

18. ALSEODAPHNE Nees in Wallich, *Pl. Asiat. Rar.* 2: 61, 71. 1831.

油丹属 *you dan shu*

Li Xiwen (李锡文 *Li Hsi-wen*), Li Jie (李捷); Henk van der Werff

Evergreen trees. Terminal buds scaly. Leaves alternate, always clustered near apex of branchlet, pinninerved, often turning black when dry. Inflorescence axillary, paniculate or racemose; bracts and bracteoles deciduous. Flowers bisexual, 3-merous. Perianth tube short; perianth lobes 6, subequal or outer 3 smaller, slightly dilated after anthesis but absent in fruit. Fertile stamens 9, in 3 whorls; filaments of 1st and 2nd whorls glandless, those of 3rd whorl each with 2 glands at base; anthers 4-celled; cells of 1st and 2nd whorls introrse, those of 3rd whorl extrorse or upper 2 lateral and lower 2 extrorse. Staminodes 3, of innermost whorl, very small, nearly sagittate. Ovary partly immersed into shallow perianth tube; style often as long as ovary; stigma small, inconspicuous, discoid. Fruit black or purplish black when mature, ovoid, oblong, or subglobose; fruit stalk red, green, or yellow, sometimes nearly cylindrical, fleshy, pulpy, always warty, truncate at apex.

Fifty species or more: Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; ten species (seven endemic) in China.

- 1a. Pedicels up to 10 mm; scales of terminal bud imbricate on margin 1. *A. gracilis*
- 1b. Pedicels short, less than 8 mm; scales of terminal bud not imbricate on margin.
 - 2a. Terminal bud large, ovoid, up to 2.5 cm; fruit large, oblong, up to 3 cm in diam. 2. *A. sichourensis*
 - 2b. Terminal bud small, ovoid or globose, ca. 2 mm, usually inconspicuous; fruit oblate, globose, ovoid, or oblong, below 3 cm in diam. when it is oblate, globose, or ovoid, but up to 5 cm in diam. when it is oblong, in latter case terminal bud inconspicuous.
 - 3a. Branchlets robust, ca. 7 mm in diam., wrinkled, with dense leaf scars near top; fruit stalk warty; fruit oblate 3. *A. rugosa*
 - 3b. Branchlets slender, below 3 mm in diam., not wrinkled; fruit stalk not conspicuously warty; fruit not oblate.
 - 4a. Branchlets conspicuously gray when dry.
 - 5a. Inflorescence brown pilose, 2–3(–4) cm 6. *A. yunnanensis*
 - 5b. Inflorescence glabrous, 3.5–8(–12) cm.
 - 6a. Leaf blade narrowly elliptic, 6–10(–16) × 1.5–3.2(–4.2) cm, leathery, shallowly foveolate adaxially, lateral veins 12–17 pairs; fruiting pedicel 3–8 mm, not verrucose 4. *A. hainanensis*
 - 6b. Leaf blade oblong or oblanceolate-oblong, 5–13 × (0.8–)1.2–2.8 cm, papery, hardly foveolate on both surfaces, lateral veins 7 or 8 pairs; fruiting pedicel 5–7 mm, densely grayish linear verrucose 5. *A. huanglianshanensis*
 - 4b. Branchlets not gray when dry.
 - 7a. Panicle much longer than leaf blade; leaf blade hairy abaxially.
 - 8a. Leaf blade oblong or lanceolate-oblong, 6–14 × 2.2–3.8 cm, not foveolate on both surfaces, sparsely yellowish brown pubescent abaxially; fruit globose, up to 2.2 cm in diam. 7. *A. marlipoensis*
 - 8b. Leaf blade oblong, 12–24 × 6–12 cm, conspicuously foveolate on both surfaces, rusty pubescent abaxially; fruit oblong, ca. 2.8 cm 8. *A. andersonii*
 - 7b. Panicle shorter than or as long as leaf blade; leaf blade glabrous abaxially.
 - 9a. Branchlets, leaf blades, and panicles all glabrous; leaf blade elliptic to oblong, 10.5–17 × 4–6.5 cm, not green-white abaxially 9. *A. hokouensis*
 - 9b. Young part of branchlet as well as panicles densely brown tomentulose; leaf blade obovate-oblong or oblong, 14–26 × 6–15 cm, green-white abaxially when young 10. *A. petiolaris*

1. *Alseodaphne gracilis* Kostermans, *Candollea* 28: 109. 1973.

细梗油丹 *xi geng you dan*

?Trees. Young branchlets white, shiny, elongate, slender, glabrous, few lenticellate. Scales of terminal bud fimbriate on margin. Leaves alternate, spirally arranged, somewhat clustered; petiole 5–20 mm, sulcate adaxially; leaf blade opaque abaxially, shiny adaxially, obovate to elliptic, 11–15 × 4.5–7.5 cm, densely and finely foveolate on both surfaces, midrib elevated on both surfaces, lateral veins slender, 13–16 pairs,

elevated adaxially but slightly so abaxially, oblique and arcuate on margin, base cuneate, apex acuminate, acumen acute. Panicle axillary, up to 3 cm, few flowered, glabrous, unbranched or 2-branched; branches up to 1 cm. Pedicels very slender, up to 10 mm. Perianth tube very short; perianth lobes ovate, equal, ca. 2 mm, gray villous inside, slightly acute at apex. Fertile stamens 1–1.25 mm, sparsely pilose, basal glands of 3rd whorl stamens small; anthers large, ovoid-square, slightly longer than slender filaments. Staminodes slender. Ovary ovoid, glabrous; style short; stigma minute, subpellate. Fruit unknown.

- Forests. SE Yunnan.

2. *Alseodaphne sichourensis* H. W. Li, Acta Phytotax. Sin. 17(2): 70. 1979.

西畴油丹 xi chou you dan

Trees evergreen, up to 30 m tall, to 60 cm d.b.h. One-year-old branchlets red-brown, terete, 5–6 mm in diam., glabrous, with longitudinally fissured elevated corky and oblong lenticels and large suborbicular leaf scars; current year branchlets reddish, subterete, usually short, 4–10 cm, 4–5 mm in diam., glabrous, with densely clustered annular scale scars at base. Terminal buds large, ovoid, up to 2.5 cm; bud scales broadly ovate or suborbicular, apiculate at apex, always glabrous, except basal ones densely yellowish brown pubescent outside and on margin, densely imbricate. Leaves alternate, remote; petiole reddish, (1.7–)2–5 cm, plano-convex, glabrous; leaf blade greenish abaxially, green adaxially, oblong, 9–20 × 2.5–5.7 cm, subleathery, glabrous on both surfaces, midrib straight, extending to leaf apex, very elevated abaxially, slightly impressed on lower part but nearly plane on upper part adaxially, lateral veins ca. 12 pairs, arcuate, interconnected and evanescent near leaf margin, transverse veins and veinlets reticulate, slightly foveolate abaxially, inconspicuous adaxially, base cuneate or broadly cuneate, sometimes slightly oblique on one side, margin slightly involute, apex shortly acuminate. Flowers unknown. Inflorescence paniculate, short, 5–8.5 cm, inserted on lower part of branchlet, only with 1 well-developed fruit; rachis reddish, glabrous. Fruit red, ellipsoid, up to 5 × 3 cm, glabrous; fruit stalk robust, ca. 5 mm, fleshy, ca. 4 mm in diam. on top, glabrous.

- Evergreen broad-leaved forests on limestone mountains; 1300–1500 m. SE Yunnan.

3. *Alseodaphne rugosa* Merrill & Chun, Sunyatsenia 2: 232. 1935.

皱皮油丹 zhou pi you dan

Trees, up to 12 m tall, to 60 cm d.b.h. Branchlets terete, robust, ca. 7 mm in diam., wrinkled, with dense leaf scars near top. Leaves inserted at apex of branchlet, dense and nearly verticillate; petiole robust, 1.5–2.5 cm; leaf blade greenish abaxially when dry, brownish and shiny adaxially, oblong-obovate or oblong-oblancoolate, 15–36 × 4–10 cm, leathery, midrib brownish, conspicuously elevated abaxially, impressed adaxially, veins and veinlets conspicuous, reticulate, base cuneate, apex shortly acuminate. Flowers unknown. Inflorescence subterminal, ca. 12.5 cm, robust; peduncle (6–)8–15 cm, glabrous. Fruit oblate, ca. 2.5 × 3 cm; fruit stalk robust, 1–1.5 cm, 5–8 mm in diam. on top, fleshy, red and warty when fresh. Fr. Jul–Dec.

- Mixed forests in valleys; 1200–1300 m. Hainan.

4. *Alseodaphne hainanensis* Merrill, Lingnan Sci. J. 13: 57. 1934.

油丹 you dan

Trees, up to 25 m tall, to 30 cm d.b.h., all except young parts glabrous. Branchlets and young branchlets terete, smallest ones ca. 2 mm in diam., all gray, with few suborbicular leaf

scars; young ones with many clustered scale scars at base. Terminal buds small, gray- or rusty sericeous. Leaves many, clustered at apex of branchlet; petiole robust, 1–1.5 cm, concave-convex; leaf blade green-white and opaque abaxially, shiny adaxially, narrowly elliptic, 6–10(–16) × 1.5–3.2(–4.2) cm, leathery, shallowly foveolate adaxially, lateral veins 12–17 pairs, slender, slightly conspicuous on both surfaces, arcuately interconnected at ends, base acute, margin revolute, apex rounded. Panicle axillary on upper part of branchlet, 3.5–8(–12) cm, glabrous, black when dry, few branched; peduncle elongate, as pedicel subfleshy. Pedicel slender, 3–8 mm, dilated in fruit, not verrucose. Perianth lobes slightly fleshy, oblong, ca. 4 × 2 mm, slightly acute at apex, glabrous outside, white sericeous inside. Fertile stamens ca. 2.5 mm, pilose; filaments of 3rd whorl each with 2 stalked glands; anthers ellipsoid-square, obtuse at apex, as long as filaments, 4-celled; cells introrse in 1st and 2nd whorls, upper 2 cells lateral and lower 2 cells extrorse in 3rd whorl. Staminodes conspicuous, sagittate, stalked. Ovary ovoid; style slender; stigma inconspicuous. Fruit green when fresh but black when dry, globose or ovoid, 1.2–2 cm, wrinkled. Fl. Jul, fr. Oct–Feb of next year.

- Valleys, forests; 1400–1700 m. Hainan [N Vietnam].

The wood is finely grained, heavy, and durable.

5. *Alseodaphne huanglianshanensis* H. W. Li & Y. M. Shui, Acta Phytotax. Sin. 42: 551. 2004.

黄连山油丹 huang lian shan you dan

Trees evergreen, up to 10 m tall. Branchlets grayish, glabrous, lenticellate; lenticels oblong, 0.7–1.3 × 0.5–0.7 mm. Leaves alternate, 2–5 mm apart, clustered near apex of branchlet in groups 10.5–14 cm apart; petiole reddish, 0.5–0.9 cm, slightly dilated at base, glabrous; leaf blade grayish abaxially, dark green adaxially, oblong or oblanceolate-oblong, 5–13 × (0.8–)1.2–2.8 cm, papery, glabrous, hardly foveolate on both surfaces, midrib conspicuously elevated abaxially, slightly elevated adaxially, lateral veins 7 or 8 pairs, arcuately ascending, hardly anastomosing near margin, slightly elevated, base cuneate, apex acute or acuminate. Flowers unknown. Inflorescences inserted in leaf axils near apex of branchlet, 4.2–5 cm, glabrous; peduncle ca. 2.5 cm, densely grayish verrucose. Pedicel 5–7 mm, densely grayish linear verrucose, apex conspicuously dilated. Fruit purple when mature, ovoid, ca. 2 × 1.2–1.4 cm; exocarp thin. Fr. Nov.

- Evergreen secondary forests on slopes with montane red earth mainly from rock detritus; 800–1300 m. S Yunnan (Lüchun).

6. *Alseodaphne yunnanensis* Kostermans, Candollea 28: 133. 1973.

云南油丹 yun nan you dan

Trees small. Old branchlets gray, shiny, robust, bark longitudinally fissured, with many brown elliptic lenticels; young branchlets slender, lenticellate. Leaves clustered at apex of branchlet, uppermost ones always subopposite; petiole slightly slender, 1–2 cm, concave-convex; leaf blade slightly shiny, oblong, 11–19 × 4.5–6 cm, papery, glabrous and densely finely foveolate on both surfaces, midrib elevated abaxially, impressed adaxially, lateral veins 9–11 pairs, elevated abaxially, inconspic-

uous adaxially, oblique, sometimes forked, arcuate and interconnected at ends, base broadly cuneate and attenuate into petiole, apex acute or acuminate. Panicle axillary, 2–3(–4) cm, few flowered, brown pilose, unbranched or shortly branched; peduncle 1–3.5 cm. Pedicel slender, 5–8 mm, glabrous. Perianth lobes 6, glabrous outside, densely brownish pilose inside, outer ones ovate, ca. 3 × 1.5 mm, acute, inner ones broadly ovate, ca. 3.5 × 2 mm, acute. Fertile stamens 9; filaments of 1st and 2nd whorls almost as long as anthers, glandless, those of 3rd whorl each with 2 large glands; anthers of 1st and 2nd whorls broadly elliptic, ca. 0.75 mm, with introrse cells, those of 3rd whorl slightly narrower, truncate at apex, with lateral cells. Staminodes conspicuous, sagittate, ca. 1.3 mm, stalked. Ovary subglobose, ca. 2.5 mm, glabrous; style short, ca. 0.5 mm; stigma discoid, inconspicuous. Fruit unknown. Fl. Apr.

- Shady rocky places in valleys; ca. 800 m. SE Yunnan.

7. *Alseodaphne marlipoensis* (H. W. Li) H. W. Li, *Acta Phytotax. Sin.* 17(2): 71. 1979.

麻栗坡油丹 ma li po you dan

Cinnamomum marlipoense H. W. Li, *Acta Phytotax. Sin.* 13(4): 48. 1975.

Trees, up to 12 m tall, ca. 30 cm d.b.h. Branchlets gray-brown, terete, slender, 3–5 mm in diam., striate, scattered with longitudinally fissured yellow-brown corky oblong lenticels, sparsely yellowish brown pubescent initially but soon glabrate. Terminal buds small, obconical, less than 2 mm; bud scales compact, sparsely yellowish brown pubescent outside. Leaves alternate, remote; petiole 0.5–2 cm, concave-convex, sparsely puberulent; leaf blade abaxially green-white, adaxially green, oblong or lanceolate-oblong, 6–14 × 2.2–3.8 cm, papery, abaxially sparsely yellowish brown puberulent, adaxially glabrous or sometimes sparsely yellowish brown pubescent on lower part of midrib, midrib extending up to leaf apex, elevated abaxially, impressed adaxially, lateral veins (9–)11–13 pairs, arcuate, inconspicuous on both surfaces, all evanescent near leaf margin, transverse veins and veinlets reticulate, nearly visible on both surfaces, base cuneate or broadly cuneate, margin revolute, apex shortly acuminate. Flowers unknown. Inflorescence paniculate, much longer than leaf blade, (8–)11–18 cm, all axillary on upper part of branchlet, few branched on upper part; branches up to 4.5 cm; peduncle elongate, (5–)8–12 cm, peduncle and rachis sparsely yellowish brown pubescent. Immature fruit green, globose, up to 2.2 cm in diam.; fruit stalk fleshy, dilated, up to 1 cm, ca. 3 mm in diam. on top, wrinkled when dry, purple-red when fresh, sparsely yellowish brown pubescent. Fr. Dec.

- Evergreen broad-leaved forests in valleys; below 1400 m. SE Yunnan.

8. *Alseodaphne andersonii* (King ex J. D. Hooker) Kostermans, *Reinwardtia* 6: 159. 1962.

毛叶油丹 mao ye you dan

Cryptocarya andersonii King ex J. D. Hooker, *Fl. Brit. India* 5: 120. 1886; *Alseodaphne keenanii* Gamble; *A. medogensis* H. P. Tsui.

Trees, up to 25 m tall, 30–45 cm d.b.h. Branchlets

blackish, robust, striate, with few inconspicuous brown and oblong lenticels, rusty puberulent when young but glabrate when mature. Petiole robust, (2–)4–5.5 cm, concave-convex, ± rusty puberulent; leaf blade green-white abaxially, opaque adaxially, elliptic, 12–24 × 6–12 cm, subleathery, rusty puberulent when young but glabrate when mature abaxially, glabrous adaxially, midrib elevated abaxially, impressed adaxially, lateral veins 9–11 pairs, oblique, elevated abaxially, impressed or plane adaxially, evanescent within leaf margin, transverse veins remote, conspicuous, always forked, veinlets reticulate, shallowly foveolate, base acute to broadly cuneate, apex abruptly shortly acuminate. Panicle axillary on upper part of branchlet, 20–35 cm, many branched; terminal branch (3–)5- or 6-flowered; peduncle 10–15 cm, peduncle and rachis densely rusty puberulent. Pedicels slender, ca. 2 mm, dilated in fruit, densely rusty puberulent. Perianth lobes ovate, (1.5–)2–2.5 mm, densely rusty puberulent, outer ones smaller, 3-nerved, inner ones large, 5-nerved, all deciduous when in fruit. Fertile stamens small; filaments villous, those of 3rd whorl each with 2 large and nearly stalkless glands at base, others glandless; anthers of 1st and 2nd whorls oblong, glandular, with introrse cells, those of 3rd whorl rectangular, glandular, with extrorse cells. Staminodes minute, reniform. Ovary ovoid; style short and oblique; stigma capitate. Fruit oblong, up to 5 × 2.8 cm, green when fresh but purple-black when mature; fruit stalk fleshy when fresh, purple-red, ca. 1 cm, ca. 4 mm in diam. on dilated top. Fl. Jul, fr. Oct–Mar of next year.

Evergreen broad-leaved forests from humid valleys to mountaintops; (1000–)1200–1500(–1900) m. SE Xizang, S and SE Yunnan [NE India, Laos, Myanmar, Thailand, Vietnam].

This species is a dominant tree of evergreen broad-leaved forests in the region.

9. *Alseodaphne hokouensis* H. W. Li, *Acta Phytotax. Sin.* 17(2): 71. 1979.

河口油丹 he kou you dan

Trees. Branchlets brownish when dry, striate, glabrous. Terminal buds subglobose, ca. 2 mm in diam.; bud scales brown, broadly ovate, acute at apex, glabrous. Leaves alternate; petiole 1.5–3 cm, concave-convex, glabrous; leaf blade brown abaxially when dry, green-brown adaxially, elliptic to oblong, 10.5–17 × 4–6.5 cm, subleathery, glabrous on both surfaces, midrib elevated abaxially, impressed adaxially, lateral veins 9–13 pairs, slightly elevated on both surfaces, oblique, evanescent and interconnected near leaf margin, transverse veins and veinlets densely reticulate, conspicuous on both surfaces, base broadly cuneate to subrounded, apex abruptly shortly acuminate. Panicle 10.5–15 cm, inserted on lower part of young branchlet; peduncle branched at middle or above, peduncle and rachis glabrous; bracts and bracteoles linear, ca. 1.5 mm, acute, ciliate, caducous. Pedicels 3–4 mm, slightly dilated on top, glabrous. Flowers small, ca. 2.5 mm. Perianth tube short; perianth lobes ovate, subequal, ca. 2 × 1.5 mm, slightly acute, glabrous outside, gray pubescent inside, deciduous. Fertile stamens 9, minute, ca. 1.5 mm in 1st and 2nd whorls, ca. 1.7 mm in 3rd whorl; filaments villous, ca. 0.7 mm in 1st and 2nd whorls, ca. 1 mm in 3rd whorl, those of 3rd whorl each with 2 stalked

orbicular-reniform glands at base, others glandless; anthers of 1st and 2nd whorls oblong, almost as long as filament, with introrse cells, those of 3rd whorl rectangular, with extrorse cells. Ovary ovoid, ca. 1.5 mm, glabrous, attenuate into a ca. 0.5 mm long style; stigma discoid, slightly lobed. Fruit unknown. Fl. May.

- Evergreen broad-leaved forests; ca. 700 m. SE Yunnan.

10. *Alseodaphne petiolaris* (Meisner) J. D. Hooker, Fl. Brit. India 5: 145. 1886.

长柄油丹 chang bing you dan

Nothaphoebe petiolaris Meisner in A. Candolle, Prodr. 15(1): 59. 1864.

Trees, up to 20 m tall, ca. 10 cm d.b.h. Branchlets brownish, robust, subverticillate, slightly angled, scattered with suborbicular corky lenticels, glabrous except young part. Terminal buds ovoid; bud scales compact, densely brown puberulent. Petiole robust, 1.5–2.5(–5) cm, concave-convex, glabrous; leaf blade brown on both surfaces but green-white abaxially when young, opaque abaxially, shiny adaxially, large, obovate-oblong or oblong, 14–26 × 6–15 cm, thickly leathery, midrib elevated abaxially, impressed adaxially, lateral veins ca. 11 pairs, very conspicuous abaxially, slightly elevated adaxially, oblique, arcuately connected at ends, transverse veins and veinlets reticulate, conspicuously elevated on both surfaces, base cuneate or subrounded and always unequal on sides, apex rounded or obtuse, abruptly shortly acuminate or emarginate. Panicle subterminal, clustered at apex of branchlet, (10–)15–30 cm, many flowered, branched, lowest branches up to 10 cm; peduncle 6–13 cm, rusty pubescent along rachis especially on nodes. Pedicels ca. 2 mm, rusty pubescent. Flowers small, ca. 2.5 mm. Perianth tube broadly conical, ca. 1 mm; perianth lobes 6, orbicular-ovate, obtuse, outer ones ca. 2 × 1.8 mm, inner ones ca. 2.5 × 2 mm, densely rusty pubescent on both surfaces. Fertile stamens 9, ca. 1.2 mm in 1st whorl, ca. 1.8 mm in 2nd whorl, and ca. 2.8 mm in 3rd whorl; filaments complanate, pilose, very short in 1st whorl, almost as long as anther in 2nd and 3rd whorls, those of 3rd whorl each with 2 shortly stalked orbicular-cordate glands, others glandless; anthers of 1st whorl broadly ovate, obtuse, ca. 0.8 mm, with 2 upper smaller cells and 2 lower large cells, cells all introrse, anthers of 2nd whorl broadly ovate-ellipsoid, obtuse, with 4 introrse cells, anthers of 3rd whorl ellipsoid, truncate or slightly emarginate on middle at apex, with 4 extrorse-lateral cells. Staminodes minute. Ovary ovoid, ca. 0.8 mm, glabrous, attenuate into a ca. 1.6 mm long style; stigma peltate, 3-lobed. Fruit oblong-ovoid, ca. 2.8 × 1.3 cm, apex rounded, fleshy; fruit stalk robust, ca. 5 mm, up to 4 mm on dilated top. Fl. Oct–Nov, fr. Dec–Apr or May of next year.

Dry sparse forests, evergreen broad-leaved forests; 600–900 m. S Yunnan [India, Myanmar].

