

## 11. HOMALIUM Jacquin, Enum. Syst. Pl. 5, 24. 1760.

天料木属 *tian liao mu shu*

*Astranthus* Loureiro; *Blakwellia* Commerson ex Jussieu (1789), not Scopoli (1777), nor Lamarck (1785); *Pierrea* Hance (1877), not F. Heim (1891), nom. cons.

Trees or shrubs. Leaves alternate, rarely opposite or verticillate; stipules caducous; usually petiolate; leaf blade pinnate-veined, margin with glandular teeth, rarely entire. Flowers bisexual, epigynous, small, in terminal or axillary, many flowered racemes or panicles, inserted singly along rachis, or in sessile to shortly pedunculate fascicles; bracts small, caducous or persistent; pedicels slender in flower, articulate at or above middle. Sepals and/or petals often accrescent after anthesis. Calyx tube obconic, adnate to lower 2/3 of ovary and later to lower 2/3 of capsule; sepals (4 or) 5–8(–12), spreading, linear, oblong, or obovate-spatulate, persistent. Petals inserted at rim of calyx tube, usually isomerous with and similar to sepals, alternating with them. Disk glands 1 opposite each sepal, rarely more or fewer, small, fleshy, ± globose and hairy. Stamens inserted singly or in groups before each petal, alternating with disk glands and inserted between them, usually finally overtopping perianth; filaments free, filiform; anthers subglobose, small, dorsifixed. Ovary semi-inferior, only upper conic part free above adnate calyx tube, 1-loculed; placentas 2–6(–8), with (1–)3–7 ovules near apex of each placenta; styles 2–5(–7), filiform, free or united in lower 1/3 or less, free parts divergent, usually finally overtopping perianth; stigmas capitate to punctiform, small. Capsule obconic, small, for most of its length enclosed in adnate calyx tube and persistent perianth segments, leathery, apex 2–8-valvate; styles ± persistent. Seeds 1 to few.

Between 180 and 200 species: tropical regions of both hemispheres; ten species (six endemic) in China; four additional species (all endemic) are poorly known.

In Chinese species: disk glands 1 or 2 opposite each sepal; stamens 1 opposite each petal; capsules to 7 mm.

Much uncertainty remains in the taxonomy of Chinese *Homalium*. Further gatherings and detailed study are recommended to establish reliable diagnostic characters (especially comparing the perianth in flower and fruit) and a stronger taxonomic framework. Where possible, descriptions of taxa in this account have been extended to include detail of perianth indumentum, which can be a useful character at species level. Sepal and petal lengths (both absolute and relative) are sometimes less useful, because of their accrescent nature. Inflorescence type (panicle vs. raceme) needs to be used with caution: apparent racemes sometimes have lateral branches although these are very short (to ca. 5 mm); false panicles occur when the leaves subtending all axillary racemes on a lateral branch are lost.

See also the four inadequately known species briefly described at the end of *Homalium*.

### 1a. Inflorescence paniculate.

- 2a. Leaves 17–19 × 5–7 cm, hairs on calyx tube spreading ..... 2. *H. kwangsiense*
- 2b. Leaves 3–14 × 1–6 cm, hairs on calyx tube spreading or appressed.
  - 3a. Leaf acumen more than 10 mm, usually much longer(–30 mm), adaxial surface of leaf drying blackish brown, shiny; hairs on calyx tube appressed ..... 10. *H. phanerophlebium*
  - 3b. Leaf acumen less than 8 mm, or absent, adaxial surface of leaf not drying blackish brown, nor shiny; hairs on calyx tube spreading or appressed.
    - 4a. Leaf blade narrowly elliptic, narrowly oblong-elliptic, or slightly oblanceolate, 1–3 cm wide, usually 3–4 × as long as wide, petiole 2–5 mm, lateral veins 4–6 pairs ..... 1. *H. stenophyllum*
    - 4b. Leaf blade elliptic or obovate, sometimes broadly so, 3–6 cm wide, usually ca. 2 × as long as wide, petiole 4–15 mm, lateral veins 5–8 pairs ..... 3. *H. paniculiflorum*

### 1b. Inflorescence racemelike.

- 5a. Flowers small, to 3.5 mm from base of calyx tube to tip of longest perianth segment ..... 5. *H. ceylanicum*
- 5b. Flowers ca. 4 mm or more from base of calyx tube to tip of longest perianth segment.
  - 6a. Abaxial surface of leaf sparsely to densely hairy throughout, hairs long (ca. 0.5 mm), spreading, yellowish, especially dense in young leaves, abaxial surface of older leaves soft and velutinous to touch ..... 7. *H. mollissimum*
  - 6b. Abaxial surface of leaf with hairs on midvein and lateral veins only, or completely glabrous, or soon becoming so.
    - 7a. Petioles 8–15 mm, leaves with acumen ca. 10 mm or more, blade drying blackish brown; hairs on calyx tube appressed ..... 10. *H. phanerophlebium*
    - 7b. Character combination not as above; petioles ca. 6 mm or less; hairs on calyx tube appressed or spreading.
      - 8a. Leaves narrowly elliptic or narrowly elliptic-oblong, 2–3 cm wide, 3–4 × as long as wide ..... 9. *H. sabiifolium*
      - 8b. Leaves elliptic, oblong-elliptic, or obovate-elliptic, 3–7 cm wide, ca. 2 × as long as wide.
        - 9a. Petals broadly spatulate, 2–3 mm wide across broadest part, apex broadly obtuse ..... 4. *H. kainantense*
        - 9b. Petals oblanceolate linear to narrowly spatulate, 1–1.5 mm wide across broadest part, apex acute to narrowly obtuse.
          - 10a. Twig tips and petioles hairy ..... 6. *H. cochinchinense*

10b. Twig tips and petioles glabrous ..... 8. *H. breviracemosum*

**1. *Homalium stenophyllum*** Merrill & Chun, Sunyatsenia 2: 287. 1935.

海南天料木 hai nan tian liao mu

Trees, rarely shrubs, to 18 m tall; bark grayish or brownish gray, not flaking; young branchlets hairy; old branches terete, glabrous. Stipules minute, subulate, glabrous, early caducous; petiole 2–5 mm, hairy when young, gradually glabrescent; leaf blade narrowly elliptic, narrowly oblong-elliptic, or slightly oblanceolate, usually  $3-4 \times$  as long as wide,  $4-10 \times 1-3$  cm, thinly leathery, both surfaces glabrous, sometimes abaxially fasciculate-hairy in vein axils, lateral veins 4–6 pairs, reticulate veins slightly conspicuous, base narrowly to broadly cuneate, margin shallowly serrate to subentire, slightly revolute, apex acute to shortly acuminate, rarely obtuse, acumen to 6 mm, usually shorter, extreme tip blunt. Inflorescence terminal or axillary, paniculate, 4–8(–12) cm; rachis pubescent, hairs spreading; lower bracts resembling small leaves, upper bracts linear, lanceolate, or narrowly oblanceolate, 2–3 mm, glabrous except for ciliate margin. Pedicels 1.5–2 mm, articulate near middle, pubescent, hairs spreading. Flowers numerous, inserted along rachis singly or in fascicles, white, 8- or 9-merous, ca. 5 mm in diam., to 8 mm in diam. at fruiting stage. Calyx tube (1–)1.5–2 mm, smooth or longitudinally ribbed, outside pubescent, hairs spreading, long; sepals drying white, 2.5–3 mm, linear to linear-spatulate, both sides glabrous, margin densely ciliate, cilia longer than 1/2 width of sepal, apex acute to obtuse, often mucronate. Petals narrowly elliptic or linear-oblanceolate, 3–4 mm, slightly longer and wider than sepals, both sides glabrous, margin densely ciliate, cilia as for sepals, apex slightly obtuse. Disk glands ca. 0.5 mm in diam., pubescent. Stamens 8 or 9(or 10); filaments 3–4.5 mm, finally overtopping perianth, hairy, hairs spreading, white, long. Free part of ovary sparsely hairy, hairs spreading, white, long; styles 3 or 4, ca. 2.5 mm, joined in basal part to form a thick column, sparsely hairy in lower part; placentas 3 or 4, each with 2–4 ovules. Capsule ca. 3.5 mm. Fl. May–Dec, fr. Dec–Jan of following year.

• Mountain forests, also on rocks along streams; 500–1000 m. Hainan.

*Lau 3225* (A), collected from Hainan, is not referable to *Homalium stenophyllum*; see inadequately known “species A” below. Also from Hainan, *A. Chun & Tso 43732* (A, K) looks rather different from most other specimens; perhaps the inflorescences are at a younger stage.

**2. *Homalium kwangsiense*** How & Ko, Acta Bot. Sin. 8: 35. 1959.

广西天料木 guang xi tian liao mu

Trees, to 15 m tall; bark not flaking; branchlets terete, striate, dull-yellowish pubescent. Petiole 2–3 mm, stout, densely dark brown pubescent; leaf blade black-brown when dry, ovate-elliptic or ovate-oblong,  $17-19 \times 5-6$  cm, thinly leathery, abaxially sparsely crisped-pubescent, more densely so along midvein and lateral veins, adaxially papillose-pubescent, midvein prominent abaxially, flat adaxially, lateral veins 9–11 pairs, conspicuously anastomosing near margin, base broadly cuneate to slightly obtuse, margin crenulate-serrate, teeth apices

fasciculate-hairy, leaf apex long acuminate, acumen 8–12 mm, straight or falcate. Inflorescence axillary, paniculate, 10–13 cm; rachis densely pubescent, hairs spreading, dull yellowish. Pedicels 2–4 mm, articulate at middle, sparsely pubescent, hairs spreading, dull-yellowish. Flowers numerous, inserted singly on rachis or less often 2–4-fasciculate, creamy-white, 8- or 9-merous, 6–7 mm in diam. Calyx tube ca. 2 mm, conspicuously longitudinally canaliculate, sparsely pubescent, hairs spreading, dull-yellowish, long; sepals linear-lanceolate, 3.5–4 mm, margin long ciliate, apex mucronate. Petals linear-oblanceolate, ca. as long as sepals but broader, apex mucronate. Disk glands squarish, pubescent. Stamen filaments 4–5 mm, soon overtopping perianth, sparsely hairy in lower part, hairs spreading, long. Free part of ovary densely pubescent, hairs spreading, yellowish, long; styles 3 or 4, 4–7 mm, indumentum as for ovary; placentas 3(or 4), each with 3–5 pendulous ovules. Capsule ca. 4 mm. Fl. Aug–Sep, fr. Sep–Dec.

• Shaded places in forests; low elevations. Guangxi.

**3. *Homalium paniculiflorum*** How & Ko, Acta Bot. Sin. 8: 36. 1959.

广南天料木 guang nan tian liao mu

Trees or shrubs, 8–12 m tall; bark gray or black-gray, not flaking; branchlets black-brown, terete, densely pubescent when young, soon glabrescent, irregularly angled. Stipules not seen, possibly early caducous; petiole 4–15 mm, pubescent; leaf blade elliptic or obovate, sometimes broadly so, excluding acumen usually ca.  $2 \times$  as long as wide,  $6-10 \times 3-6$  cm, papery, both surfaces glabrous, or abaxially barbate in vein axils, midvein and lateral veins raised on both surfaces, lateral veins 5–8 pairs, base generally broadly acute to rounded, margin serrate, teeth obtuse, leaf apex obtuse to rounded, contracting abruptly to a short acumen to ca. 5 mm. Inflorescence terminal or axillary, paniculate, 9–11 cm; rachis densely pubescent, hairs appressed, short; bracts ovate, 1–3 mm, pubescent, early caducous. Pedicels 2–3.5 mm, articulate above middle, densely pubescent, hairs appressed, short. Flowers numerous, inserted along rachises singly or in fascicles of 2–4, yellowish, fragrant, 8-merous, 4–6 mm in diam. Calyx tube 2–2.5 mm, ca. 1 mm in diam., pubescent, hairs appressed, mostly much shorter than those of sepal and petal margins; sepals linear-oblong,  $2-3 \times$  ca. 0.5 mm, apex acute, both surfaces hairy, sparsely so on outside, hairs white, long (ca. 0.5 mm), appressed, especially on outside, less so on inside; sepal margin densely ciliate, hairs spreading, white, longer than 1/2 width of sepal. Petals narrowly oblong,  $2.5-3.5 \times$  ca. 0.5 mm, slightly longer and broader than sepals, indumentum of both surfaces and margin similar to sepals, apex obtuse. Disk glands ca. 0.5 mm in diam., hairy. Stamens 4–5 mm, finally overtopping perianth, glabrous or with a few long hairs in lower part. Free part of ovary hairy, hairs spreading, white, long; styles (2 or)3, 2.5–3 mm, free nearly to base, sparsely hairy in lower half, hairs spreading; placentas 3, each with 4 or 5 ovules. Capsule 6–7 mm, 1.5–2 mm in diam. Fl. Jun–Dec, fr. Dec–Feb of following year.

• Dense or thin forests, thickets along streams, dry or moist gentle

slopes, sandy or clay soil, seashores; (sea level to) 100–400 m. Guangdong, Hainan.

**4. *Homalium kainantense*** Masamune, Trans. Nat. Hist. Soc. Taiwan 33: 169. 1943.

阔瓣天料木 *kuo ban tian liao mu*

*Homalium brevisepalum* How & Ko.

Trees, 10–12 m tall; branchlets purple-brown or black-brown, terete, twig tips at first minutely whitish puberulous (view at  $\times 10$  mag.), glabrescent. Stipules linear-oblong, to ca. 4 mm, papery, minutely puberulous, early caducous; petiole very short, ca. 1.5 mm, rarely to 3 mm, stout, very sparsely puberulous; leaf blade elliptic, oblong-elliptic, or obovate-elliptic, 7–13  $\times$  4–6 cm, papery or subleathery, both surfaces initially densely and minutely puberulous (almost imperceptibly, view at  $\times 20$  mag.) with spreading hairs, becoming glabrous or with a few minute hairs remaining along veins (view at  $\times 20$  mag.), midvein and lateral veins raised abaxially, flat adaxially, lateral veins 6 or 7 pairs, reticulate veins inconspicuous, base acute, cuneate, margin serrate, teeth obtuse, apex broadly acute to obtuse, contracting to an acumen 5–10 mm. Inflorescence axillary, racemelike, 7–12 cm, sometimes with very short branches less than 5 mm; rachis pubescent, hairs spreading, whitish, short; bracts not seen. Pedicels ca. 3 mm, articulate near apex, pubescent, hairs spreading, short. Flowers numerous, 2–4-fasciculate along rachis, white, 5–7-merous, ca. 1.2 cm in diam., fragrant. Calyx tube narrowly obconic, 3–4 mm, sparsely puberulous, hairs whitish, semiappressed, short; sepals linear-lanceolate, 1.5–2 mm, outside sparsely pubescent, hairs appressed and short, margin ciliate with short (0.1–0.2 mm) appressed hairs, apex acute or obtuse. Petals ca. 5  $\times$  2–3 mm, broadly spatulate, conspicuously veined, outside glabrous, inside with a few semispreading short hairs toward base, margin ciliate, hairs spreading and short (ca. 0.2 mm), apex obtuse. Disk glands ca. 1 mm wide, sides sparsely hairy, apex flat, glabrous. Stamen filaments ca. 6 mm, longer than or equal to petals, with a few hairs scattered in lower part. Free part of ovary sparsely hairy, hairs spreading, whitish, short (ca. 0.2 mm); styles 3, free nearly to base, ca. 4 mm, hairy in lower part, hairs as for ovary; placentas 3, each with 2 or 3 ovules. Capsules (not seen) probably 6–8 mm. Fl. Aug–Dec, fr. Sep–Mar of following year.

• Mixed forests and thickets; low elevations. Guangdong, Guangxi, Hainan.

**5. *Homalium ceylanicum*** (Gardner) Bentham, J. Linn. Soc., Bot. 4: 35. 1859 [“*zeylanicum*”].

斯里兰卡天料木 *si li lan ka tian liao mu*

*Blackwellia ceylanica* Gardner, Calcutta J. Nat. Hist. 7: 452. 1847; *Homalium balansae* Gagnepain; *H. bhamoense* Cubitt & W. W. Smith; *H. ceylanicum* var. *laoticum* (Gagnepain) G. S. Fan; *H. hainanense* Gagnepain; *H. laoticum* Gagnepain; *H. laoticum* var. *glabratum* C. Y. Wu.

Trees, 6–30(–40) m tall, buttressed; bark smooth to coarse; branchlets brown, angular to terete, puberulous to glabrous. Stipules linear-lanceolate, 1.5–3 mm, glabrous or glabrescent,

early caducous; petiole 5–12 mm, glabrous or finely hairy; leaf blade variable in shape and size, elliptic to oblong, rarely obovate, excluding acumen 1.5–2.5(–3)  $\times$  as long as broad, 6–18(–20)  $\times$  2.5–8(–9) cm, thinly leathery to thickly papery, abaxially pubescent with appressed short hairs or glabrous, adaxially glabrous or  $\pm$  glabrescent, midvein raised abaxially, flat or impressed adaxially, lateral veins 7–10 pairs, raised abaxially, base acute with concave sides, acute-cuneate, or subrounded, margin serrate-crenate to practically entire, teeth apices obtuse, leaf apex acute to rounded, contracting (sometimes very abruptly) to an acumen to 1 cm. Inflorescence axillary, racemose, pendulous, 5–20(–30) cm; rachis sparsely to very densely, pale grayish brown shortly pubescent; bracts narrowly triangular, minute, to ca. 2 mm, papery, sparsely hairy, caducous. Pedicels 1–3 mm, articulate at or above middle, densely puberulous to appressed shortly pubescent. Flowers numerous, in fascicles of 3 to ca. 20, sometimes very crowded along rachis, reddish or whitish, 4–6-merous, 2.5–3 mm in diam. at anthesis, fragrant. Calyx tube 0.5–1.5 mm, sparsely to densely pubescent, hairs whitish, appressed, short (0.1–0.2 mm); sepals linear-oblong or spatulate, 0.5–2  $\times$  0.3–0.5 mm, apex acute, indumentum outside as for calyx tube, inside slightly denser, margin densely ciliate, hairs spreading, whitish, length less than 1/2 to 1  $\times$  sepal width. Petals whitish or pinkish, ovate-oblong or spatulate, 0.8–2  $\times$  ca. 0.6 mm, both surfaces densely appressed whitish pubescent, sometimes more so than sepals, margin densely white-ciliate, apex obtuse. Disk glands truncate at apex, hairy. Stamens 4–6; filaments 2–3 mm, glabrous; anthers ca. 0.4 mm. Free part of ovary gray pubescent; placentas 4–6, each with 3–6 ovules; styles 4–6, free nearly to base, 1–2 mm, sparsely hairy at base; stigmas capitate to slightly peltate. Mature fruit not seen. Fl. Jan–Nov, fr. Feb–Dec.

Sparse or dense forests of mountain valleys, forest margins, rain forests, evergreen broad-leaved forests, along streams, in forested ravines, on gentle slopes; 400–1200 m. Guangdong, Guangxi, Hainan, Hunan, Jiangxi, SE Xizang, S Yunnan [Bangladesh, India, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam].

*Homalium ceylanicum* is cultivated for ornament, and its wood is used commercially. Yu (in Fu & Jin, China Pl. Red Data Book 1: 304–305. 1992) gave *H. laoticum* var. *glabratum* as an accepted taxon and categorized it as vulnerable. They noted it as a rare and valuable timber tree, with small, scattered populations under threat from felling and bush fires. Natural regeneration is poor and seed set is low (despite prolific flowering).

*Homalium ceylanicum* is treated here in a wide sense as a highly polymorphic species within which various elements show intergrading variation in indumentum, leaf size, and raceme length. Indian floras recognize also *H. ceylanicum* subsp. *minutiflorum* (Kurz) Mitra, with *H. ciliatum* N. Mukherjee in synonymy. Wu Zhengyi (pers. comm., 2005) recommended recognition of *H. bhamoense* at species level, with a new species to accommodate plants from Xizang. Resolution of the *H. ceylanicum* complex requires a study across its entire range. Material with mature fruit is apparently scarce. Verdcourt (in Dassanayake & Clayton, Rev. Handb. Fl. Ceylon 10: 219. 1996) recommended a field study to investigate fruit production.

**6. *Homalium cochinchinense*** (Loureiro) Druce, Rep. Bot. Exch. Club. Brit. Isles 4: 628. 1917.

天料木 tian liao mu

*Astranthus cochinchinensis* Loureiro, Fl. Cochinch. 1: 222. 1790; *Blackwellia fagifolia* Lindley; *B. padiflora* Lindley; *Homalium cochinchinense* var. *pseudopaniculatum* (Yamamoto) Li; *H. digynum* Gagnepain; *H. fagifolium* (Lindley) Benth; *H. fagifolium* var. *pseudopaniculatum* Yamamoto.

Shrubs or small trees, 2–10 m tall; bark gray-brown or purple-brown; branchlets terete, densely yellowish pubescent when young, gradually glabrescent. Stipules linear to narrowly obovate, to 8 mm, papery, hairy; petiole 2–3 mm (rarely to 6 mm), yellowish pubescent; leaf blade broadly elliptic, elliptic-oblong, or obovate, ca. 2 × as long as wide, 6–15 × 3–8 cm, thickly papery, both surfaces pubescent along midvein and lateral veins, midvein raised abaxially, impressed adaxially, lateral veins 7–9 pairs, anastomosing near margin, conspicuous on both surfaces, margin obtusely serrate, serrate-crenate, or dentate, sometimes minutely so, remotely toothed to entire toward leaf base, base acute, sometimes broadly so, usually cuneate, extreme base sometimes rounded, apex variable, acute to shortly acuminate (acumen to ca. 10 mm) or not. Inflorescence racemelike, (5–)8–15 cm, sometimes with very short branches less than 5 mm; rachis pubescent, hairs spreading; bracts linear to lanceolate, 1–4 mm, papery, pubescent, early caducous. Pedicels 2–3 mm, articulate above middle, densely pubescent, hairs spreading, yellowish. Flowers numerous, inserted along rachis singly or few together in sessile to very shortly pedunculate fascicles, whitish, 7- or 8-merous, 6–9 mm in diam., fragrance-free (once recorded). Calyx tube 2–3 mm, longitudinally ribbed, sparsely pubescent, hairs spreading or semispreading, white, mostly shorter than hairs of sepal and petal apex margins; sepals linear to narrowly oblanceolate, 2–4 × 0.3–0.5 mm, membranous, with conspicuous midvein, outside subglabrous to sparsely hairy, inside sparsely hairy, hairs on both surfaces appressed or spreading, white, shorter and generally weaker than those on margins; sepal margin ciliate, hairs spreading, white, ca. as long as 1/2 sepal width; sepal apex acute, often apiculate. Petals 2–4.5 mm × 1–1.5 mm, narrowly oblanceolate-linear to narrowly spatulate, midvein and lateral veins conspicuous, indumentum on both surfaces and margin as for sepals, hairs at petal apex 0.5–0.7 mm, ca. 1/2 as long as petal width. Disk glands pubescent, hairs white, straight, long. Stamens 6–9; filaments 3–4 mm, sparsely hairy in lower half, hairs spreading, white, long. Free part of ovary densely hairy, hairs spreading, white, straight, long; styles usually 3, ca. 3 mm, hairy in lower 1/3, hairs as for ovary; placentas 3, each with 2–4 ovules. Capsule 5–6 mm, subglabrous. Fl. Feb–Nov, fr. Sep–Dec.

Broad-leaved forests in mountains; 400–1200 m. Fujian, Guangdong, Guangxi, Hainan, Hunan, Jiangxi, Taiwan [Vietnam].

See also inadequately known “species D” (*Liang 63511* (K) and *Liang 63788* (K), from Hainan), below.

**7. *Homalium mollissimum*** Merrill, Lingnan Sci. J. 14: 39. 1935.

毛天料木 mao tian liao mu

Shrubs or small trees, 6–7 m tall; bark gray or gray-brown; branchlets terete, densely pubescent, hairs spreading, yellowish. Stipules sometimes persistent, 5–10 mm, linear, narrowly elliptic, or obovate, pubescent with long white hairs, margin toothed or erose; petiole 2–5 mm, densely pubescent; leaf blade elliptic or oblong-elliptic, rarely oblong or obovate, ca. 2 × as long as wide, 5–11 × 2.5–5 cm, leathery, both surfaces sparsely to densely yellow pubescent throughout, midvein and lateral veins raised abaxially, flat adaxially, lateral veins 6–8 pairs, base acute to rounded, margin remotely shallowly serrate, apex acute to shortly acuminate, acumen to ca. 7 mm. Inflorescence terminal or axillary, racemose, 4–8 cm; rachis densely pubescent, hairs spreading, yellowish white, long; bracts narrowly lanceolate to linear, 1–4 mm, papery, margin entire, toothed, or erose, pubescent, hairs spreading, white, long. Pedicels 2–3 mm, articulate above middle, densely pubescent, hairs spreading, yellowish, long. Flowers numerous, inserted along rachis singly or in pairs, white, 7- or 8-merous, 4–6 mm in diam. Calyx tube ca. 2 mm, conspicuously longitudinally ribbed, outside densely pubescent, hairs mostly as long as those on sepal and petal margins, spreading, yellowish; sepals linear or oblanceolate-linear, 3–5 × 1–1.5 mm, apex usually acute, both surfaces sparsely pubescent, hairs spreading, white, long; sepal margin densely ciliate, hairs spreading, white, long. Petals oblanceolate, slightly longer than sepals, apex acute or obtuse, both surfaces sparsely pubescent, hairs spreading, white, long; margin densely ciliate, hairs spreading, long, to 1.5–2 mm at petal apex. Disk glands minute. Stamens 7 or 8; filaments ca. equal to or overtopping petals, with long spreading hairs in lower part. Free part of ovary pubescent, hairs spreading, white, straight, ca. 1 mm or more; styles 3 or 4, ca. 3 mm, ca. 2 × longer at fruiting stage, hairy except for distal 1/4, hairs as for ovary; placentas 3 or 4, each with 3 or 4 ovules. Capsule 5–7 mm. Fl. Jun–Dec, fr. Jul–Jan of following year.

Mountain forests, thickets, on dry, rocky, clay or sandy soil, gentle slopes; low elevations. Hainan [N Vietnam].

*Taam 286* (A, K), collected from Guangdong, might not be referable to *Homalium mollissimum*; see inadequately known “species B” below.

**8. *Homalium breviracemosum*** How & Ko, Acta Bot. Sin. 8(1): 40. 1959.

短穗天料木 duan sui tian liao mu

Shrubs, 1.5–2.5 m tall, glabrous throughout except for inflorescence; bark thin; branchlets black-brown, terete, slender, densely and irregularly striate. Petiole purple-black, very short, ca. 1 mm; leaf blade elliptic-oblong or obovate-oblong, (5–)7–9(–11) × 3.5–4.5 cm, thinly papery, midvein and lateral veins raised abaxially, slightly raised adaxially, lateral veins 4–6 pairs, anastomosing along margin, base slightly obtuse, margin sparsely crenulate, apex shortly acuminate or acute. Inflorescence axillary, racemose, 4–5 cm; rachis puberulous. Pedicels filiform, ca. 2 mm, articulate near apex, spreading pubescent. Flowers numerous, solitary or rarely 2-fasciculate along rachis, white, 6- or 7-merous. Calyx tube narrowly obconic, 3–3.5 mm, longitudinally canaliculate, spreading pubescent; sepals oblan-

ceolate-linear, 3–3.5 × ca. 0.6 mm, conspicuously 3-veined, outside subglabrous, inside pubescent, margin ciliate, apex mucronate. Petals oblanceolate-linear, 4–4.5 × 1–1.5 mm, conspicuously 3-veined, outside subglabrous, inside pubescent, hairs spreading and long, margin ciliate, apex slightly obtuse or acute. Disk glands nearly square, hairy. Stamen filaments ca. 4 mm. Styles 3, glabrous or nearly so; placentas 3, each with 4 ovules. Fl. Aug–May, fr. Feb–Nov.

- Sparse forest margins; low elevations. Guangdong, Guangxi.

Of the present authors, Yang considers *Homalium breviracemosum* to be a synonym of *H. cochinchinense*; Zmarzty has seen no material of *H. breviracemosum*.

**9. *Homalium sabiifolium*** How & Ko, Acta Bot. Sin. 8(1): 43. 1959 [*“sabiæfolium”*].

窄叶天料木 zhai ye tian liao mu

Shrubs, 2–3 m tall; bark gray-brown, not flaking; branchlets terete, pubescent when young, glabrescent, hairs whitish, semiappressed. Stipules linear, nearly filiform, 1.5–2 mm, hairy, early caducous; petiole short, ca. 2 mm, pubescent, swollen; leaf blade narrowly elliptic, rarely narrowly elliptic-oblong, ca. 3 × as long as wide, 8–10 × 2–3 cm, leathery, both surfaces usually glabrous, adaxially sometimes hairy along midvein and in vein axils, midvein raised abaxially, flat adaxially, lateral veins 6–8 pairs, base acute, margin shallowly obtusely serrate, apex acute or tapering to an acuminate tip 1–1.5 cm. Inflorescence terminal or axillary, racemose, 4–6 cm; upper bracts linear to lanceolate, 1.5–2 mm, papery, pubescent, hairs semiappressed. Pedicels 2–3 mm, articulate at middle, pubescent, hairs semiappressed. Flowers numerous, inserted along rachis singly or in pairs, (8–)10-merous, 6–8 mm in diam. Calyx tube 2–3 mm, longitudinally ribbed, pubescent, hairs whitish, appressed, short, ca. 0.2 mm; sepals 2–3 × ca. 0.5 mm, linear or linear-lanceolate, both sides sparsely pubescent, hairs appressed, margin ciliate, hairs spreading or semispreading, mostly longer than those on calyx tube; sepal apex mucronate. Petals subequal to sepals in size, or longer (to ca. 4 mm) and broader as fruit develops, outside sparsely appressed hairy, inside with hairs denser, longer, more closely appressed, margin ciliate, hairs spreading, white, straight, to ca. 0.5 mm. Disk glands ca. 0.5 mm in diam. Stamens 3–5 mm, overtopping perianth, sparsely pubescent except in upper 1/3, hairs spreading. Free part of ovary sparsely pubescent throughout, hairs spreading, white, long; styles 4, ca. 4 mm, joined in basal 1/4 to form a short column, hairy except in distal 1/3, hairs spreading, white, long; placentas 3, each with 3 or 4 ovules. Fl. Oct–Feb of following year, fr. Mar–Nov.

- Sparse forests of mountain valleys; ca. 500 m. Guangxi.

#### Inadequately known species

The following are informal descriptions, for use in identification only. No publication of new names nor typification is intended.

**11. *Homalium “species A”*** Hainan, *Lau* 3225 (A).

Twig tips puberulous. Petiole ca. 0.5 cm, glabrous; leaf blade drying reddish brown, ovate, 3–6 × 1.5–2 cm, both surfaces glabrous, base obtuse to rounded, margin shallowly serrate-crenate, apex broadly acute, contracting or tapering to a

**10. *Homalium phanerophlebium*** How & Ko, Acta Bot. Sin. 8(1): 44. 1959.

显脉天料木 xian mai tian liao mu

*Homalium phanerophlebium* var. *obovatifolium* S. S. Lai.

Trees, 8–10 m tall; bark gray to grayish brown; branchlets terete, initially pubescent with short curved (in dry material) hairs, soon glabrescent, markedly lenticellate. Stipules not seen, scars present; petiole 8–15 mm, pubescent with short curved hairs or practically glabrous; leaf blade drying blackish brown, elliptic-oblong or ovate-oblong, (3–)7–14 × (2–)3–5.5 cm, 2–3.5 × as long as wide, both surfaces glabrous, midvein and lateral veins slightly raised abaxially, adaxially flat, lateral veins 5–7 pairs, base acute, obtuse, or rounded, suboblique, margin remotely serrulate, appearing nearly entire, slightly revolute in dried state, apex usually obtuse, contracting gradually or abruptly to a narrow acumen 10–30 mm, extreme tip generally blunt, less often leaf apex acute. Inflorescence terminal or axillary, racemose or paniculate, 7–15 cm; rachis pubescent, hairs semi-spreading, curved, short; bracts ca. 1.5 mm, very narrow, glabrous or pubescent. Pedicels 1.5–2.5 mm, longer in fruit, articulate near middle, pubescent, below articulation hairs semi-spreading, curved, short, above articulation generally straighter and more appressed. Flowers numerous, inserted along rachis singly or in fascicles of 2–4, fragrant; (5 or)6 or 7(or 8)-merous, at anthesis 3–4 mm, to 6 mm in fruit (excluding styles). Calyx tube 1–1.5 mm at anthesis, sparsely pubescent with closely appressed hairs 0.1–0.2 mm, initially smooth, later becoming longitudinally ridged; sepals linear-oblong to narrowly obovate, ca. 2 × 0.4 mm at anthesis, both surfaces glabrous or with a few closely appressed hairs, margin ciliate, hairs straight, often appressed, 0.1–0.2 mm; sepal apex acute or rounded. Petals oblanceolate, slightly longer and wider than sepals, both surfaces glabrous except for sparse spreading hairs near base, margin ciliate, hairs spreading, ca. 0.3 mm, longer than hairs on sepal margin, shorter than 1/2 width of petal; petal apex obtuse, apiculate. Stamen filaments ca. 3.5 mm, glabrous except for long, spreading hairs toward base. Disk glands sparsely pubescent, hairs spreading, long. Free part of ovary pubescent, hairs spreading, long, similar to those on disk glands and petal margins; styles 2 or 3(or 4), free, 3–4 mm, glabrous or with a few spreading hairs near base; placentas 2 or 3(or 4), each with 3 or 4 ovules. Capsule excluding perianth segments 4–5 mm. Fl. Oct–Nov, fr. Dec–Feb of following year.

Mixed woods and thickets. Guangdong, Hainan [Vietnam].

The specimen *S. K. Lau* 5436 (A), from Hainan, is not referable to *Homalium phanerophlebium*; see inadequately known “species C” below.

blunt acumen to ca. 1 cm. Inflorescence axillary, paniculate, ca. 3 cm, slender; rachis with short, rather dense, spreading hairs. Flowers small, 3–4 mm excluding exerted stamens and styles, 7- or 8-merous. Calyx tube ca. 1 mm, glabrous or with short, appressed hairs; sepals linear oblong, 2–3 mm, outside glabrous or with a few appressed hairs on midvein, margin shortly cili-

ate. Petals ca. as long as sepals or longer, oblanceolate, indumentum as for sepals though margin cilia longer. Stamen filaments with long, sparse, spreading hairs in lower half. Free part of ovary and lower part of styles with indumentum as for stamens; styles 4, joined in lower part.

• Thickets on sandy soil, rocky dry steep slopes, described on herbarium label as “fairly common.” Hainan.

This species was previously identified as *Homalium stenophyllum*. The specimen is also annotated “*Homalium laui* Merr. n. sp.” (an unpublished name) and “Merr. & Metc. [?] sp. nov.”

### 12. *Homalium* “species B” Guangdong, *Taam 286* (A, K).

Twig tips very densely hairy, hairs spreading, yellowish. Petiole short, densely hairy; leaf blade drying distinctly reddish brown, elliptic to slightly obovate, 4–7 × 3–4 mm, abaxially similar with additional hairs sparsely scattered throughout blade, adaxially densely hairy on midvein and lateral veins, base obtuse, margin serrate except entire near base, apex widely acute to obtuse, contracting abruptly to a short acumen 3–4 mm. Inflorescence axillary, probably racemose though panicle-like through loss of subtending leaves, 5–7 cm; rachis very densely hairy, hairs spreading, yellowish; flowers nearly sessile, inserted singly on rachis or 2 to few together in rather congested fascicles, absent from basal 1/3 of rachis, ca. 7-merous, 2.5–5 mm excluding exerted stamens and styles, fetid. Calyx tube 1.5–2 mm, indumentum rather dense, hairs spreading, white; sepals 1–2 mm, narrowly oblong to slightly oblanceolate, adaxially with hairs more appressed than those on calyx tube, margin with long white cilia. Petals ca. as long as sepals though wider and more spatulate, indumentum as for sepals. Disk glands shortly and broadly obconic, small, ca. 0.3 mm in diam., pubescent with spreading long white hairs. Stamens with sparse, spreading long hairs in lower half. Free part of ovary densely hairy, hairs semispreading, long. Styles 3, free nearly to base, hairy in lower half, hairs as for ovary.

• Thickets, described on herbarium label as “rare.” Guangdong.

This species is very similar to *Homalium mollissimum* but the hairs on the perianth are shorter and the sepal apex is obtuse. The specimen at A is annotated “*Homalium villosinervium* Merr. & Metc. sp. nov.” (an unpublished name) and “type!”

### 13. *Homalium* “species C” Hainan, *Lau 5436* (A).

Twig tips pubescent, hairs spreading. Petiole 5–10 mm, initially sparsely appressed hairy, glabrescent; leaf blade narrowly ovate to oblong, 6–13 × 2.5–4 cm, both surfaces glabrous, base broadly obtuse to rounded, margin slightly serrate to nearly entire, apex widely acute to slightly obtuse, contracting to a blunt acumen to ca. 1 cm. Inflorescence axillary, 7–10 cm, racemelike though with very short lateral branches less than 5 mm; rachis with sparse spreading hairs. Flowers 6–8 mm (at this length possibly becoming accrescent in fruit), 6- or 7-merous. Calyx tube ca. 2 mm, with long semiappressed hairs; sepals 2–2.5 mm, narrowly oblong to lanceolate, with sparse, appressed hairs, margin long ciliate. Petals longer than sepals, or becoming so, indumentum as for sepals. Stamen filaments sparsely hairy in lower 1/2 to 2/3, hairs spreading, long. Disk glands obconic, small, ca. 0.2 mm in diam., pubescent with long spreading whitish hairs. Styles 4, joined in lower half, free part of ovary and basal 2/3 of styles with indumentum as for stamen filaments.

• Forests, on rocky sandy soil, dry steep slopes, described on label as “rare.” Hainan.

This species was previously determined as *Homalium phanero-plebium*, also annotated “*Homalium*, Merr. & Metc. sp. nov.” and, by C. Y. Wu (in 1990), “Holotype of *H. heterosemma* Merr. sp. nov. ined.” The leaves are similar to those of *H. phanero-plebium* but the perianth indumentum is different.

### 14. *Homalium* “species D” Hainan, *Liang 63511* (K) and *Liang 63788* (K).

Branchlets practically glabrous. Petiole 8–10 mm, glabrous; leaf blade elliptic to oblong-elliptic, 6–12 × 3–5 cm, both surfaces glabrous, lateral veins ca. 4 or 5 pairs, high ascending, base broadly acute, slightly oblique, margin serrate, teeth obtuse, leaf apex broadly acute, contracting gradually or more abruptly to an acumen ca. 1 cm. Inflorescence axillary (and ?terminal), paniculate, 7–13 cm; rachis with semiappressed to spreading hairs. Flowers 3–4 mm excluding exerted stamens, ca. 6- or 7-merous. Calyx tube 8–10 mm, with appressed hairs; sepals linear-oblong, ca. 2 mm, outside glabrous, inside with a few long, appressed hairs, margin long ciliate. Petals narrowly oblong-obovate, slightly longer and broader than sepals, indumentum as for sepals. Stamen filaments with a few long hairs toward base. Ovary, disk glands, and lower part of styles with long straight hairs; styles 3, joined in basal part.

• Mountain forests. Hainan.

This species was previously determined by Sleumer (determination slip dated 1953 on herbarium sheet) as *Homalium cochinchinense* but has paniculate inflorescences, glabrous petioles, and appressed hairs on the calyx tube. It is similar to *H. paniculiflorum* but has lateral veins fewer, more spaced, and higher ascending.

