

THREE NEW TAXA IN LAURACEAE FROM INDIA

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Abstract

Three new taxa, namely *Apollonias arnottii* Nees var. *beddomei* M. Gangop. var. nov., *Persea macrantha* (Nees) Kosterm. var. *brevifolia* M. Gangop. var. nov., and *Phoebe palghatensis* M. Gangop. sp. nov. of the family Lauraceae are described and illustrated from India.

Introduction

During the course of a taxonomic study of the family Lauraceae in India the author came across some interesting specimens of the genera *Apollonias* Nees, *Persea* Mill. and *Phoebe* Nees deposited in the herbaria of Central National Herbarium, Botanical Survey of India, Howrah (CAL), Southern Circle, Botanical Survey of India, Coimbatore (MH), Department of Botany, Presidency College, Chennai (PCM), Rapinat Herbarium, St. Joseph College, Tiruchirapally (RHT), and Tropical Botanical Garden, Thiruvananthapuram (TBGRI). After critical studies, these were found to be three new taxa, which are described and illustrated here.

1. *Apollonias arnottii* Nees var. *beddomei* M. Gangop. var. nov. (Plate 1)

Apollonias arnottii Nees var. *arnottii affinis*, sed differt foliis gracilibus chartaceis latis ellipticis vel lanceolato - ellipticis, infra cyaneo - glaucis, inflorescentiis glabris, floribusque longipedicellatis.

Holotypus: Tamil Nadu, Tinnevely hills, Beddome *s.n.* (Acc. No. 383377 CAL); iso in CAL; *paratypi:* Sisparaghat (Nilgiris), n.d., *coll. illeg. s.n.*, acc. no. 383382 (CAL); *ibid.*, 1200 m, May 1884, *J. S. Gamble* 14267 (CAL); Nilgiris, Kurisimalai, 1500 m, 30.01.1971, *J. L. Ellis* 37771 (MH); Anamalais, Iyerpadi, 25.10.1901, *C. A. Barber* 3845 (MH).

Allied to *A. arnottii* Nees, but differs in having thin chartaceous broad elliptic or lanceolate-elliptic leaves bluish glaucous beneath, glabrous inflorescences and long pedicellate flowers.

Habit not known. Branchlets slender, terete, 2-4 mm in diameter, rough with leaf-scars, warts and elevated lenticels, glabrous, gradually smooth, angled and longitudinally canaliculate, sparsely fine puberulous or tomentellous towards apices; terminal bud narrow ovate-lanceolate, c 2.5 × 1.5 mm, acuminate, brown or rusty silky tomentose.

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Leaves scattered, crowded towards apices, thinly chartaceous, dark greenish- or brownish-green above, bluish-glaucous beneath, usually broad elliptic or lanceolate-elliptic or rarely narrowly elliptic, 10-20.5 × 3-5 cm, unequally or sub-equally acute or obtuse at base, non-decurrent to extreme base, entire, flat along margin, attenuate to long acumens often beaked (acumens 11-32 mm long, broad and acute at tip) at apex; glabrous excepting mid-vein sparsely tomentellous at lower half above, sparsely minutely appressed fine puberulous beneath; mid-vein penninerved, slender, shallowly sunken at lower halves, gradually flat along length above, slightly raised, convex or rarely triangular beneath; lateral nerves 10-14 pairs, slender, hardly raised above, slightly raised beneath, arcuate, forming faint loops near margin; tertiary nerves obscure to faint above, faint beneath, distantly scalariform; minor nervules obscure above, faint beneath, reticulate; petioles slender, 10-18 mm long, 1-1.5 mm broad, sparsely puberulous or glabrous, concave above, convex beneath. Inflorescences axillary, solitary, few flowered cymes or panicle, 2.5-8 cm long, glabrous; peduncles slender, 10-55 mm long, c 1 mm wide, terete below, angled and flat along length above, bracts and bracteoles deciduous. Flowers (over matured) cupular-campanulate, 12-15 × 1.8-3 mm, long pedicellate, almost glabrous; pedicels 7-10 mm long, c 1 mm wide, flattened; cup obconic, c 2 × 2 mm; tepals 3 + 3, obovate-oblong, obovate or ovate, acutish, gland dotted; outer: 2.5-3.2 × 2.1-2.5 mm, anastomosis faint, shallowly concave ventrally, usually glabrous, rarely sparsely puberulous at apex without and ventrally; inner: 2-2.8 × 1.8-2 mm, anastomosis obscure, shallowly concave ventrally, glabrous or sparsely puberulous at apex without. Stamens 9, 3 in each whorl, anther 2-celled, I and II introrse, III whorl 2 glandular, extrorse, filaments sparsely villous; I whorl: 1.4-2 mm long, filaments 1-1.1 mm long, thin, flat, anther ovate-oblong or ovate, retuse at apex; II whorl: filament 1-1.2 mm long, anther ovate, obtuse or truncate at apex; III whorl: glands c 1 mm long, stipe c 0.5 mm long, thin, sparsely villous, adnate at base of filaments head oblong- or ovate-orbicular, obtuse or apiculate at apex, cordate at base, filaments 1-1.3 mm long, wider below, anther narrow ovate-oblong, truncate at apex. Staminodes 3, c 1.5 mm long; stipe c 0.9 mm long, ventrally concave, villous; head sagittate, acute, ventrally shallowly concave. Pistil 2.6-2.8 mm long, glabrous; ovary oblong-ovoid to obovoid, smooth, 1.2-1.4 × c 1.2 mm; style 1-1.2 mm long, ventrally shallowly longitudinally channeled; stigma peltate, spreading or reflexed, thin, shallowly lobed, muriculate. Fruits not seen. *Flowering time*: May.

Distribution: India (Tamil Nadu).

Habitat: Grows in hilly forests at about 1200 m altitude.

Note: The infra-specific epithet is contributed to the honour of Mr. R.H. Beddome.

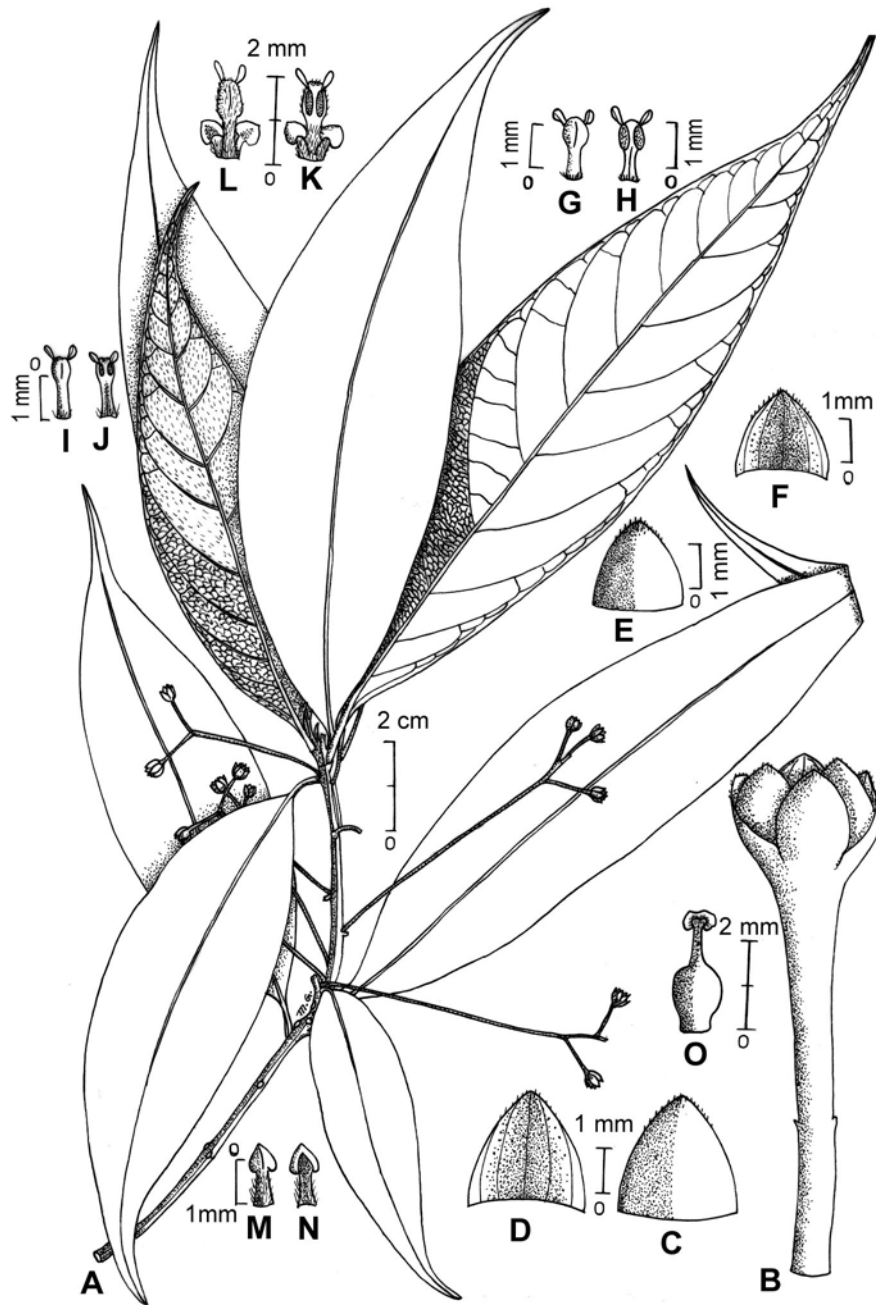


Plate 1. *Apollonias arnottii* Nees var. *beddomei* M. Gangop. var. nov. A. Flowering branch; B. Flower; C. Outer tepal - dorsal view; D. Idem - ventral view; E. Inner tepal - dorsal view; F. Idem - ventral view; G-L. Stamens: G. Whorl I - dorsal view; H. Idem - ventral view; I. Whorl II - dorsal view; J. Idem - ventral view; K. Whorl III - dorsal view; L. Idem - ventral view; M. Whorl IV (staminode) - dorsal view; N. Idem - ventral view; O. Pistil [after *Coll. illeg. s.n.*, acc. no. 383381(CAL)].

2. ***Persea macrantha*** (Nees) Kosterm. var. ***brevifolia*** M. Gangop. var. **nov.** (Plate 2)

Persea macrantha (Nees) Kosterm. var. *macranthae affinis*, sed differt foliis parvioribus rigide coriaceis petiolis brevibus, nervis lateralibus confertis non divergentibus, inflorescentiisque brevioribus et crassioribus.

Holotypus: Tamil Nadu, Anamalays, 2000 m, June 1859, *Beddome 120* (CAL); iso in CAL.

Allied to *P. macrantha* (Nees) Kosterm. var. *macrantha* but differs in having rigidly coriaceous smaller leaves with short petiole, close set up lateral nerves and shorter and stouter inflorescences.

A tree. Branchlets slender, terete, whitish gray or pale brown, 2-3.5 mm in diameter, with scattered leaf-scars and warts, glabrous; gradually angular, compressed, smooth, glabrous towards apices. Bud-scales: ovate-lanceolate, blackish, coriaceous, c 5 × 2.5 mm, acuminate, glabrous. Leaves scattered and crowded toward apices, young one thinly chartaceous, blackish, glabrous, venation obscure, matured one rigidly coriaceous, blackish-green, glossy above, pale brown and glaucous beneath, glabrous, obovate to oblong-obovate, 8-8.5 × 3.5-4 cm, unequally obtuse at base, margin entire, strongly incurved, obtuse and apiculate at apex; mid-vein slender, shallowly channeled above, raised and terete at lower half, gradually triangular along length beneath; lateral nerves up to 12 pairs, close, arcuate, almost flat and faint above, obscurely canaliculate beneath; tertiary nerves faint above, obscure beneath; minor nervules canaliculate-reticulate above, areolate-reticulate beneath; petioles stout, to 12 mm long (from impression marks), 1.5-2 mm wide, flat and channeled above, terete beneath, glabrous. Inflorescences whorled below terminal buds, axillary, solitary, panicle of cymes, 6.5-9 cm long; branches short, ascending, fine brown puberulus; peduncles 15-40 mm long, 2-2.5 mm wide, stout, terete below, gradually compressed and angled along length above, glabrescent, longitudinally canaliculated. Flowers cupular-campanulate, 7-8 mm long, 4-5.5 mm across, finely appressed puberulous; pedicels 3.5-4 mm long, up to 1.5 mm wide, flattened, shallow grooved; bracteoles minute, triangular-acute; tepals 3 + 3, thick, anastomosis obscure, shortly keeled at apex, ventrally tomentose; outer: c 3.3 × 1.5 mm, ovate-lanceolate, shallow concave ventrally; inner: c 5 × 1.5 mm, narrow-oblong, almost flat within. Stamens 9, in 3 whorls, anther 4-locular; whorls I and II introrse, and whorl III extrorse; I and II whorls: c 3.3 mm long, filaments c 2.5 mm long, slender, flat, ventrally shallow concave, pilosulous, anthers narrow oblong, retuse; III whorl: c 3-4 mm long; glands 2, up to 1.5 mm long, stipes c 1 mm long, flat, adnate at the base of filament, pilose, head oblong, cordate at base, retuse at apex; filament 2.5-3.5 mm long, thick, pilose, anther narrow oblong, retuse at apex. Pistil c 4 mm long; ovary narrow-ovoid, c 1.5 × 0.9 mm; style slender, shallowly channeled, pilose below; stigma minute, thin, peltate. Infructescences (immature one): 6-14 cm long; peduncles 45-60 mm long, 2-2.5 mm wide, terete below, angled at length above, glabrous; rachis and branches puberulous.

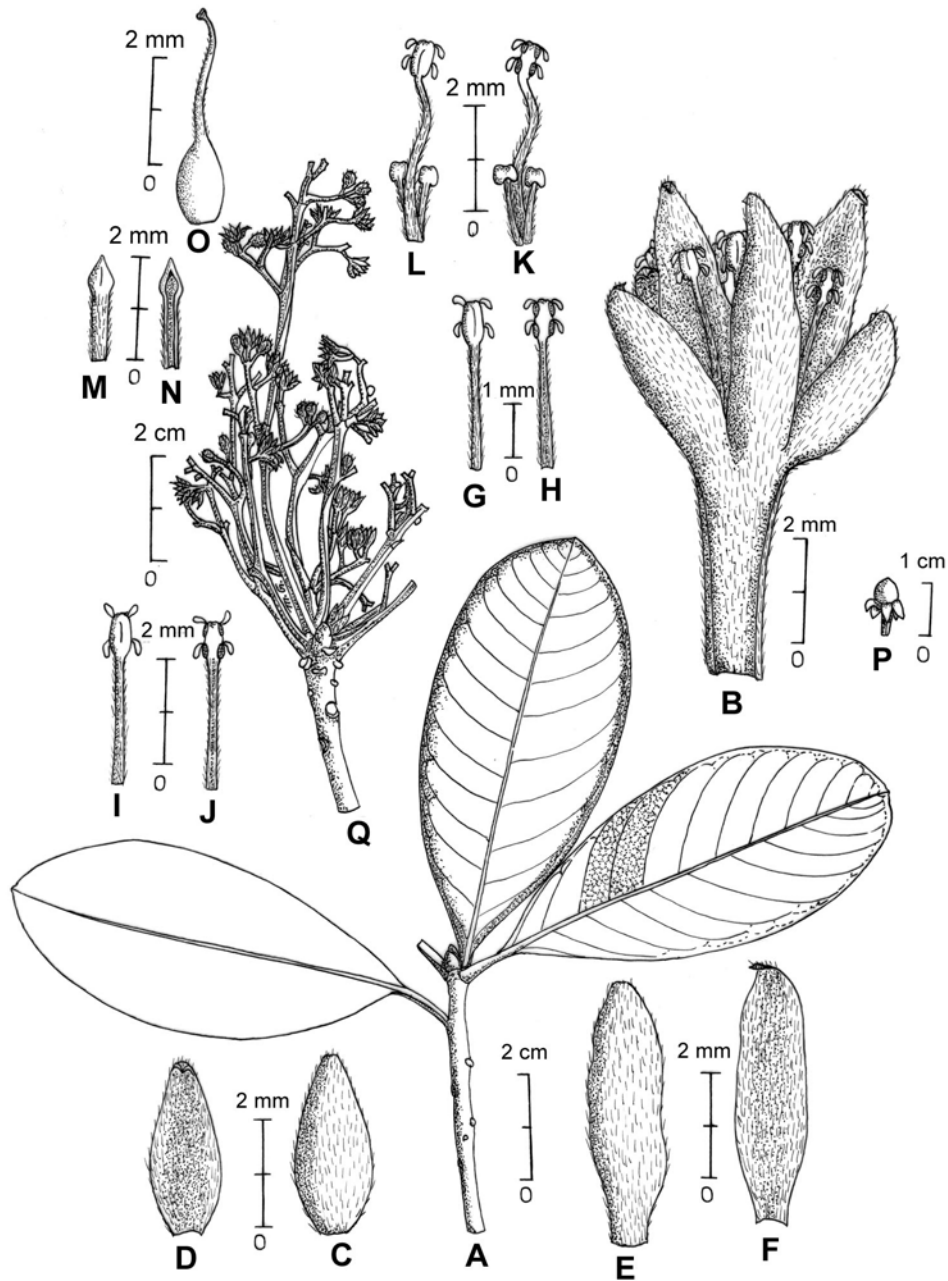


Plate 2. *Persea macrantha* (Nees) Kosterm. var. *brevifolia* M. Gangop. var. nov. A. Leafy branch; B. Flower; C. Outer tepal - dorsal view; D. Idem - ventral view; E. Inner tepal - dorsal view; F. Idem - ventral view; G-N. Stamens and staminode: G. Whorl I - dorsal view; H. Idem - ventral view; I. Whorl II - dorsal view; J. Idem - ventral view; K. Whorl III - dorsal view; L. Idem - ventral view; M. Whorl IV (staminode) - dorsal view; N. Idem - ventral view; O. Pistil; P. Immature fruit; Q. Inflorescence [A-O & Q after *Beddome* 120, and P after *Coll. illeg. s.n.*, acc. no. 384502 (CAL)].

Fruits (immature): globose, c 4 mm diameter, glabrous, smooth; stalks c 5 mm long and 1 mm wide, compressed, puberulous; tepal lobes reflexed, up to 5 mm long, 3 mm wide, sericeous on both surfaces. *Flowering time*: June.

Distribution: India (Tamil Nadu).

Habitat: Grows in hill forests at about 2000 m altitude.

Note: The specimen was mentioned by Hooker (1886, 1890) as a different form from the typical one because of the foliage characters. Later on, J.S. Gamble did support this view by putting a slip on the specimen, but did not give any name to it.

3. *Phoebe palghatensis* M. Gangop. sp. nov. (Plate 3)

Phoebe wightii Meisn. *affinis*, sed differt surculis juvenibus sparsim sericeis, foliis longe acuminates, nervis tertiaribus gracilibus et semote positis, nervulis minoribus ad maturitatem infra obscuras. Differt a *P. lanceolatae* (Nees) Nees foliis latiribus paniculis brevibus, minus ramosis, fructoque lato ovoideo et indumento.

Holotypus: Kerala, Idukki Dist., Meenmutty, 600 m, 14.02.1982, C. N. Mohanan 73233 (CAL); iso in MH; *paratypi*: Kerala. Travancore, 1500 m, December 1910, A. Meebold 13212 (CAL). Idukki Dist., Calnarymount, 800 m, 21.02.1983, C. N. Mohanan 77913 (CAL, MH); Kulamavu, 700 m, 30.12.1983, A. G. Pandurangan 62579 (CAL, MH); *ibid.*, Thekkady, 850 m, 29.09.1972, B.D. Sharma 42359 (MH); Meenmutty dam area, 700 m, 25.02.1983, C. N. Mohanan 77977 (CAL), Pearmeed, 900-1200 m, March 1887, T. F. Bourdillon 23 (MH). Palghat Dist., Singamparai R.F., 26.05.1979, E. Vajravelu 62829 (CAL, MH); Dam site of Valiyaparathode, 850 m, 05.12.1980, N. C. Nair 69119 (CAL, MH); Madrithode to Walghat, 1100 m, 11.12.1980, N. C. Nair 69544 (CAL, MH); Karapara, 850 m, 01.03.1975, E. Vajravellu 46130 (MH); Panthenthode, 850 m, 21.01.1980, P. Bhargavan 65647 (MH); Kudam-Muthikulam, 850 m, 29.04.1979, E. Vajravellu 62980 (MH). Tamil Nadu, Shevaroyas, 1400 m, 13.05.1978, V. A. Amalraj 13773 (PCM); Bothamalai, 1100 m, 14.07.1978, K. M. Matthew & K. Murugesan 14843 (PCM); Kodai Kanal, 24.03.1956, J. Pallithanam 1657 (PCM); Cauveri Peak, 1300m, 16.03.1976, K. M. Matthew & V. Alphonse 1695 (PCM). Andhra Pradesh, Visakhapatnam dist., Sunkarimetta, 1350 m, 19.09.1961, N. P. Balakrishnan 688 (CAL).

Allied to *P. wightii* Meisn., but differs in having sparsely sericeous young shoots, leaves with long acumens, tertiary nerves slender and distantly placed and minor nervules faint beneath when mature. It also differs from *P. lanceolata* (Nees) Nees in having broader leaves, short, less branched panicle and broad ovoid fruits and in indumentum.

A tree, (2-) 5-15 m high. Branchlets terete, whitish-yellow to pale yellow, 5-6 in mm diameter, rough with profuse leaf-scars, elevated and ellipsoid lenticels and warts, glabrous in age; leaf bearing branches slender, dark blackish-brown or brown, scattered

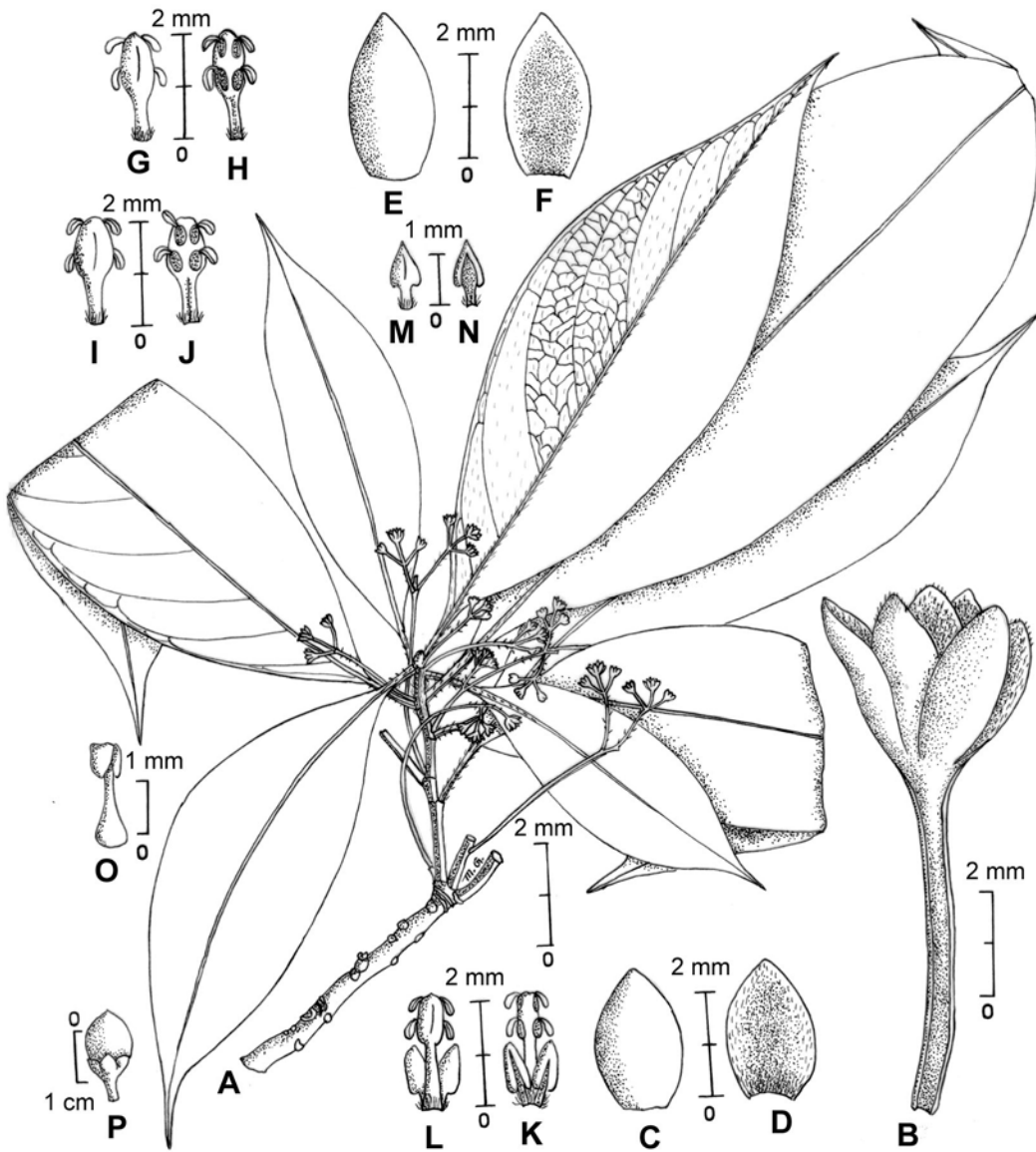


Plate 3. *Phoebe palghatensis* M. Gangop. sp. nov. A. Flowering branch; B. Flower; C. Outer tepal - dorsal view; D. Idem - ventral view; E. Inner tepal - dorsal view; F. Idem - ventral view; G-N. Stamens and staminode: G. Whorl I - dorsal view; H. Idem - ventral view; I. Whorl II - dorsal view; J. Idem - ventral view; K. Whorl III - dorsal view; L. Idem - ventral view; M. Whorl IV (staminode) - dorsal view; N. Idem - ventral view; O. Pistil; P. Immature fruit [A after K. Vivekananthan 66216 (CAL), B-O after V. A. Amalraj 13773 (RHT), and P after K. M. Matthew & K. Murugesan 14843 (RHT)].

leaf scarred and lenticelate, up to 2.5 mm thick; very young one compressed, angled, shallow canaliculate, appressed tomentellous or villosulus; terminal buds ovate, to narrow ovate-lanceolate, up to 2×1.5 mm, coriaceous, acuminate, silky-brown puberulous or tomentellous. Leaves scattered, crowded toward apices, thinly chartaceous to thinly coriaceous, young one reddish-brown, blackish-green to dark-brown above when mature, paler and sometimes subglaucous beneath, sparsely appressed fine puberulous or tomentellous along mid-vein above, sparsely appressed fine puberulous or tomentellous along mid-vein and scattardly so else where beneath, glabrous in age, elliptic, obovate, oblong or oblong-lanceolate, sometimes ovate-lanceolate or elliptic-lanceolate, $7-20 \times 2.5-5$ cm, unequally attenuate or acute at base, decurrent to extreme base, slightly incurved along margin, long acuminate (acumens 17-25 mm long, sharp and sometimes beaked) at apex; mid-vein flat or slightly raised and canaliculate above, raised beneath; lateral veins 10-12 pairs, slender, raised on both surfaces, arcuate and weakly looped along margins; tertiary nerves faint above, slender but prominent beneath, scalariform; minor nervules obscure or inconspicuously canaliculate-reticulate above, slender and prominent beneath; petioles slender, 10-17 mm long, 1-1.5 mm wide, flat and shallow channeled above, terete beneath, sparsely puberulous when young, glabrous in age. Inflorescence axillary and sub-terminal solitary panicle, slender, 3-6 cm long, once branched or simple, sparsely puberulous or tomentellous; peduncles slender, shallow channeled, 20-50 mm long, c 1 mm wide; bracteole deciduous; branches short, thin, flattened. Flowers lax, cupular, $8-9.5 \times 2-2.5$ mm; pedicels 4-5 mm long, c 1 mm wide, shallow longitudinally channeled, angled; tepals 3 + 3, ovate or ovate-orbicular, sub-acute, thin, anastomosis prominent, margin ciliate; outer: $2.5-3 \times 2$ mm, concave and sparsely puberulous within; inner: c 3×2 mm, sparsely puberulous within. Stamens 9, 3 in each whorl, anthers 4-locular, whorls I and II introrse, of III extrorse, filaments thin, flat, glabrous or very sparsely villous at base; I whorl: 2-2.5 mm long; filament 1.2-1.5 mm long, anther ovate or ovate-oblong, truncate or retuse at apex; II whorl: 1.8-2.1 mm long; filament 1.2-1.5 mm long; anthers ovate or ovate-oblong, truncate or retuse at apex; III whorl: 2-2.2 mm long, glands 2, c 1 mm long, stipe c 0.5 mm long, thin, flat, head ovate-orbicular, cordate at base; filaments c 1-1.5 mm long, wider below; anthers narrow-oblong, truncate at apex; IV whorl (of 3 staminodes): minute, c 1.5 mm long; stalk c 1 mm long, flat, ventrally shallow channeled, head sagittate, acute, ventrally shallow concave. Pistil 2.1-2.7 mm long, glabrous; ovary obovoid, $1.3-1.5 \times 1$ mm, smooth; styles 1.3-1.5 mm long, slender, flat, shallow channeled; stigma discoid, thin, lobulate. Infructescences: 3-8 cm long, slender, sparsely puberulous or glabrous, profuse lenticelate; peduncles 25-65 mm long, c 1 mm wide, blackish, lenticelate. Fruits ovoid, brown to blackish, $12-8 \times 9-10$ mm, obtuse apex with a mucro at centre, pericarp smooth, glabrous; stalks (2.5-) $5-7 \times 1-2$ mm, glabrous or sparsely puberulous; clasping tepals to 4×7 mm, blackish, smooth, thick, glabrous or sparsely sericeous. *Flowering time*: All year round. *Fruiting time*: Not known.

Distribution: India (Andhra Pradesh, Tamil Nadu and Kerala).

Habitat: Grows on hilly forests at 700-1500 m altitudes.

Note: Most of the specimens had been identified as *P. lanceolata* (Nees) Nees which is a different species in having glabrous nature, narrow-elongated leaves, elongated inflorescence and ellipsoid fruits. The collection from South India of R. Wight deposited in Wallich Herbarium (Cat. No. 2598) at K was misidentified by Kostermans as *P. cathia* (D. Don) Kosterm., a species is distributed in the Himalayas. Actually it is *P. wightii* Meisn. The Himalayan species *P. cathia* is readily distinguished from this new taxon in having much branched paniculate inflorescences and young branchlets densely brown tomentose.

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