

Three new species and a new variety of Fagaceae from Thailand

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ABSTRACT. Three new species of Fagaceae, *Castanopsis pseudo-hystrix*, *Castanopsis thaiensis* and *Lithocarpus loratefolius*, together with a new variety *Quercus mespilifolia* var. *pubescens*, are described and illustrated.

During work on a revision of the family Fagaceae for the Flora of Thailand, three undescribed species of the genera *Castanopsis* and *Lithocarpus* and one variety of the genus *Quercus* were discovered and are herewith described.

***Castanopsis pseudo-hystrix* Phengklai sp. nov.** haec. species *Castanopsidis hystricis* (Hook. f. et. Thom.) A. DC. similissima, sed foliis ovatis vel raro obovatis, coraceis, margine revoluta et in parte tertia apicali serrata, glandibus unam nucem habentibus, cupulis spinas ramosas et in 4–5 lineis irreguaribus distributas praebentibus differt. Typus: Thailand, Chiang Mai, *Smitinand* 90–198 (holotypus BKF!). Fig. 1.

Tree, 5–20 m high, 70–100 cm girth. *Twigs* dark brown tomentose then glabrescent, with sparsely rounded lenticels. *Terminal buds* ovoid, 5–6 by 2–3 mm, with many bracts, hairy on outer part and glabrous on inner part. Bark brown to dark brown, longitudinally furrowed; inner bark reddish brown with pale longitudinal stripes. *Leaves* ovate or obovate, 6–10 by 3–7 cm, coriaceous, sparsely pubescent then glabrous, glossy on upper surface, slightly serrate on the upper half to entire and revolute margin; apex acute, obtuse to shortly acuminate and usually minute emarginate; base obtuse to slightly cuneate; midrib and lateral nerves raised sharply on lower surface; lateral nerves in 5–7 pairs, arched but not anastomosing; scalariform veins inconspicuous; petioles 4–5 mm long, pubescent then glabrescent, blackish when dry. *Male and female inflorescences* terminal or axillary. *Male inflorescence* much branched, spikelets 4–7 cm long, pubescent; calyx 6-lobed, free, ± 1 by 0.5 mm, obovate or spatulate, outer part pubescent; rudimentary ovary ca. 1 by 1 mm, hairy; stamens 11–12, 2–2.5 mm long; anthers dorsifixed, all glabrous. *Female inflorescence* erect, simple or few branches, 8–17 cm long, pubescent; perianth 6-lobed, similar to male flower; staminodes 11–12; ovary inferior, 3 locular, each locule with 2 anatropous ovules; styles 3, hairy on lower half, stigmas pointed with divergent apex. *Acorns* ovoid 1–2.5 cm in diam. (including cupule spines), sessile; on erect infructescences, 8–17 cm long. *Cupule* almost enclosed the nut, except the top most near by the umbonate, pubescent then glabrescent; skin covered with branched and recurved spines, set in 4–5 irregularly lines, spine pubescent then glabrescent. *Nut* 1 in each cupule, ovoid to ellipsoid, 1.3–1.5 by 1–1.2 cm, \pm glossy brown.

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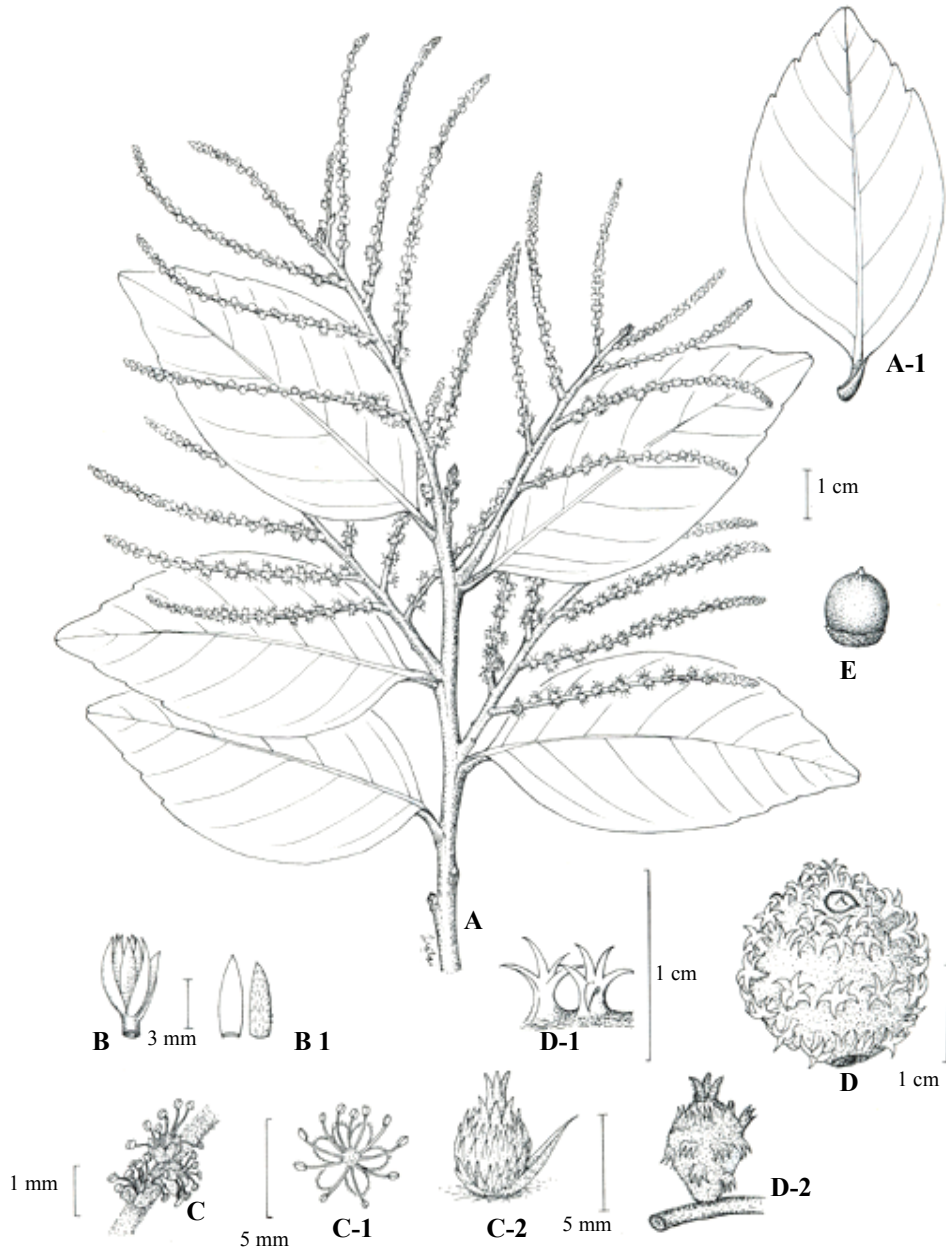


Figure 1. *Castanopsis pseudo-hystrix* Phengklai: A. twig and inflorescences, A-1 leaf; B. terminal bud, B-1 sheath; C. male flowers, C-1 male flower (enlarged), C-2 female flower (enlarged); D. acorn (mature), D-1 spines, D-2 young acorn; E. nut (A.-C. from *T. Smitinand* 90-198; D.-E. from *W. Eiadthong* BKF 97215). Drawn by O. Kirdkaew.

Thailand.— Chiang Mai [*Smitinand* 90–198 (holotype BKF)].

Distribution.— Endemic to Thailand.

Ecology.— In lower montane forest; ca. 1,200 m altitude.

Castanopsis thaiensis Phengklai **sp. nov.** haec, species *Castanopsidis wallichii* King ex Hook.f. similissima sed foliis subtus permanente molliter pubescentibus, magine in parte tertia apicali folii serrata, petiolo tantum usque ad 1 cm longo, bracteis inflorescentiae magis, glandibus ad maturitatem in partes tres vel quinque dehiscentibus, nucibus semper urniformibus et a latere et vertice visis triangularibus, stylis in apice nucis maturaе vulgo praesentibus differt. Typus: Thailand, Nan, *K. Larsen* 44319 (holotypus AAU!; isotypus BKF!). Fig. 2.

Tree. *Twigs* densely grey simple hairs and indumentum, then glabrescent, with sparsely round and convex top lenticels. *Lateral buds* flattened, 0.4–0.5 by 0.2 mm., scales hooked, terminal buds ovoid, 9–10 by 3–4 mm, scales imbricate, adpressed silvery hairs along the middle line and around apex on outer part, glabrous on inner side. *Leaves* oblong or oblong-elliptic, 10–12 by 3–4 cm, subcoriaceous to coriaceous, glabrous except along midrib near base on upper surface, densely shortly pubescent, especially along nerves on lower surface; margin serrate on $\frac{1}{3}$ toward the apex; apex cuspidate, caudate or bluntly acute; base cuneate to obtuse, \pm symmetric; midrib and lateral nerves prominent beneath, \pm depressed on upper surface; lateral nerves in 12–15 pairs, rigid, aligned at 30°–35° to midrib and curved near margin; scalariform veins distinct on lower and subdepressed on upper surface; petioles 0.5–1 cm long, grooved at adaxial, densely darkish grey hairy. *Male inflorescence* not seen. *Female inflorescence* terminal or axillary, rachis 8–15 cm long, spike 3–5 cm long, densely to pubescent grey hairy, bracts ca. 10 by 3 mm, silvery hairy on outer part, glabrous on inner side, not early caducous. *Flowers* solitary or 2–3-flowered in a group; perianth 6-lobed, 1.5–1 mm in diam. (young), divided $\frac{1}{2}$ – $\frac{2}{3}$ to the base; sepals ovate, sparsely hairy on outer part and ciliate; staminodes 12, very short, glabrous; ovary inferior, 3-locular, each locule with 2 anatropous ovules; styles 3, hairy on lower half, stigmas with pointed and divergent apex. *Acorns* sessile, ovoid, subdepressed, 1.5 by 2–2.5 cm (including branched spines), on erect, 8–15 cm long infructescences. *Cupule* entirely enclosed the nut, except the top most near by the umbonate, shortly grey hairy on outer part, long silky fulvous on inner part, dehiscent in 3–5 parts when dry; skin covered with branches and recurved spines, spine base tubular, 2.5–3 mm high, then divided into 3–5 curved and sharp branches (rarely 1–2), pubescent along tube, branches glabrous. *Nuts* 1–3 in each cupule, urceolate, when 3 the middle one longitudinally triangular, the other two flattened on one side and remaining 3-angled in both lateral and vertical outlines, glossy brown except at the narrow top, with persistent style and stigmas.

Thailand.— NORTHERN: Nan [*Larsen* 44319 (holotype AAU; isotype BKF)].

Distribution.— Endemic to Thailand.

Ecology.— In evergreen forest; 1,000 m altitude.

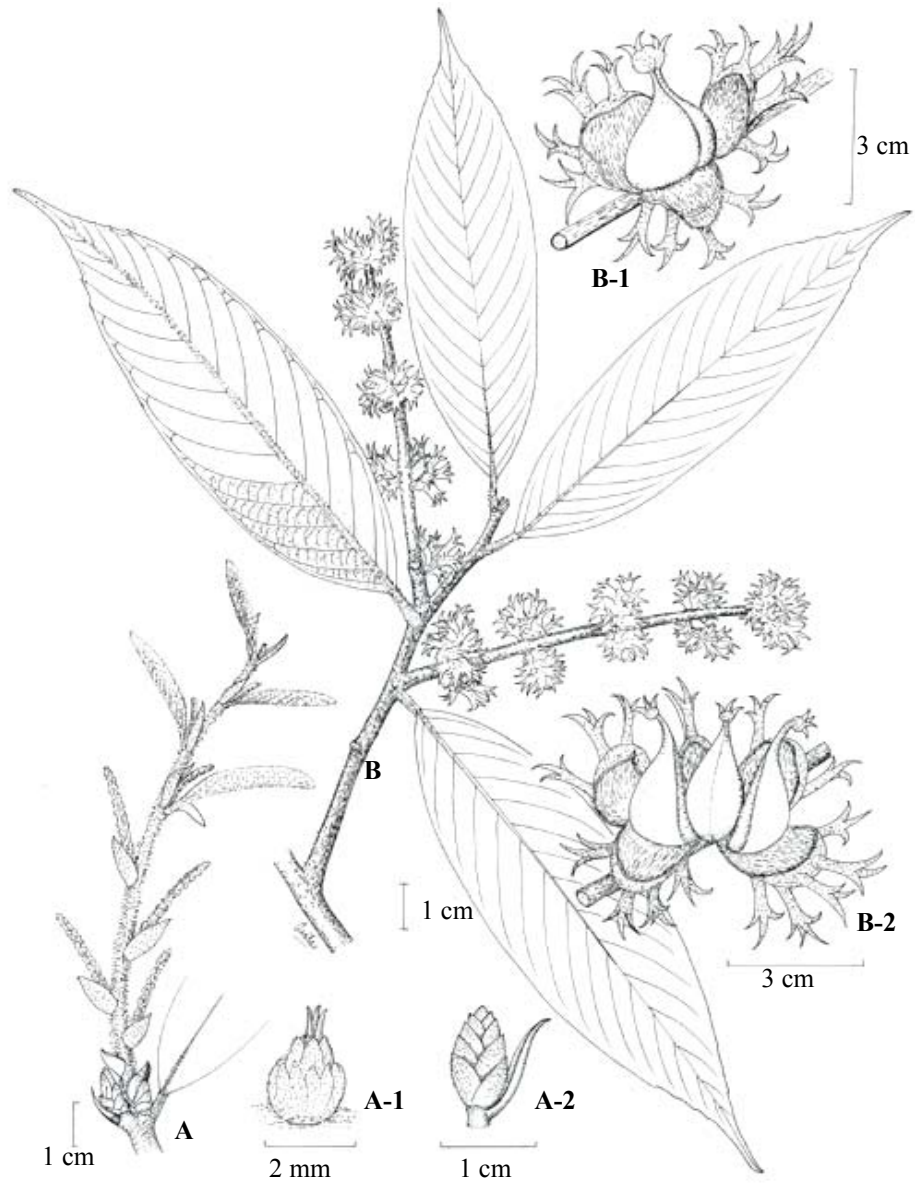


Figure 2. *Castanopsis thaiensis* Phengklai: A. female inflorescences, A-1 female flower, A-2 bud; B. twig and infructescences, B-1 & B-2 acorns (*K. Larsen et al.* 44319). Drawn by O. Kirdkaew.

Lithocarpus loratefolius Phengklai sp. nov. haec species *Lithocarpi lucidi* (Roxb.) Rehder similissima, sed foliis chartaceis ensiformibus, ranunculis juvenilibus tri-vel tetra-angularibus, petiolo brevissimo (2–3 mm); glandibus collum manifestum in medio parte nucis supra cupulam visibili habentibus. Typus: Thailand, Ranong, *Th. Wongprasert* 92-6-68 (holotypus BKF!). Fig. 3.

Tree, 10–15 m high, 60–90 cm girth. *Twigs* with 3–4 sharp longitudinal ridges, then terete, glabrous; bark thick, rough, with brown to brownish grey scales and sparsely lenticels. *Leaves* ensiform, linear to linear lanceolate, 14–20 by 2–2.5 cm, chartaceous, sparsely simple hairy and indumentum on both sides, glabrescent; apex acuminate to caudate; base slightly cuneate, not oblique; midrib prominent on both surfaces; lateral nerves in 14–20 pairs, faint on both sides; reticulate veins inconspicuous; petioles 2–3 mm long, glabrous, dark brown when dry. *Male and female* inflorescences not seen. *Acorns* conical and subdepressed, 2–2.5 by 2.5–3 cm (including cupule), sessile on fruit stalk up to 2 mm long, on erect, up to 10 cm infructescences, with sparsely grey indumentum. *Cupule* saucer-shaped, 0.5–1 by 2.5–3.5 cm, woody, and 2–4 mm thick, enclosing only the base or up to $\frac{1}{5}$ of the nut; skin covered with thick lamellae, set in 5–7 ring-like lamellae, fused and covered with grey indumentum, then glabrescent on both sides. *Nut* 1 in each cupule, subdepressed, broadly conical, 1.5–2 by 2.5–3 cm, dull brown to shiny, one strongly horizontal annular pressed on the middle of nut, scar at the base convex, 1.5–2 cm in diam.

Thailand.—PENINSULAR: Ranong [*Wongprasert* 92-6-68 (holotype BKF)].

Distribution.—Endemic to Thailand.

Ecology.—In rain forest; up to 120 m altitude.

Quercus mespilifolia Wall. ex DC., Prodr. 16. II. 101. 1864. **var. pubescens** Barnett ex Smitinand & Phengklai **var. nov.** qui a typo differt folia angustiora et subtus molliter et durabiliter pubescentia praebens. Typus: Thailand, Kamphaeng Phet, *Kerr* 6107 (holotypus K!). Fig. 4.

Tree, 15–20 m high, 80–90 cm girth. *Twigs* greyish-brown, then glabrescent; bark \pm 1 cm thick; sapwood yellowish with distinct radial rays; hardwood dark brown, durable. *Leaves* oblong, lanceolate-oblong, rarely elliptic, 5–17 by 2–5 cm, coriaceous, dull green and glabrescent except along nerves on the upper surface and softly greyish hairy on lower surface; apex acuminate or acute; base obtuse, slightly cuneate and unequally sided; midrib and lateral nerves prominent on lower surface; lateral nerves in 15–18 pairs, parallel and straight towards the end of serrate margin; scalariform veins conspicuous on lower surface; petioles 1–2.5 cm long, sparsely hairy with dark brown hairs. *Female inflorescences* axillary, hairy on all parts; perianth 6-lobed; staminodes 12, glabrous; ovary inferior, 3-locular, each locule with 2 anatropous ovules; styles 3(–4), conical, 1–1.5 mm long, greyish hairy on lower half, stigmas flattened, glabrous and blackish. *Acorns* obconical or cup-shaped, 1 by 1–1.5 cm (including cupule), sessile, on erect, 1–4 cm, greyish-brown hairy infructescences. *Cupule* entirely enclosing the nut, except the top most nearby the umbonate; skin covered with 6–8, thick, ring-like lamellae, fused at base, apex free, hairy on both sides. *Nut* 1 in each cupule, top flattened, green and brown when dry; scar at the bottom, flattened or slightly convex, ca. 0.5 cm in diam.

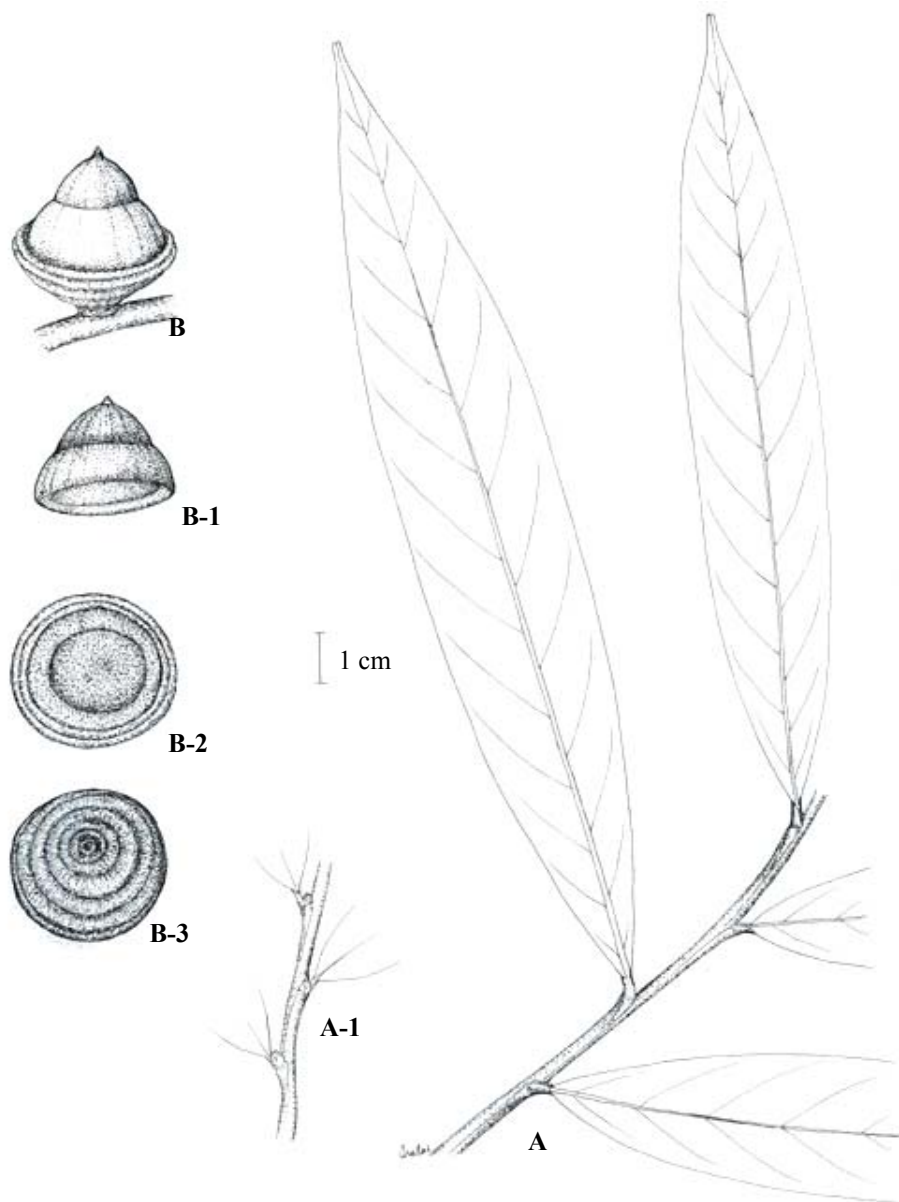


Figure 3. *Lithocarpus loratefolius* Phengklai: A. twig and leaves, A-1 young twig; B. acorn, B-1 nut, B-2 inner part of cupule, B-3 outer part of cupule. All from *Th. Wongprasert* 92-6-68. Drawn by O. Kirdkaew.

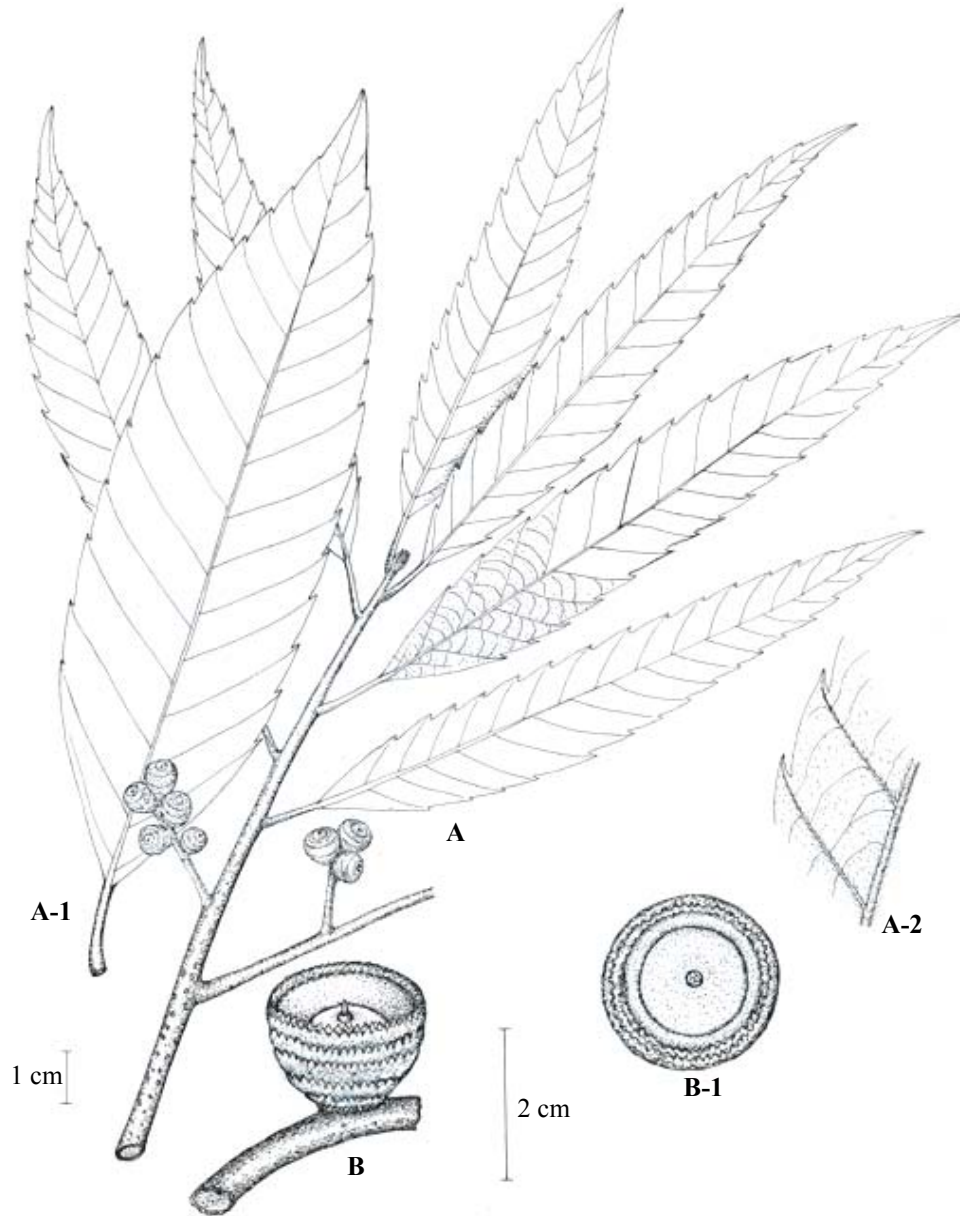


Figure 4. *Quercus mespilifolia* Wall. ex DC. var. *pubescens* Barnett ex Smitinand & Phengklai: A. twig & infructescences, A-1 & A-2 leaf & part of leaf; B. acorn, side view, B-1 top view (enlarge). All from *A.F.G. Kerr* 6107. Drawn by O. Kirdkaew.

Thailand.— NORTHERN: Kamphaeng Phet [*Kerr* 6107 (holotype K)].

Distribution.— Endemic to Thailand.

Ecology.— In deciduous forest.

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