

ADDITION OF THREE NEW LAURACEAE RECORDS FOR BANGLADESH

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Abstract

Three new records of angiosperms belonging to the genera *Cinnamomum*, *Litsea*, and *Neolitsea* of the family Lauraceae are described and illustrated from Bangladesh. Following critical examination, two voucher specimens of Lauraceae collected from Cox's Bazar and Rangamati districts, and housed in DACB and BFRIH, respectively, were identified as *Cinnamomum subavenium* and *Litsea glabrata*. Two other specimens recently collected from the Lathitila forest of Moulvibazar during the floristic explorations conducted in the northeast region of Bangladesh were identified as *Neolitsea foliosa*. These three species are reported here as new to the flora of Bangladesh. A detailed taxonomic description, including data on ecology, distribution, and use, representative specimens examined, and an illustration of each of these species have been provided.

Introduction

Each year, new plant species have been described by plant taxonomists from the nature. As a result of the ongoing effort to discover new plant species in Bangladesh, taxonomists have occasionally released a significant number of new records throughout the past few decades. Over 281 new records have been reported since Ahmed *et al.* (2008–2009) published the Encyclopedia of the Flora of Bangladesh, the majority of which provide details on the precise distribution (Islam and Rahman, 2017; Rahman and Hassan, 2017; Sourav *et al.*, 2017; Ara and Hassan, 2018; Rahman and Uddin, 2018; Uddin, 2018; Alam and Uddin 2018; Alfasane *et al.*, 2019, 2020; Hossain *et al.*, 2020; Sultana and Rahman, 2021; Hossain *et al.*, 2022; Rahman *et al.*, 2022; Sultana *et al.*, 2022; Uddin and Uddin, 2022; Rahman *et al.*, 2023). So far, a total of 3892 species, or 77.84% of Khan's (1977) estimate of 5000 species to exist within the territory of Bangladesh, have been reported through various floristic studies conducted so far covering its political boundary (IUCN, 2024). This indicates that, if Khan's (1977) estimate is taken into account, the presence of around 1108 (22.16%) species and their status in this country have not yet been verified through field investigations, a goal that the nation's plant taxonomists are attempting to achieve.

During an investigation on the voucher specimens of Lauraceae housed in local herbaria of Bangladesh, two specimens of this family that were previously collected from the Cox's Bazar and Rangamati districts and preserved in the Bangladesh National Herbarium (DACB) and Bangladesh Forest Research Institute Herbarium (BFRIH), respectively, and two other specimens that were collected from the Lithitila forest area of Juri, Moulvibazar, during the floristic surveys carried out in the northeast region of Bangladesh in 2022–2023, seemed to be distinct from all of the 66 species under 14 genera of this family reported so far from Bangladesh (Das and Alam, 2001; Ara

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et al., 2007; Arefin *et al.*, 2011; Ara and Khan, 2015; Basak and Alam, 2015; Rahim, 2019; Rahman *et al.*, 2024). These specimens did not match with the voucher specimens or the taxonomic description or key characters of any species of Lauraceae known or reported so far from Bangladesh.

Following a thorough taxonomic examination of these specimens, including matching their characters with relevant descriptions, key characters, voucher specimens, and images of voucher specimens available at the local herbaria and on the websites of a few international herbaria (e.g., Kew and P), the voucher specimen of Cox's Bazar housed in DACB was found to belong to *Cinnamomum* Schaeff., and that of Rangamati deposited in BFRIH to *Litsea* Lam., whereas the recently collected two specimens of Lithitila forest belong to *Neolitsea* (Benth.) Merr. of Lauraceae. These voucher specimens do not belong to the nine, twenty, and one species of these three genera, respectively, reported so far from Bangladesh, but to their other species that have never been reported in any publication on the flora covering the present territory of this country, and hence, these species have been confirmed as new to the flora of Bangladesh. The Bangladesh National Herbarium (DACB) and the Forest Research Institute Herbarium (BFRIH) hold the specimens of these species.

Materials and Methods

Field surveys were carried out between December 2022 and May 2023 in the deciduous, semi-evergreen, and evergreen forests and scrub jungles of the hilly areas located within the administrative borders of the Sylhet division, including the Moulvibazar district, which represent the northeastern region of Bangladesh. Following standard herbarium procedures, the freshly collected plant specimens were processed, pressed, dried, and stored at DACB (Hyland, 1972; Jain and Raw, 1977).

The taxonomic identification of the specimens was completed by matching their characteristics to the pertinent taxonomic literature (e.g., Devis and Cullen, 1965; Geesink *et al.*, 1981; Hooker, 1886; Prain, 1903; Mia, 2009; Li *et al.*, 2008; Ngernsaengsaruy *et al.*, 2011), images available on the websites of a few international herbaria (e.g., K, P), and the voucher specimens of Lauraceae housed at DACB, BFRIH, and herbaria of other institutions. The taxonomic description of each species was created by closely observing and analyzing the morphological characters of the specimens. Consulting recent taxonomic publications (Li *et al.*, 2008) and the nomenclatural databases of POWO (2023), GBIF Secretariat (2023), and Tropicos (2023), nomenclatural information was confirmed.

Results and Discussion

The taxonomic identification of the specimen of Cox's Bazar housed in DACB has been confirmed as *Cinnamomum subavenium* Miq., and that of Rangamati deposited in BFRIH as *Litsea glabrata* (Wall, ex Nees) Hook, f., whereas the specimens of Lithitila forest, preserved in DACB as *Neolitsea foliosa* (Nees) Gamble of family Lauraceae. The following taxonomic descriptions of these species, including the key for their identification, have been produced based on the collected specimens and field notes recorded during field visits.

Key to genera

1. Flowers bisexual, in panicles; bract small, not forming an involucre; **Cinnamomum**
perianth caducous.
- Flowers unisexual, in pseudoumbels or racemes; bract large, forming an **2**

involucre; perianth persistent.

2. Flowers 2-merous; perianth lobes 4; fruit 10-12×7-8 mm in diam.; **Neolitsea**
perianth tube upto 7 mm in diam.
- Flowers 3-merous, perianth lobes 6; fruit 10-15×5-7 mm in diam., **Litsea**
perianth tube upto 10 mm in diam.

Cinnamomum subavenium Miq. Fl. Ned. Ind. 1(1): 902 (1858); Cammerl. (1925) 452; Masam. 308 (1942); Kosterm. 68 (1970b); Argent *et al.* (1997) 310; Beaman *et al.* (2001) 400. —TYPE: Teijsmann H.B. 1032 and 1037 (HT, U, in 2 sheets, barcodes U0002678, U0002677; iso BO), Sumatra, Solok; *Cinnamomum cyrtopodum* Miq. 897 (1858); *C. borneense* Meisn. 19.(1864); *C. borneense* Miq. 260 (1864), nom. illeg., non Meisn.; *C. floribundum* Miq. (1864), nom. nov.; *C. glabrescens* Miq. 264 (1864); *C. culitlawan* Blume var. *celebricum* Teijsm. & Binn. 92 (1866); *C. nooteboomii* Kosterm. 446 (1988); *C. ridleyi* Gamble 218 (1910). (Fig. 1)

A large tree. Bark smooth. Leaves opposite or subopposite or rarely alternate, trinerved or triplinerved, subcoriaceous, appressed hairy below, narrowly elliptic, (4-) 7-12(-16) by (1.5-)3-4 (-7) cm, base narrowly cuneate and slightly attenuate, apex acuminate, acumen 0.5-1(-2) cm long; midrib flat above, prominent and smoothly raised below; lateral veins flat above, prominent and raised below, ending at the base of acumen; petiole slender, 0.5-1.5 cm long, c. 1 mm diam, flat to



Fig. 1. *Cinnamomum subavenium* Miq., a branch with infructescence.

shallowly grooved above, dark brown, appressed hairy. Inflorescences axillary or subterminal, paniculate–cymose branched, densely hairy, 6–9 cm long. Flowers greyish when dried, densely appressed hairy; perianth lobes elliptic, c. 2–3 mm long, appressed hairy on both sides; pedicels 2–3 mm long; fertile stamens c. 2 mm long, anthers 4-locular, filaments c. 1/2 the length of the stamen, hairy; staminodes 1.5–2 mm long, appressed hairy, sagittate; ovary oblong, c. 1 mm long, stigma trilobed. Fruits ellipsoid, c. 10 × 7 mm, drying dark brown; cupule funnel shaped; perianth lobes caducous, sparsely hairy; fruiting pedicel obconical, c. 3 mm long, hairy. *Flowering and fruiting period:* August to December.

Ecology: In hill forest, at high altitudes.

Specimen examined: **Cox's Bazar:** Rajarchara, Teknaf Range, 5.10.1991, Khan, Huq, Mia and Rahman K. 8580 (DACB 24789).

Distribution: Bangladesh, Sumatra and Peninsular Malaysia

Use: Wood is used as timber.

Notes: *C. subavenium* Miq. seems morphologically similar to *C. iners* (Reinw. ex Nees & T. Nees) Blume, from which it can be distinguished by its cupule with an entire to slightly lobed rim in contrast to *C. iners*'s cupule with distinct persistent lobes. In *C. iners*, the hairs on the lower leaf surface are appressed and white, while *C. subavenium* has erect, curly, and yellowish hairs.

Litsea glabrata (Wall, ex Nees) Hook, f., Fl. Brit. India. 5: 174 (1886); Gamble, Man. Timber Tress 572 (1902); Bourd., For. Trees Travancore 307 (1908); Gamble, Fl. Pres. Madras 2:866 (1957. repr. ed.); Kosterm., Bibl. 823 (1964); Ahmedullah & M. P. Nayar, End. Pl. Ind. Reg. 1: 66 (1986); V. Chandras. in A. N. Henry, Kumari & Chithra, Fl. Tamil Nadu Analysis 2: 210 (1987); Vajr., Fl. Palghat Dist. 405 (1990); M. Mohanan & A. N. Henry, Fl. Thiruvananthapuram 395 (1994); *Tetranthera glabrata* Wall, ex Nees in Wall., PL As, Rar. 2: 67 (1831); Syst. Laurin. 560 (1836); Meisn. in DC., Prodr. 15(1): 197 (1864); Brandis, Indian Trees 539 (1906). TYPE: India, Tamil Nadu, Dindugal district, 3000 ft, Wight s.n., Wallich Ct. no.2543, (K image!). **(Fig. 2)**

An evergreen tree, 20–25 m tall. Branches densely tomentose. Leaves 12–15 cm × 3.6–4.9 cm, alternate, elliptic–oblong, acute at apex, entire along margin, cuneate at base, glabrous; petioles 10–12 mm long, cylindric, tomentose. Inflorescence umbellules, axillary, arranged in racemes, 7–12 cm long, densely silky tomentose, bracteate; peduncles 6–10 mm long, densely tomentose; bracts 4, in 2 rows. Flowers 5–7.5 mm × 6–8 mm, yellow-green; pedicels 1–2 mm long, stout, green, densely hairy; perianth lobes 6, 3–3.5 mm × 2–2.5 mm, elliptic, gland-dotted, densely tomentose outside, hairy at base inside, perianth tubes 1–1.5 mm long, funnel shaped, hairy; in male flowers stamens 12, in 4 rows; in female flowers staminodes 12, in 4 rows, pistil 2.5–3 mm long, stigma irregularly lobed, styles 0.8–1 mm long, glabrous, ovary 1–1.5 mm long, ovoid, glabrous. Berries 1–1.5 cm × 0.5–0.7 cm, ovoid to ellipsoid, smooth, green, seated on thickened cup shaped perianth tube, 0.7–1 cm in diameter, entire, obconic, brown, glabrous; fruiting peduncle 8–12 mm long, brown, glabrous; fruiting pedicel 0.5–0.8 cm long, brown glabrous. *Flowering and fruiting period:* Flowering August to December and Fruiting January to May.

Ecology: In evergreen forest, at high altitudes.

Specimen examined: **Rangamati:** Pablakhali, 06.04.1965, D. K. Das 432 (FRIH)

Distribution: Bangladesh, India and Nepal.

Use: Wood is durable, used for planking and making boxes.

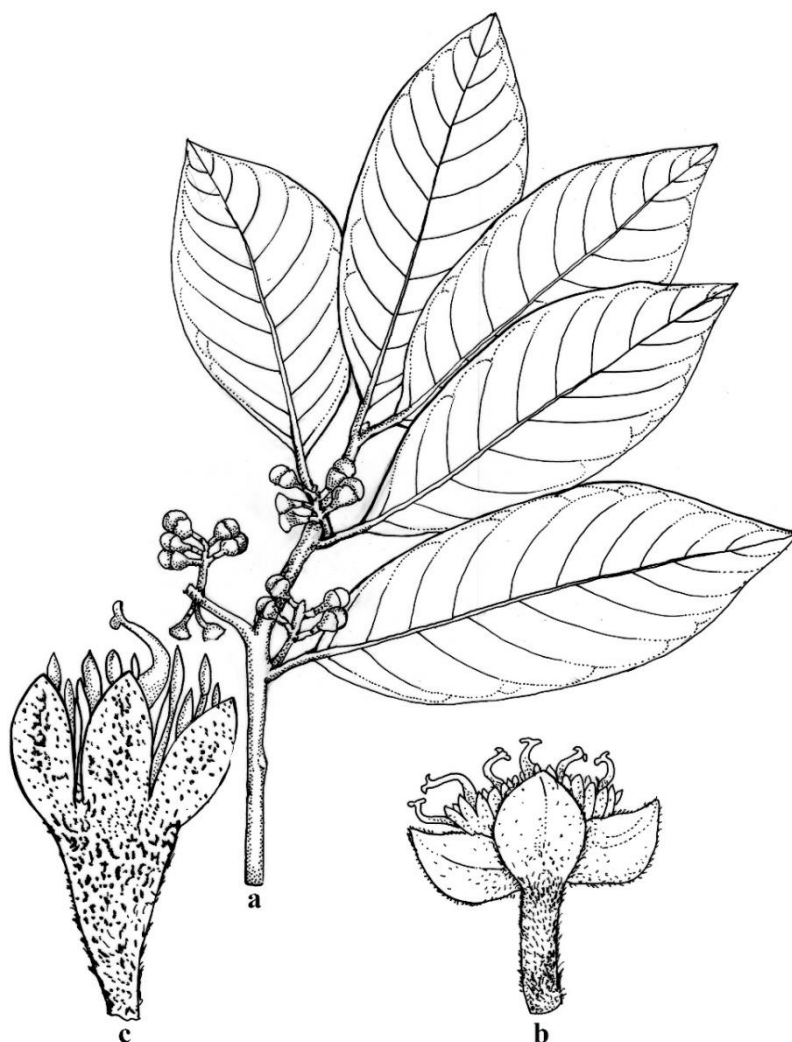


Fig. 2. *Litsea glabrata* (Wall, ex Nees) Hook, f., a) a branch with infructescence, b) a female inflorescence and c) a female flower.

Notes: Morphologically, *L. glabrata* (Wall, ex Nees) Hook, f. appears to be similar to *L. panamanja* (Nees) Hook, f., from which it differs by its shorter recemes (up to 12 cm long), 6–10 pairs of secondary veins, shorter and tomentose petioles, and stalked glands, in contrast to the later's (*L. panamanja*) longer (up to 23 cm long) recemes, with 10–12 pairs of secondary veins, longer glabrous petioles, and sessile glands.

Neolitsea foliosa (Nees) Gamble, Fl. Madras 1240 (1925); D.G. Long in Grierson & D.G. Long, Fl. Bhutan 1(2): 279 (1984); C.J. Saldanha *et al.*, in C.J. Saldanha, Fl. Karnataka 1: 70 (1984); Kosterm. In Dassan. *et al.*, Rev. Handb. Fl. Ceylon 9: 168 (1995); Chakrab. in Phytotaxa 419(2): 213 (2018). *Tetranthera foliosa* Wall. [Numer. List No. 2563 (1830), nom. nud.]. *Tetradenia*

foliosa Nees in Wall., Pl. Asiat. Rar. 2: 64 (1831). *Litsea foliosa* (Nees) Nees, Syst. Laur. 622 (1836); Meisn. In DC., Prodr. 15(1): 222 (1864), p.p. excl. var. *caesia*, Hook.f., Fl. Brit. India 5: 178 (1886). *Litsea foliosa* (Nees) Nees var. *puncticulata* Meisn. In DC., Prodr. 15(1): 222 (1864). *Litsea striolata* Blume, Mus. Bot. 1: 347 (1851); Meisn. in DC., Prodr. 15(1): 223 (1864). (Fig. 3)

A tree, up to 14 m high, branchlets glabrous. Terminal buds 3-10 mm long, branchlets flattened towards apices, terete below. Leaves elliptic to oblong elliptic to lanceolate oblong or ovate-elliptic to ovate-oblong, 5-18 × 1.5-7 cm, acute, subacute to cuneate at base, apex acuminate, glaucous or glabrescent beneath, lateral primary nerves prominent, 3-5 pairs above the basal, nervules conspicuously reticulate, areolate above and beneath; petioles 6-28 mm long; involucre bracts sub-orbicular 4-5 mm wide; Male umbels sessile to pulvinate, 2-5 together; in



Fig. 3. *Neolitsea foliosa* (Nees) Gamble., a branch with infructescence.

male flowers pedicels 2-5 mm long, sepals ovate to suborbicular 2-3 × 1-1.8 mm, filament 2-4 mm long; anthers oblong ca 1 mm long. Female umbels 2-5 together, female flowers pedicels 2-6 mm long, sepals as like as male flower; staminodes ca 2 mm long, ovary subglobose, 1-1.5 mm in diam., styles 1.5-2 mm long, stigma conspicuous, peltate. Fruits oblong-ellipsoid, 11-12 × 7-8

mm; fruiting pedicels 5–12 mm long, 1–2 mm thick; cupule 1–3 × 3–7 mm. *Flowering and fruiting period*: February–June.

Ecology: In Hill forests, at medium altitude.

Specimens examined: **Moulvibazar**: Lathitila, Juri, 28.12.2022, S.A. Khan and M.S. Rahman 4858 (DACB); 21.05.2023, M.S. Rahman 4891 (DACB).

Distribution: Bangladesh, India and Myanmar.

Use: Wood is used as timber.

Notes: *N. foliosa* (Nees) Gamble seems similar to *N. cuipala* (D. Don) Kostrem, from which it can be easily differentiated by its glabrous young shoots and leaves with finely, conspicuously, aerolate, and reticulate minor venation, in contrast to *N. cuipala*'s sericeous, tomentose, or pubescent young shoots and leaves with inconspicuously, aerolate, and reticulate minor venation.

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