen by the present authors.

One of the present authors (van der Werff) believes that *Actinodaphne mushaensis* should be treated as a variety of *Litsea elongata*, as was done in Fl. Taiwan, ed. 2 (2: 470. 1996).

The wood may be used for construction and furniture.

