

Lithocarpus corneus (Fagaceae), a new record for the Flora of Thailand

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ABSTRACT. A new record for the Flora of Thailand is reported, *Lithocarpus corneus* (Lour.) Rehder, collected during fieldwork in Phu Wua Wildlife Sanctuary, Thailand. For this species we provide illustrations, colour images and a description of the collecting locality. The species is unique for Thailand by its serrate leaves, cup-shaped to discoid cupules, a cupule surface covered with triangular to rhomboid bracts arranged in a diamond pattern and an oblate to depressed subglobose nut. Finally, we discuss important morphological differences with other *Lithocarpus* species found in Thailand.

KEY WORDS: Conservation status, Fagaceae, Flora of Thailand, *Lithocarpus corneus*, new record, taxonomy.

INTRODUCTION

The genus *Lithocarpus* Blume is the second largest genus (after *Quercus*) within Fagaceae, with over 300 species described. They occur in broad-leaved evergreen forests near sea level to mixed forests at altitudes over 3200 m. The distribution of *Lithocarpus* ranges from warm-temperate, subtropical and tropical regions in eastern India and the foothills of the Himalayas, northeastward to the southern islands of Japan, and southward to include the Philippines and Papua New Guinea. The first comprehensive treatment of *Lithocarpus* in Thailand listed 30 species, including four varieties (Barnett, 1940). Of these, 25 species are still recognised in modern literature. In the most recent treatment of *Lithocarpus* in Thailand, Phengklai reports 56 species occurring in Thailand (Phengklai, 2008). During fieldwork in Phu Wua Wildlife Sanctuary, Bueng Kan province, we collected *Lithocarpus corneus*, previously only described from China and NE Vietnam, and report it here as a new record for Thailand.

DESCRIPTION

Lithocarpus corneus (Lour.) Rehder in L.H.Bailey, Stand. Cycl. Hort.: 3569. 1917; A.Camus, Chênes 3, 7: 152, Plate 366, 1948; Chênes 8: 612. 1954; C.C.Huang, Y.T.Zhang & B.M.Barthol. in C.Y.Wu & P.H.Raven, Fl. China 4: 349, *incl. var.* 1999.—*Quercus cornea* Lour., Fl. Cochinch. 2: 572. 1790. Type: *Loureiro s.n.* (not seen).—*Synaedrys cornea* (Lour.) Koidz., Bot. Mag. (Tokyo) 30: 188. 1916.—*Pasania cornea* (Lour.) Oerst., Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn: 83. 1866; Hickel & A.Camus in Lecomte, Fl. Indo-Chine 5: 1001. 1930.—*Quercus hemisphaerica* Drake, J. Bot. 4: 151. 1890, *nom. illeg.*—*Pasania hemisphaerica* Drake ex Schottky, Bot. Jahrb. Syst. 47: 673. 1912; Hickel & A.Camus in Lecomte, Fl. Indo-Chine 5: 1002, as *nom. nov.* 1930. Syntypes: N Vietnam, Jen Lang, Balansa 2364 (**K**, 2 sht. **P**, all photos seen), N Vietnam, Tu Phap, Balansa 2369 (**K**, 2 sht. **P**, all photos seen).—*Lithocarpus hemisphaericus* (Drake ex Schottky) Barnett, Trans. & Proc. Bot. Soc. Edinburgh 34: 179, Figs. 1–2. 1944.

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Tree, up to 10 m tall, 20 cm in diameter. *Bark* brown. *Twigs* light brown to grey, glabrous to pubescent, sparsely covered with lightly coloured, raised lenticels. *Leaves* arranged in clusters towards the end of branches; petiole 0.9–2.3 cm long; blade elliptic to elliptic-oblong, (10–)12–19 × 4–7.5(–9) cm, coriaceous, sturdy, base cuneate to slightly attenuate, margin dentate to gently undulate, small rounded teeth often present, apex acuminate to strongly acuminate, subglossy, dark green above, pale green below; secondary veins 11–21 pairs, tertiary veins abaxially distinct, abundant. *Staminate inflorescence* remaining on the ripe infructescence, up to 10–15 cm long. *Infructescence* with alternate, tightly packed fruits usually in clusters of (2–)3–4 or rarely solitary, 8–12 cm long, rachis 5–7 mm thick. *Cupule* cup-shaped to discoid, 2.5–3.4 × 3.3–4.9 cm, enclosing 1/2–2/3 of nut, wall (2–)3–4 mm thick, woody and more dense near the base, interior surface of cupule furrowed, shallowly lacunose, cupular bracts rhomboid, center line of bracts with sharp ridge, margin of cupule densely packed with small fused scales. *Nut* oblate to depressed subglobose, apex convex to flat, but slightly concave towards the center, scar covering

up to 1/2–2/3 of the nut; exocarp smooth, waxy and in younger fruits covered with a fine layer of silvery hairs towards the centre of the fruit; only the flat, top part of the receptacle tissue covered by a thin layer of exocarp, lower parts (section of the nut that is contained in the cupule) lacking such a layer; uncovered receptacle wall rough and furrowed, consisting of hardened yellow to brown ridges.

Thailand.— NORTH-EASTERN: Bueng Kan [Phu Wua Wildlife Sanctuary, Bang Bart stream, 13 June 2013, *Suddee et al.* 4512 (**BKF, K, QBG**)].

Distribution.— China (S Fujian, Guangdong, Guangxi, S Guizhou, Hainan, S Hunan, Taiwan, SE Yunnan), Vietnam. A common and widespread species in southern China.

Ecology.— Broad-leaved evergreen forest by stream at 181 m. Species generally not found above 1000 m. According to Huang et al. (1999), flowering throughout the year but primarily from May–July, with fruits maturing on one year old branchlets.

Vernacular.— Ko bang bat (ก้อบังบาตร); Sỏi bán cầu (Vietnam); Yan dou ke (China).

Table 1. Morphological differences between *Lithocarpus corneus* (Lour.) Rehder, *L. magnificus* (Brandis) A. Camus and *L. lucidus* (Roxb.) Rehder.

Characters	<i>L. corneus</i>	<i>L. magnificus</i>	<i>L. lucidus</i>
Leaf margin	serrate	slightly serrate to entire	entire
Cupule size (diameter)	2.5–5.5 cm	1–3.2 cm	3–4 cm
Cupule size (height)	3.3–4.9 cm	1–3.5 cm	1–1.5 cm
Cupule shape	cup-shaped to discoid	obconical	saucer-shaped
Cupule surface	triangular to rhomboid bracts, with ridge in centre and margin, arranged in a diamond pattern	tomentose scales, arranged in 3–8 rings or lamellae	greyish-brown scales, arranged in 5–7 rings or lamellae
Nut size (diameter)	2.2–5.3 cm	2–3.5 cm	2–3 cm
Nut size (height)	2.0–3.0 cm	1–2.7 cm	1.5–2.5 cm
Nut shape	oblate to depressed subglobose	broadly ovoid	broadly conical, flattened at base
Nut enclosure	cupule enclosing 1/2–2/3 of nut	cupule completely enclosing the nut except the umbo	cupule enclosing only the base of the nut

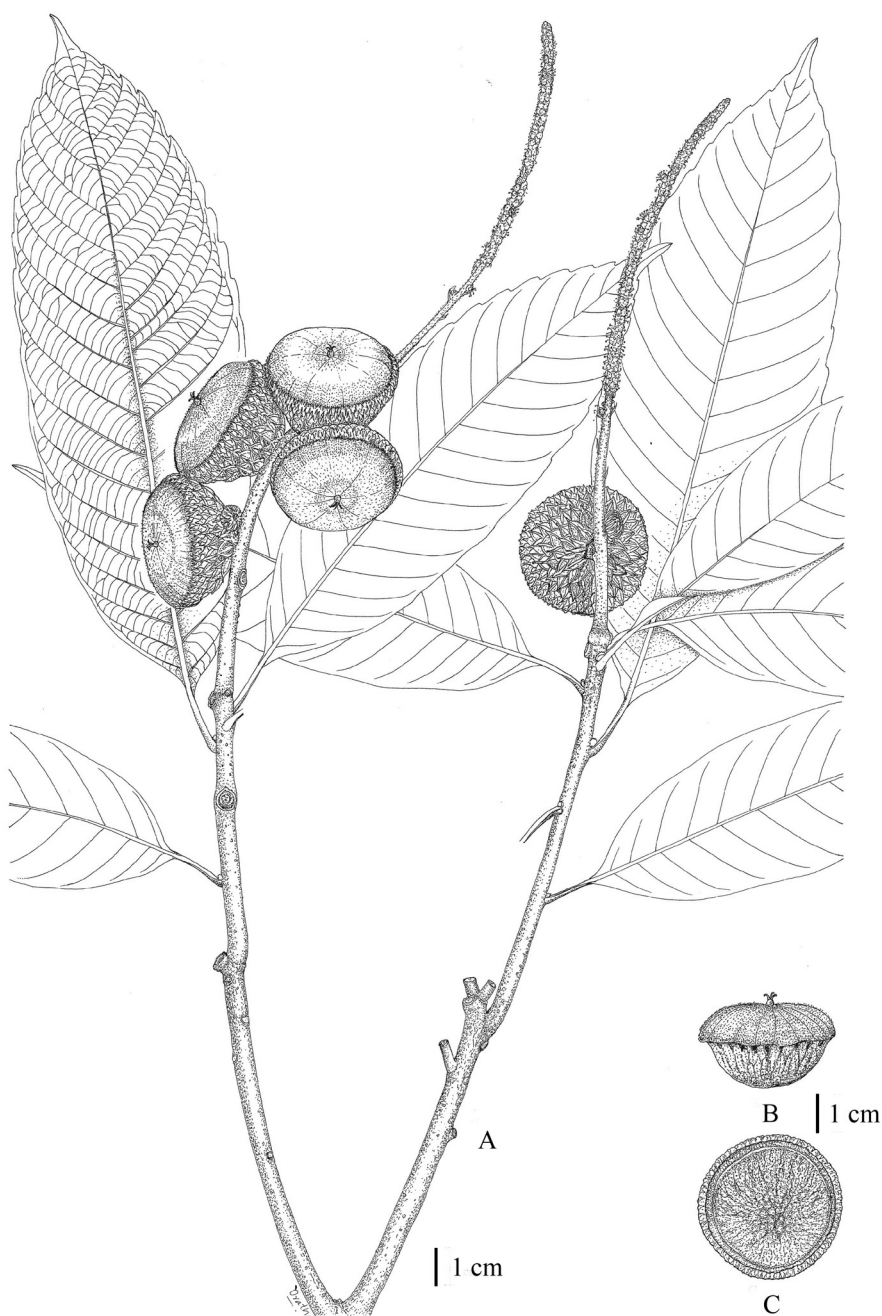


Figure 1. *Lithocarpus corneus* (Lour.) Rehder. A. Branch with leaves; B. Nut, side view; C. Nut, bottom view. Suddee et al 4512 (BKF). Illustration by O. Kerdkaew.

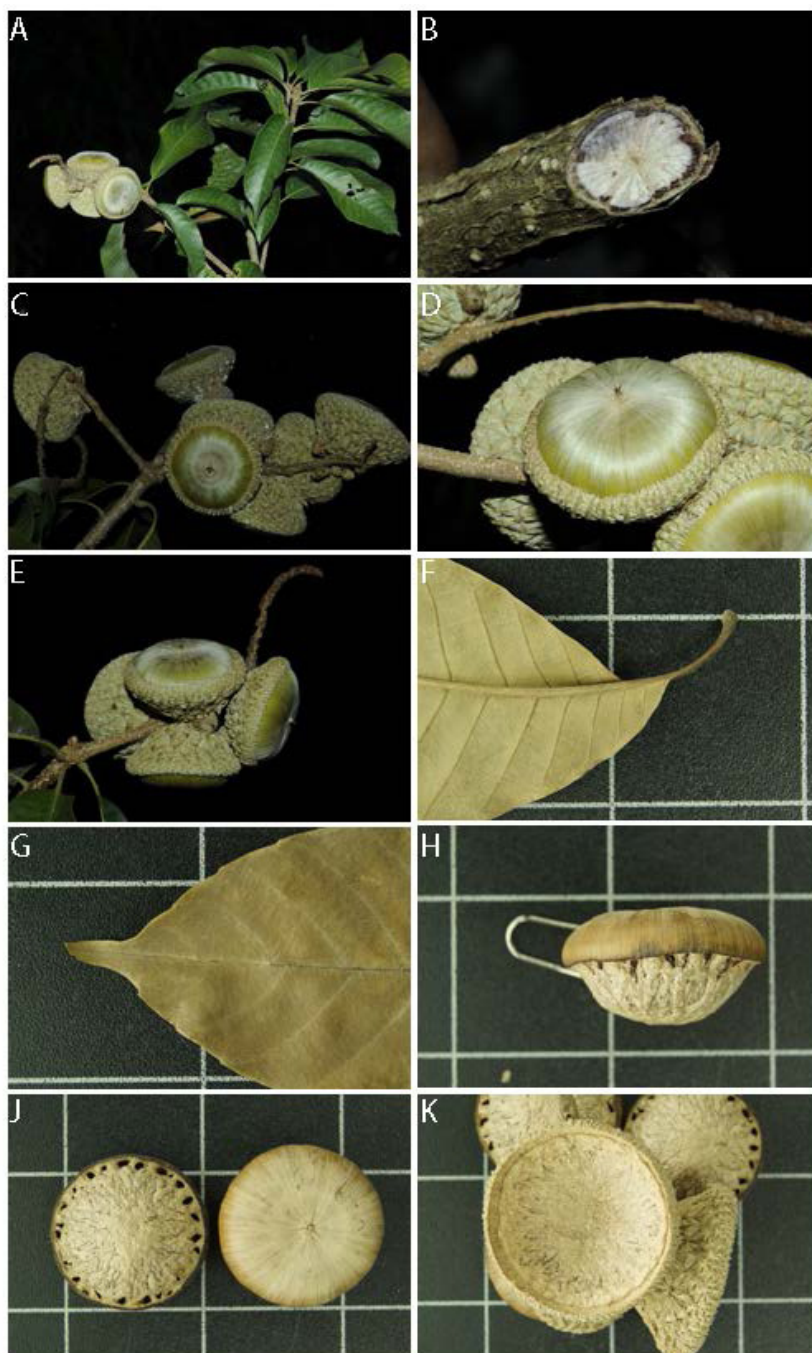


Figure 2. *Lithocarpus corneus* (Lour.) Rehder. Suddee et al 4512 (BKF). A. Habit; B. Twig cross section; C. Infructescence; D. Fruit close-up; E. Infructescence and persistent male inflorescence. F. Leaf base. G. Leaf apex. H. Nut side view. J. Nut bottom (left) and top view. K. Interior surface of cupule. Pictures by S. Rueangruea and J. S. Strijk.

Notes.— The characters that distinguish *Lithocarpus corneus* are 1 - serrate leaves [within Thailand, the only other *Lithocarpus* with this character is *L. magnificus* (Brandis) A. Camus (serrate to entire leaves)], 2 - fruit shape/dimension and 3 - cupule properties (see Table 1). *Lithocarpus corneus* is unique for Thailand in having very large fruits and a cupule surface covered with triangular to rhomboid bracts with a ridged centre line and margin, with bracts arranged in a diamond pattern, while species with fruits approaching a similar size class (e.g. *L. lucidus* (Roxb.) Rehder) have cupules covered with scales arranged in rings or lamellae.

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