

SEVENTY ONE NEW ADDITIONS TO THE ANGIOSPERM FLORA OF BANGLADESH

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Abstract

Seventy one species are added to the angiosperm flora of Bangladesh. Taxonomic information such as updated nomenclature, important synonyms, brief description and specimen citation have been provided for each species.

Introduction

Bangladesh is situated between the latitudes of 20°34'N and 26°33'N and longitudes of 88°01'E and 94°41'E. It has an area of about 147570 sq. km (BER, 2016). The land is mostly a flat plain criss-crossed by many river systems. Being a subtropical country and having a favorable geophysical condition for plant growth, Bangladesh is very rich in biodiversity. It is assumed that about 5000 plant species reside in the country. However, the exact number of the angiosperm species of the country is still unknown. The history of botanical exploration of Indian subcontinent is more than 200 years old. William Roxburgh (1751-1815), William Carey (1761-1834), Nathaniel Wallich (1786-1854), Robert Wight (1796-1872), William Griffith (1810-1845), Thomas Thomson (1817-1878), Joseph Dalton Hooker (1817-1911), Sir Henry Hervey Bruce (1820-1907), Francis de Silva (1823-?), Dietrich Brandis (1824-1907), Charles Baron Clarke (1832-1908), Sulpiz Kurz (1833-1878), Sir Henry Collett (1836-1901), Sir George King (1840-1909), John Firminger Duthie (1845-1922), James Sykes Gamble (1847-1925), David Prain (1857-1944) made significant role on botanical expeditions in the Indian subcontinent and reported many species from the territory of present Bangladesh, specially from present Sylhet, Chittagong and the Chittagong Hill Tracts region. They worked mainly for the British East India Company and stored most of their plant collections at Royal Botanic Gardens, Kew and Central National Herbarium, Kolkata. Based on those plant collections, JD Hooker and David Prain produced two comprehensive floristic works named as 'Flora of British India' and 'Bengal Plants' respectively. Besides those two workers, some other workers (*viz.* Heinig, 1925; Cowan, 1926; Raizada, 1941; Datta and Mitra, 1953; Sinclair, 1956) had produced some local floras of the country. Since the establishment of Bangladesh National Herbarium (BNH) in 1970, several workers have paid attention to explore the flora of newly independent Bangladesh and recorded a good number of angiosperm species from the country. Very recently, Ahmed *et al.* (2007-2009) and Siddiqui *et al.* (2007) compiled 3611 angiosperm species from Bangladesh based on all of these available taxonomic literatures. Even after the publication of 'Encyclopedia of Flora and Fauna of Bangladesh', the worker of BNH and other institutes have recorded 89 additional angiosperm species from the country (Rahman and Hassan, 2017). That updates and new additions of angiosperm species indicates the necessity of more floristic study of the country. Therefore, the present study aimed at to prepare a comprehensive list of new additions of angiosperm species which were collected from present Bangladesh territory and stored at Kew but not published in any floristic literatures of the country.

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Materials and Methods

The paper is based on the herbarium specimens stored at the Royal Botanic Gardens Kew Herbarium. The authors have downloaded 1210 images of herbarium sheets collected from present Bangladesh territory by using the website (<http://apps.kew.org/herbcat/gotoSearchPage.do>) of Kew. The identification of those images have been confirmed by consulting taxonomic literature viz. Hooker (1872-1897); Prain (1903); Kanjilal *et al.* (1934-1940); e-flora of India (<http://efloraindia.nic.in/efloraindia/eFloraHomePage.action>), e-flora of China (http://www.efloras.org/flora_page.aspx?flora_id=2), e-flora Malesiana (<http://portal.cybertaxonomy.org/flora-malesiana/node/1>). Furthermore, Ahmed *et al.* (2007-2009), Siddiqui *et al.* (2007) and Rahman and Hassan (2017) have been consulted to prepare the additional flora list.

Results and Discussion

The authors have identified 875 plant species from 1210 images of herbarium specimens downloaded from the website of Kew. Among those species, 71 species are new additions to the flora of Bangladesh as they are not mentioned in any floristic publications referring to Bangladesh territory. The 71 species are distributed under 63 genera and 41 families. Among those families and genera, 2 families (i.e. Lardizabalaceae and Saxifragaceae) and 14 genera (i.e. Lardizabalaceae and Saxifragaceae) are also new for Bangladesh. Among them 31 species are herbs, 20 species are shrubs and 20 species are trees. The species are arranged in alphabetical order and presented along with their updated nomenclature, family name, synonyms, brief description, flowering and fruiting period (whenever available), distribution (whenever available) and specimen citations.

Taxonomic Enumeration

1. *Acranthera tomentosa* R.Br., Fl. Brit. India 3: 92. 1880.

Rubiaceae

Epiphytic herbs. Stem stout, hirsutely tomentose. Leaves elliptic or oblanceolate, 10-25 × 5.2-7.5 cm long, acute at apex, hirsute; petiole 2-2.5 cm long, hirsute. Inflorescence subterminal, cymes. Flowers bluish, bracteate. Calyx tube oblong; lobes 5, linear-lanceolate, 1.5-2.5 cm long. Corolla tube funnel-shaped, 3.5-4.0 cm long, villous; lobes 5, short, rounded, villous. Stamens 5, included; filaments filiform; anthers cohering into a tube, pointed and spurred at tips. Ovary fusiform, 1-celled; ovules numerous, on two parietal 2-lamellate placenta; style filiform; stigma clavate, furrowed. Berry 3.5-4.0 cm long with persistent calyx lobes. *Flowering & fruiting*: July-October. *Distribution*: India. *Specimen examined*: Sylhet, 1831, Wallich, N., 8398 (K000030962).

2. *Aeschynanthus bracteatus* Wall. ex A. DC., Prodr. 9: 261. 1845.

Gesneriaceae

Epiphytic shrubs. Stems 20-140 cm long, glabrous. Leaves opposite; petiole 4-20 mm long; leaf blades broadly lanceolate-elliptic, ovate, or obovate, 4.5-12.5 × 1.5-6.0 cm, base cuneate to rounded, apex acute, margin entire, coriaceous. Inflorescence axillary or pseudoterminal cymes, 2-7-flowered; peduncle 3-7 cm long; bracts usually persistent, red to purple, lanceolate to ovate; pedicel 6-12(-20) mm long. Calyx red, 5-lobed; lobes linear to lanceolate, 1.2-1.9 cm × 2-4 mm, outside glabrous. Corolla red to pink or purple, 3-4 cm long; limb indistinctly 2-lipped. Stamens exerted; filaments 2.3-2.6 cm long; anthers coherent in pairs at apex. Style 5-7 mm long, glandular puberulent. Capsule 7-16 cm long. *Flowering & fruiting*: Throughout the year. *Distribution*: Bhutan, China, India, Myanmar. *Specimen examined*: Pundua, Sylhet, 1824, Wallich, N., 794 (K001111908).

3. Aeschynanthus longiflorus (Blume) A.DC., Prodr. 9: 262. 1845. *Lysionotus longiflorus*

Blume (1826).

Gesneriaceae

Epiphytic herbs. Stem arching, glabrous. Leaves opposite; petiole 3-14 mm long, glabrous; blade ovate or elliptic, 3.5-17.5 × 1.5-6.5 cm, base rounded to cuneate, apex acuminate to caudate, margin entire, fleshy or coriaceous. Inflorescence terminal, 2-5 flowered cymes; bracts linear, 3-5 mm long; pedicels 10-15 mm long, brownish-green or purplish, glabrous. Calyx of separate lobes free to base, 4.5-22 mm long; lobes linear, narrowly triangular, narrowly ovate or oblong, erect. Corolla 4-9 cm long, tube narrow at base; outside bright red or dark red, inside cream-coloured; lobes bright red; upper lobes orbicular, oblong or ovate; lateral lobes oblique ovate or deltoid. Stamens long exerted, fused in 2 pairs; filaments reddish; anthers pale pink. Pistil 4-8 cm long; ovary 2-3 mm long; style purple or purplish-pink. Capsule 20-60 cm × 3-4 mm. *Flowering & fruiting*: June-September. *Distribution*: Thailand, Malaysia and Indonesia. *Specimen examined*: Pundua, Sylhet, 1824, Wallich, N., 795 (K001111909).

4. Aeschynanthus superbus C.B. Clarke, Commelyn. Cyrtandr. Bengal. t. 6. 1874. **Gesneriaceae**

Epiphyte herbs. Stem 50-100 cm long, ascending and pendulous, glabrous. Leaves opposite; petiole 5-15 mm long, glabrous; leaf blades elliptic to obovate-lanceolate, 8-22 × 1.5-10.5 cm, base cuneate to obtuse, apex abruptly acuminate, margin entire, leathery. Inflorescences terminal or axillary, 5-15-flowered cymes; peduncle 1-4 cm long; bracts red; pedicels 5-12 mm long. Calyx 5 lobed, lobes elliptic to obovate, 15-35 × 5-10 mm, orange-red. Corolla 6-9 cm long; bright red with darker lines; limb indistinctly 2-lipped. Stamens exerted, fused in 2 pairs; filaments glandular hairy. Pistil 6-8 cm long; ovary 1.5-4.5 mm long, glandular pubescent; style 8-12 mm long. Capsule 30-50 cm × 1.5-3.0 mm. *Flowering & fruiting*: August-December. *Distribution*: Bhutan, China, India, Myanmar. *Specimen examined*: Pundua, Sylhet, 1829, Wallich, N., 795 (K000831877).

5. Alyxia fascicularis (Wall. ex G. Don) Hook. f., Fl. Brit. India 3: 636. 1882.**Apocynaceae**

Woody liana, up to 2 m long. Stem terete, gray, glabrous, with latex. Leaves opposite or in whorls of 3; petiole 2-4 mm long; leaf blade oblong-elliptic, oblong, or oblanceolate, 5-10 × 1.5-3.0 cm long, glabrous, base broadly cuneate, apex caudate-acuminate. Cymes fascicled, short pedunculate, densely flowered, glabrous or puberulent. Flowers small, 5-merous. Calyx deeply divided, lobes ovate. Corolla white, tube ca. 2 mm long; lobes small, rounded. Stamens included, inserted at or above middle of corolla tube; filaments very short; anthers free from pistil head; disc absent. Ovaries 2, distinct; ovules biseriate, 4-6 in each ovary; style filiform; pistil head capitate, apex shortly 2-cleft. Fruit moniliform, stipitate, with 2-4 cylindrical-ellipsoid articles ca. 21 cm. *Flowering & fruiting*: September-November. *Distribution*: China, India, Thailand. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 1612 (K001113587).

6. Ardisia thomsonii Mez, Pflanzenr. IV, 236: 133. 1902.**Myrsinaceae**

Shrubs or small trees. Leaves alternate or pseudoverticillate, oblong-elliptic, papery to subleathery, base attenuate, apex acuminate, margins entire, usually punctate. Inflorescences solitary, or cymes, rarely racemose. Flowers bisexual, 5-merous. Calyx campanulate; sepals free or rarely united at base, imbricate or quincuncial, usually punctate or punctate-lineate. Corolla campanulate, often punctate; lobes united at base, imbricate, often conical in bud. Stamens shorter than petals; anthers ovate-lanceolate, apex acute. Ovary ovoid or subglobose; ovules 3 to many. Fruit drupaceous, 1-seeded, exocarp fleshy, endocarp bony. *Flowering & fruiting*: Through out the

year. *Distribution*: India, Myanmar. *Specimen examined*: Chittagong, 31 xii 1850, Hooker & Thomson, 270 (K000756673).

7. *Aristolochia bracteolata* Lam., Encycl. 1: 258. 1783.

Aristolochiaceae

Perennial lianas. Stem striate, glabrous. Leaves alternate, simple, glabrous; lamina ovate-cordate, 6-9 × 7-10 cm, reniform at base, obtuse or rounded at apex, margin entire, leathery, basal nerves 5-7. Inflorescence solitary, axillary; bracts large, orbicular, 1-1.3 cm long, glabrous; pedicel 5-10 mm long. Perianth 2.5-4.0 cm long, base globose, tube cylindrical, erect, slender, lip erect, linear, dark purple, villose. Stamens 6, sessile, anthers united with a 6-lobed gynostegium. Ovary inferior; placentation parietal in upper portion, placentae intruded and meeting in the centre, exile below. Capsule pyriform, 2-3 cm long, 12-ribbed, glabrous. *Flowering & fruiting*: June-January. *Distribution*: Tropical Africa, Arabia, Sri Lanka, India and Pakistan. *Specimen examined*: Bank of Jamuna, 16 vii 1813, S. Coll., 2706(K001116864).

8. *Artemisia japonica* Thunb. 1784. Fl. Jap. 310. 1784.

Asteraceae

Perennial, aromatic herbs. Stem 50-120 cm tall, woody at base. Leaves clustered at apex, blade spathulate, oblong-obovate, 3-8 × 1-3 cm, cuneate to flabellate, coarsely dentate to incised-dentate; puberulent or glabrescent. Synflorescence a narrow panicle, 15-20 × 3-15 cm; bracts leaf-like, elliptic, lanceolate or linear-lanceolate. Capitula many, nodding; involucre ovoid or subglobose, 1.5-2.5 mm in diam. Florets 12-15, yellow; marginal-florets 3-8; corolla narrow, 2-toothed. Disk florets 5-10, male. Achenes obovoid, 0.8-1.0 mm long, dark brown. *Flowering & fruiting*: July-September. *Distribution*: Japan, Korea, China, Nepal, India, Pakistan, Afghanistan and Russia. *Specimen examined*: Sylhet, 1830, Wallich, N., 3303 (K000942037).

9. *Astragalus strictus* Benth., Illustr. Bot. Himal. Mount. 198. 1835. *Astragalus ladakensis* N.P. Balakr. (1967).

Fabaceae

Herbs, up to 30 cm tall. Stems appressed hairy. Leaves 4-7 cm long and stipules 3.5-6.5 mm long; leaflets 8-12 pairs, narrowly elliptic to elliptic, 4-10 × 1-4 mm, abaxially densely hairy, adaxially sparsely to loosely hairy, apex narrowly rounded to emarginate. Racemes ovoid, densely 10-20-flowered; peduncle 5-8 cm long; bracts 2-3 mm long, white and black hairy. Calyx 3-4 mm long, rather densely covered with appressed white hairs up to 1 mm and with mostly shorter black hairs. Petals pale pinkish to purple, standard elliptic, 7-9 × 4-6 mm; wings 6-8 mm long. Pods unilocular, 6-8 mm long, beak 0.5-1.0 mm long. *Flowering & fruiting*: April-September. *Distribution*: India, Nepal, Tibet, Bangladesh. *Specimen examined*: Sylhet, date unknown, Wallich, N., 5924 (K001090984).

10. *Buddleja macrostachya* Benth., Scroph. Ind. 42. 1835. *Buddleja hosseusiana* Kraenzl. (1912); *Buddleja martii* J.A. Schmidt (1868).

Buddlejaceae

Shrubs or small trees, up to 6 m tall. Leaves sessile or subsessile; interpetiolar stipules leaflike, sometimes deciduous; leaf blade narrowly elliptic, 5-45 × 1-15 cm long. Inflorescence terminal or axillary, cymes, 10-30 cm long. Flowers fragrant; pedicels 1-2 mm long. Calyx campanulate, 3-6 mm long, outside stellate tomentose, inside glabrous. Corolla tube cylindrical, 8-11 mm long, mauve, purple, or lilac, with an orange to red throat. Stamens inserted at throat of corolla, anther oblong. Ovary ovoid, 2-4 × 1.5-2.5 mm, stellate tomentose; style 0.5-3.0 mm long, basally stellate tomentose and with glandular hairs. Capsules elliptic or ovate, 7-10 × 3-4 mm, stellate tomentose, style persistent. *Flowering & fruiting*: March-September. *Distribution*: China, Bangladesh, Bhutan,

India, Myanmar, Thailand, Vietnam. *Specimen examined*: Sylhet, 1832, Wallich, N., 6407 (K001096402).

- 11. *Callicarpa rubella*** Lindl., Bot. Reg. 11: t. 883. 1825. *Callicarpa purpurea* Lem. (1859); *Callicarpa sessilifolia* Wall. ex Walp. (1845). **Verbenaceae**

Shrubs, up to 2 m tall. Stems terete, brown stellate-tomentose. Leaves opposite, sessile or subsessile; leaf blades lanceolate, oblanceolate, obovate-elliptic, or ovate, 5-17 × 2-10 cm, base cordate, sometimes oblique, margins irregularly serrulate or serrate, apex acuminate to caudate; veins 5-9 pairs, elevated on both surfaces. Inflorescence axillary, dichotomous cymes, 3-5 cm across; peduncle 2-4 cm long; bracts small. Flowers small, purplish. Calyx tube subtruncate to slightly dentate, shortly 4-lobed, lobes obtusely triangular. Corolla purple, greenish, or white, ca. 2.5 mm. Stamens 4, inserted on corolla tube; anthers ovate or oblong. Ovary imperfectly 2-locular; ovules 2 per locule; style longer than stamens; stigma usually dilated. Drupes globular, 1-2 mm in diameter, purple. *Flowering & fruiting*: May-November. *Distribution*: China, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam. *Specimen examined*: Sylhet, Pundua, date unknown, De Silva, F., 1837 (K001114364).

- 12. *Capparis decidua*** (Forssk.) Edgew., J. Linn. Soc., Bot. 6: 184. 1862. *Capparis aphylla* Roth; *Sodada decidua* Forssk. **Capparaceae**

Shrubs or small trees, up to 5 m tall. Stems crooked spiny. Leaves present on young twigs or spine-tip, subsessile, caducous; lamina linear, 4-20 × 1-3 mm; stipular spines 1-6 mm long, straight or slightly curved, yellow or brown. Inflorescence few to many flowered corymbs, on short lateral shoots, ebracteate. Flowers 1-2 cm across, usually brick red; pedicel 1.0-1.5 cm long, slender. Sepals 4(-5), free. Petals 4(-5), imbricate, obovate. Stamens 10-15, red. Pistil 10-15 mm long; ovary about 2 mm in diam., beak about 1 mm long. Fruit globose, 10-15 mm in diam., slightly beaked, glabrous, smooth, deep red when ripe. Seeds reniform. *Flowering & fruiting*: February-July. *Distribution*: North and Tropical Africa, Arabia, India. *Specimen examined*: Bank of Jamuna, 1 vii 1813, S. Coll., 6983 (K001126488).

- 13. *Clematis smilacifolia*** Wall., Asiat. Res. 13: 402. 1820. *Clematis smilacina* Blume; *Clematis subpeltata* Wall. **Ranunculaceae**

Woody climbers. Stems shallowly 8-20-grooved, glabrous. Leaves simple; petiole 3-6 cm long; blades ovate to deltoid-ovate, 8-15 × 6-12 cm long, leathery, glabrous, base cordate to subcordate, or peltate, margins entire, basal nerves 7-9. Inflorescence axillary, paniculate cymes, laxly flowered; peduncle 1-10 cm long, sparsely puberulous; bracts linear. Flowers 3-4 cm diameter. Sepals 4 or 5, blue-purple, lanceolate-oblong, 1.6-1.8 × 0.5-0.7 cm. Stamens 0.8-1.4 cm, glabrous; anthers narrowly oblong, 2.5-3.0 mm long. Ovaries pubescent; style 5-7 mm long, densely villous. Achenes narrowly ovate, 5-7 × 1.8-2.0 mm, puberulous; persistent style 5-8 cm long, plumose. *Flowering & fruiting*: November-January. *Distribution*: China, Bhutan, Cambodia, India, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam. *Specimen examined*: Rangpur, 24 i 1809, S. Coll., 4684 (K001039684).

- 14. *Clerodendrum bracteatum*** Wall. ex Walp., Repert. Bot. Syst. 4: 106. 1845. **Verbenaceae**

Shrubs or small trees, up to 10 m tall. Stems 4-angled, densely yellowish brown tomentose. Leaves opposite; Petiole densely pubescent; blades ovate to broadly ovate, 10-15 × 5-10 cm long, densely villous and yellow to orange glandular dotted, base broadly cuneate to subtruncate, margin

entire or subentire, apex acuminate. Inflorescences axillary, cyme-like capitula; peduncle 3-10 cm long; bracts persistent, elliptic to ovate. Calyx deeply 5-lobed, membranous, red. Corolla tube slender, 1.5-3.5 cm long; lobes oblong, 6-8 mm long, white. Stamens 4. Ovary 4-locular; ovules pendulous; style with 2 stigmatic lobes. Drupes subglobose, 5-7 mm in diam., enclosed in calyx, purple-black. *Flowering & fruiting*: July-November. *Distribution*: Bhutan, China, India. *Specimen examined*: Sylhet, Pundua, date unknown, De Silva, 1800 (K001114230).

15. *Cleyera japonica* Thunb., Nov. Gen. Pl. 69 1783. *Cleyera grandiflora* Wall. ex Choisy.

Theaceae

Shrubs or trees, up to 10 m tall. Young branches grayish brown, terete, slightly 2-ribbed. Leaves simple, alternate; petiole 5-10 mm long; blade elliptic-ovate, 6-12 × 2-5 cm, leathery, apex acuminate, base acute or cuneate, margins entire, lateral nerves indistinct, shiny and glabrous. Inflorescence axillary, solitary or cluster of 5. Flowers 1-2 cm across, white turning yellow, scented; pedicel 1-3 mm long. Sepals 5 free, lobes ovate to orbicular, 2-3 × 3-4 mm, apex rounded, margin ciliate. Petals obovate-oblong, 0.6-1 × 1-1.5 cm, fleshy. Stamens 25-30, filaments glabrous; anthers ovate to long ovate, with filiform trichomes. Ovary globose, 2-celled, multi-ovuled; style 5-6 mm long, apically 2-lobed. Fruit globose, 8-10 mm in diameter, purplish black. Seeds dark brown, compressed, shiny. *Flowering & fruiting*: May-December. *Distribution*: Japan, Korea, China, Taiwan, northern India, Myanmar, Thailand and Nepal. *Specimen examined*: Sylhet, Pundua, date unknown, De Silva, 1461 (K001113145).

16. *Crotalaria burhia* Benth., Hook Lond. J. 2: 474. 1843.

Fabaceae

Undershrubs, up to 60 cm tall. Stem hoary with dense appressed pubescence. Leaves deciduous, simple; blades oblong, 0.6-2.5 cm × 3-10 mm, obtuse, pubescent. Inflorescence axillary, single flowered; pedicels very short; bracteoles 2. Flowers usually pedicellate; bracteoles 2, rarely lacking. Calyx 7-9 mm long, pubescent, teeth lanceolate, subcampanulate, with 5 subequal lobes or 2-lipped with 3 narrow abaxial lobes and 2 broader adaxial lobes often connate or partly connate. Corolla yellow, slightly exerted, 2 appendages inside; wings oblong or narrowly elliptic. Style slightly bearded at the top. Stamens monadelphous, dimorphic, 5 usually shorter with oblong and basifixed anthers alternating with 5 longer with ovoid and dorsifixed anthers. Pods 8-9 mm long, hairy, 3-4-seeded. *Flowering & fruiting*: January-March. *Distribution*: Pakistan, India, Afghanistan. *Specimen examined*: Bank of Jamuna, 3 viii 1818, S. Coll., 5386 (K001120739).

17. *Decaneuropsis vagans* (DC.) H. Rob. & Skvarla, Proc. Biol. Soc. Wash. 120(3): 365. 2007.

Gymnanthemum scandens (DC.) Steetz. (1864); *Vernonia scandens* DC.

Asteraceae

Climbing herbs. Branches slender, glabrous or pubescent. Leaves petiolate; blades ovate elliptic or lanceolate, acuminate, entire, glabrous or pubescent beneath, pinnately veined. Inflorescence terminal, paniculate heads of 5-10 flowered; pedicels long, leafy; involucre bracts ovate or linear-lanceolate, acute or obtuse. Corolla pink, narrowly tubular, often glandular, with campanulate or campanulate-funnelform limb; lobes 5. Anthers hastate, obtusely auricled. Style branches subulate, puberulent. Achenes compressed, glabrous deeply 10-ribbed, pappus red outer hairs few short slender. *Flowering & fruiting*: November-February. *Distribution*: India and Myanmar. *Specimen examined*: Sylhet, date unknown, Wallich, 3060 (K000814666).

- 18. *Desmodium multiflorum*** DC., Ann. Sci. Nat. (Paris). 4: 101. 1825. *Desmodium angulatum* DC.; *Desmodium dubium* Lindl. *Desmodium floribundum* (D.Don) Sweet. *Desmodium mairei* Pamp. *Desmodium nepalense* H. Ohashi. *Desmodium sambuense* (D.Don) DC.

Fabaceae

Shrubs, 1-2 m tall. Branches yellow to white pubescent, becoming glabrescent. Leaf trifoliolate; petiole 2-6 cm long, densely tomentose; leaflets elliptic or obovate, 5-10 × 3-6 cm, base cuneate or nearly rounded, apex obtuse or acute, mucronate, glabrescent above, densely appressed hairy below; stipules c. 7.5 mm long. Inflorescence axillary and terminal, panicle or racemes, flowers solitary or in pairs; bracts 6-7 mm long; pedicel 5-6 mm long. Calyx 3-4 mm long, pubescent, teeth as long as the tube. Corolla 7.5-10.0 mm long, densely hooked hairy; standard elliptic, claw obovate, wings narrowly elliptic, lilac. Stamens monadelphous. Pods 1.8-2.5 cm long, suture indented, 4-7-jointed, articles obovate, 2.5-4.0 mm long, appressed brown pubescent. *Flowering & fruiting*: June-September. *Distribution*: Pakistan, India, Nepal, Bhutan, Thailand, China. *Specimen examined*: Chittagong, 1821, Bruce, 5729 (K001121920).

- 19. *Diospyros lanceolata*** Poir., Encycl. 5: 434. 1804. *Diospyros humbertii* (H. Perrier) G.E. Schatz & Lowry; *Ebenus lanceolata* (Poir.) Kuntze; *Embryopteris lanceolata* (Poir.) G. Don; *Maba humbertii* H. Perrier; *Maba lanceolata* (Poir.) Hiern

Ebenaceae

Medium-sized tree. Leaves lanceolate to ovate-lanceolate, 4-10 × 1.5-3.0 cm long, base obtuse or rounded, apex acute, coriaceous, shiny above; petiole 2-4 mm long. Male inflorescence cymes, 1-3 cm long, 1-3 flowers together, sessile, ovoid, glabrous; bracts 6-7, imbricate, coriaceous; calyx campanulate, densely ferruginous-hirsute, trilobed; corolla 3-4-lobed, lobes oblong, emarginate, recurved, glabrous; Stamens 24-32, glabrous, inserted at the base of corolla; ovary absent. Female flower: peduncle very short; calyx urceolate, shortly 3-lobed; corolla narrowed at the throat, deeply 3-4-lobed; ovary spherical, glabrous, 3-celled; 2-ovules per cell; styles 3-lobed. Fruit ellipsoid or globose, 1.7-2.5 cm diameter, glabrous, shiny. *Flowering & fruiting*: May-September. *Distribution*: India. *Specimen examined*: Gangachora, Rangpur, 29 v 1809, S. Coll., 4122 (K001038194).

- 20. *Dipsacus asper*** Wall. ex C.B. Clarke, Fl. Brit. India 3: 218. 1881.

Caprifoliaceae

Perennial herbs, up to 2 m tall. Stems erect, branched, 4-8-ridged, ridges sparsely covered with retrorse spines. Basal leaves rosulate; petiole up to 24 cm long; leaf blade pinnatisect, rarely entire, 14-24 × 4-19 cm long, adaxially white setose, or papillate-setose, abaxially densely setose along veins. Inflorescence globose heads, 1.5-3.0 cm in diameter; peduncles 15-30 cm long; involucre bracts 5-7, leaflike, lanceolate or linear, hispid; bracts obovate, 6-10 mm long. Calyx 4-ribbed, disk-shaped, ca. 1 mm long. Corolla yellowish or white, funnel form, 10-12 mm long; tube ca. 2.4 mm long. Stamens exserted; anthers purple. Achenes adnate to involucre, 8-ribbed, crowned with calyx limb. *Flowering & fruiting*: July-September. *Distribution*: China, India, Myanmar. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, 428 (K001111011).

- 21. *Ehretia silvana*** R.R. Mill, Edinburgh J. Bot. 53: 266. 1996.

Boraginaceae

Trees. Branches terete, glabrous, young twigs dark reddish-brown. Leaves expanding mainly after the flowers; petiole 10-22 mm long, channelled on one side; lamina elliptic, coriaceous. Inflorescences terminal and sublateral, ovoid corymbs, 2.5-5.0 × 3-7 cm, twice or three times dichotomously branched; peduncles 10-25 mm long; pedicels 0.5-1.5 mm long. Calyx tube short, shallowly cup-shaped, sparsely glandular-puberulent. Corolla white, infundibular, 9-10 mm long.

Filaments inserted near top of tube. Style 6-8 mm long, unequally bifid. Drupes yellow or orange, subglobose, glabrous. *Flowering & fruiting*: May-October. *Distribution*: India, Myanmar, Bhutan. *Specimen examined*: Sylhet, 1823, Hooker, 896 (K000998072).

22. *Enicostema verticillatum* (L.) Engl., Pflanzenw. Ost-Afrikas C: 313. 1895. *Centaurium verticillatum* (L.) E.H.L.Krause; *Exacum verticillatum* (L.) Willd.; *Gentiana verticillata* L.; *Hippion verticillatum* (L.) F.W. Schmidt; *Lepinema verticillata* (L.) Raf.; *Slevogtia occidentalis* Griseb.; *Slevogtia verticillata* (L.) G. Don **Gentianaceae**

Perennial herbs, up to 50 cm tall. Leaves in many pairs, sessile; lamina linear, oblong-lanceolate, 1.8-8.0 cm long; apex acuminate to subacute, base gradually attenuate and amplexicaul, chartaceous, with 3(-5) strongly ascending veins. Flowers in dense, axillary, verticillate clusters, usually 4-8 flowers per cluster, 6-8 mm long, white, sessile, bracteates, the bracts linear, 4-6 mm long. Calyx tube 4-8 mm long, urceolate, lobes subulate to narrowly linear-lanceolate, 6-8 mm long, recurved, margins membranous. Corolla 6-8 mm long. Stamens inserted; filaments 1.5-2.2 mm long; anthers shortly apiculate. Ovary ovoid; style subulate; stigma subcapitate. Capsule 3-4.5 × 2.0-2.5 mm., obovoid. Seeds 0.4-0.5 mm diam., subglobose. *Flowering & fruiting*: August-January. *Distribution*: Antigua, Dominica, Grenada, Barbados, Trinidad, Tobago, South America. *Specimen examined*: Banks of Jamuna, 6 viii 1813, S. Coll., 4396 (K001038898).

23. *Farsetia aegyptia* Turra, Farsetia: 5. 1765. *Cheiranthus farsetia* L.; *Farsetia cheiranthoides* R.Br.; *Farsetia chudaei* Batt. & Trab.; *Farsetia incana* Raf.; *Farsetia oblongata* C.Presl; *Farsetia ovalis* Boiss. **Brassicaceae**

Perennial shrubs, up to 60 cm tall. Stem erect, densely branched, cylindrical. Leaves alternate, sessile, exstipulate; blades linear oblong, 0.5-2.0 × 0.1-0.3 cm, apex acute, obtuse or emarginated, fleshy, midrib prominent on lower surface. Inflorescence 5-10-flowered lax racemes. Flowers are greyish or greenish-brown. Fruit a dry siliqua, ovate-oblong to elliptical, 1-2 mm long, covered with closely appressed fine whitish hairs. Seeds circular, flattened, wing transparent, membranous. *Flowering & fruiting*: January-May. *Distribution*: Egypt, East Mediterranean region, Pakistan and Afghanistan. *Specimen examined*: Bank of Jamuna, 3 viii 1813, S. Coll., 4801 (K001039943).

24. *Ficus cyrtophylla* (Wall. ex Miq.) Miq., Ann. Mus. Bot. Lugduno-Batavi 3: 282. 1867. *Covellia cyrtophylla* Miq.; *Ficus asymmetrica* H.Lév. & Vaniot **Moraceae**

Shrubs or small trees, up to 6 m tall. Branchlets densely covered with short stiff hairs. Leaves distichous; petiole 1.0-1.5 cm long, densely covered with stiff hairs; leaf blades oblong to oblong-obovate, strongly asymmetric, 9-15 × 5-8 cm, papery, densely brown hairy beneath, above very rough. Figs axillary, on normal leafy shoots, paired or clustered, yellowish orange. Male flowers: near apical pore; calyx lobes 4, white; stamen 1. Gall flowers: style lateral, short. Female flowers: pedicel hairy; calyx lobes 5, white, linear, hairy; style lateral, long; stigma enlarged. *Flowering & fruiting*: May-June. *Distribution*: China, Bhutan, India, Myanmar, Thailand, Vietnam. *Specimen examined*: Sylhet, date unknown, de Silva, 4532 (K000880217).

25. *Ficus virgata* Reinw. ex Blume, Bijdr. 454. 1825. *Ficus cuspidatolongifolia* Kaneh.; *Ficus decaisneana* Miq.; *Ficus ellipsoidea* Miq.; *Ficus esmeralda* F.M.Bailey; *Ficus formula* Miq.; *Ficus insularis* Miq.; *Ficus magnifica* Elmer; *Ficus philippinensis* Miq.; *Ficus pinkiana* F.Muell.; *Ficus setibracteata* Elmer; *Ficus trymatocarpa* Miq. **Moraceae**

Medium-sized, evergreen trees. Branchlets pale yellow to yellowish brown, smooth. Leaves alternate; stipules caducous, yellow or white, lanceolate; petiole thick, curved, 0.5-1.5 cm long, with scurfy hairs; leaf blade narrowly ovate, 15-20 × 4-7 cm, leathery, glabrous, base oblique, apex mucronate. Figs axillary on normal leafy shoots, solitary or paired, yellowish orange to purplish brown when ripe. Male flowers: calyx lobes 4, white or yellow; stamen 1(or 2), rudimentary ovary absent. Gall flowers: sessile or shortly pedicellate; calyx lobes 4; ovary ellipsoid to obovoid, smooth. Achenes ellipsoid, 8-10 mm long. *Flowering & fruiting*: Throughout the year. *Distribution*: Taiwan, Indonesia, Japan, New Guinea, Philippines, Australia, Pacific Islands. *Specimen examined*: Banks of Jamuna, 12 viii 1813, S. Coll., 4492 (K001039145).

26. *Fimbristylis intonsa* S.T.Blake, J. Arnold Arbor. 35: 221. 1954.

Cyperaceae

Annual herbs. Culms tufted, 5-15 cm tall, setaceous, acutely 5-ribbed, scabrid. Leaves basal; blades falcate, flat, obtuse, apiculate, margin antrorsely spinulose-scabrid, 1.5-2.0 mm wide; ligule absent. Inflorescence simple or subcompound, loose, with 3-8-spikelets, 1-5 cm long. Involucral bracts 2-3. Primary rays 3-7, scabrid. Spikelets solitary, ovate-oblong, strongly compressed, sometimes contorted, acute, densely many-flowered, brown. Stamens 3; anthers oblong-linear. Stigmas 3, style triquetrous. Nut obtusely trigonous, obovoid to oblong-ovoid, 0.6-0.8 × 0.3-0.5 mm, shiny white, shortly stipitate, verrucose. *Flowering & fruiting*: Throughout the year. *Distribution*: Malaysia, Sumatra, New Guinea. *Specimen examined*: North Bengal (between Titalya and Dauknuddee), 28 x 1968, Kurz, (K000974042).

27. *Fraxinus floribunda* Wall., Fl. Ind. 1: 150. 1820. *Fraxinus urophylla* (G.Don) Wall. ex A.DC.; *Ornus urophylla* G.Don

Oleaceae

Trees, up to 25 m tall. Buds densely brown tomentose. Leaves pinnately compound, 14-30 cm long; petiole 4-5 cm long; leaflets 7-9; petiolule 0.4-1.5 cm long; leaflet blade ovate-lanceolate to elliptic, 8-15 × 2-6 cm, leathery, glabrous or pilose, base broadly cuneate, oblique, margin serrate or entire, apex caudate-acuminate; primary veins 10-12. Panicles terminal, spreading, many flowered cymes, 20-30 cm long. Flowers appearing after leaves; pedicel 3-4 mm long. Calyx cupular, 1.0-1.4 mm long; teeth broadly deltate. Corolla white; lobes oblong, (1.5-)3-5 mm, obtuse. Stamens exceeding corolla lobes. Samara linear, 2-4 cm × 4-5 mm, wing decurrent to distal part of nutlet. *Flowering & fruiting*: February-October. *Distribution*: Bhutan, China, Afghanistan, India, Japan, Laos, Myanmar, Nepal, Thailand, Vietnam. *Specimen examined*: Sylhet, Pundua, date unknown, De Silva, 2835 (K001117199).

28. *Garnotia polygonooides* Munro ex Oliv., Hooker's Icon. Pl. 15: t. 1481. 1885.

Berghausia emodi Endl.; *Garnotia emodi* (Arn. & Nees) Janowski; *Miquelia emodi* Arn. & Nees

Poaceae

Perennial herbs. Culms slender, 30-55 cm long. Leaf-sheaths hispid, with tubercle-based hairs; ligule ciliate membranous, 0.2-0.5 mm long, erose; blades flat or involute, 8-18 cm × 3-6 mm, hispid or sparsely hairy. Inflorescence a panicle, contracted, linear or lanceolate, 8-20 cm long. Spikelets solitary; pedicelled; comprising of 1 fertile florets, pedicels unequal. Spikelets with 1 floret, narrowly lanceolate, dorsally compressed, base often with a tuft of short stiff hairs, disarticulating below spikelet; glumes as long as spikelet, subequal, lower slightly longer, thinly herbaceous, 3-veined, glabrous or hispid, acute to acuminate, awned or awnless; lemma about as long as upper glume, glumes lanceolate, 3.0-3.5 mm long, membranous, 1-3-veined, palea subequal to lemma, margins ciliate, auriculate at base. *Flowering & fruiting*: April-September.

Distribution: India and Bhutan. *Specimen examined:* Jamuna Valley, 2 ix 1883, Duthie, J.F., 299 (K000943344).

29. *Hiptage acuminata* Wall. *ex* A. Juss., Ann. Sci. Nat., Bot., sér. 2. 13: 269. 1840.

Malpighiaceae

Scandent shrubs. Young branches terete, densely yellowish brown appressed pubescent, mature branches dark brown, glabrous, lenticellate. Leaf blade lanceolate, oblong, or ovate, 7-12 × 3-4 cm long, leathery, both surfaces glabrous. Racemes axillary or terminal, 3-5 cm long, appressed pubescent, 4-10-flowered; pedicels 9-14 mm long, articulate proximally or rarely at middle; bracteoles subulate-lanceolate. Sepals elliptic, 4-5 × 2.0-2.5 mm long, densely pubescent, apex rounded. Stamens differing in size, 4-10 mm long; anthers ovate. Ovary pubescent; style circinate. Samaras 1-3, each 3-winged; abaxial wing long, erect; lateral wings short, spreading. Seed angular-globose. *Flowering & fruiting:* March-May. *Distribution:* China, India, Myanmar. *Specimen examined:* Pundua, Sylhet, date unknown, De Silva, F., 1065 (K001110904).

30. *Ilex venulosa* Hook.f., Fl. Brit. India 1: 602. 1875.

Aquifoliaceae

Trees or shrubs, up to 15 m tall. Leaves oblong-ovate or ovate, 9-19 × 3.0-6.5 cm, apex caudate-acuminate, narrow and 2-3 cm long, base rounded or blunt, entire, leaf surface abaxially bulge, lateral veins 15-20 pairs. Inflorescences are pseudo-panicles or clusters of cymes or umbels, born in bifurcated leaf bracts; inflorescence axis 4-30 mm long. Pedicels 7-11 mm long, slightly flat, longitudinally wrinkled, base broadly triangular, pedicel 1-2 mm; flowers white or yellow, 5 or 6 bases, calyx discoid. Petal oblong, 2.5 mm long, apex rounded; stamens slightly shorter than petals, anthers oblong-ovoid. Corolla erect, 3-4 mm in diam., petals obovate, 1.5 mm long; ovary spherulites ovoid, 1.5 mm long, stigma capitate, 5-7 cracked. Fruit spherical, 3-4 mm in diam. Seed 5-7, oblong-ovate, 2 mm long. *Flowering & fruiting:* February-December. *Distribution:* Bhutan, India, Myanmar and China. *Specimen examined:* Sylhet, 19 viii 1850, Wallich, 4321 (K000669421).

31. *Impatiens laevigata* Wall., Numer. List 4753. 1831.

Balsaminaceae

Undershrubs. Leaves alternate, crowded together at top of stem, elliptic-oblancheolate to narrowly oblanceolate, attenuate or cuneate at base, acute to caudate-acuminate at apex, shallowly serrate along margins with teeth shortly appendaged, 5-12 × 2.5-5.0 cm, mid green above, pale green beneath; lateral nerves 5-12 pairs; petiole 1 - 6 cm long, often glandular. Flowers 1 - 4, clustered at top of stem, yellow; bracts two types, outer bracts larger, ovate-cordate, long, inner ones 6 mm long, yellow; peduncles slender, 1.2 - 2.5 cm long. Lateral sepals ovate, acuminate, 1.6 - 1.8 × 1.4 - 1.6 cm, greenish with brownish nerves. Wings 2 - 3 cm long, yellowish or with brownish streaks. Capsules narrowly fusiform, 1.5 cm long, glabrous. *Flowering & fruiting:* July-December. *Distribution:* India, Nepal and Myanmar. *Specimen examined:* Sylhet, 1820, Wallich, 4753 (K000694815).

32. *Impatiens latiflora* Hook.f. & Thomson, J. Proc. Linn. Soc., Bot. 4: 139. 1860.

Balsaminaceae

Shrubs, up to 1 m tall. Leaves alternate, subopposite or sub verticellate, usually crowded in the end of the branches, ovate-lanceolate, about 5.0-12.5 × 2-6 cm across, base cuneate, apex acuminate to caudate, lateral veins about 7-10 on either side of the midrib, membranous, pubescent, petiole slender, glandular at the lower half, glabrous, about 2-7 cm long. Inflorescence

resupinate, axillary solitary or fascicles. Flowers bisexual, zygomorphic, white, purple, about 2.5-4.0 cm across, pedicel slender, about 2-6 cm long, sepals 3, imbricate. Stamens 5, anthers bilocular. Ovary 5 locular, superior. Fruit indehiscent, capsule, narrow fusiform or ellipsoid, about 1.8-2.5 cm across, swollen in the middle, glabrous. Seeds many. *Flowering & fruiting*: August-November. *Distribution*: India and Bhutan. *Specimen examined*: Dapla, date unknown, Booth, s.n. (K000694821).

33. Indigofera dosua D. Don, Prodr. Fl. Nepal. 244. 1825.

Fabaceae

Shrubs, up to 20 cm tall. Leaves 4-10 cm long, 13-39-foliolate; petiole absent; rachis with dense spreading brown trichomes; petioles 1 mm long. Racemes 5-15 cm long; peduncle and rachis with dense spreading long white trichomes; peduncle 4-7 mm long; bracts linear to narrowly triangular, 8-10 mm long. Calyx 3 mm long, outside with long spreading white trichomes; tube 2 mm long. Corolla pink; standard elliptic-oblong, 8-10 × 4.5 mm, outside with dense spreading brown or white long trichomes, apex mucronate. Stamens 7.5-9.0 mm long; anthers hairy at base. Ovary with dense appressed white trichomes. Legume linear, cylindric, deflexed to spreading, 3-4 cm × 3-4 mm. Seeds 6-10 per legume, dark brown, cubic, 1.5-2 × 1.5-2 mm. *Flowering & fruiting*: April-August. *Distribution*: China, Bhutan, India, Indonesia, Laos, Myanmar, Nepal, Thailand and Vietnam. *Specimen examined*: Sylhet, date unknown, Wallich, 5487 (K000848683).

34. Inula eupatorioides Wall. ex DC., Prodr. (DC.) 5: 469. 1836. *Duhaldea eupatorioides* (Wall. ex DC.) Steetz.

Asteraceae

Shrubs, up to 2 m tall. Leaf oblong or elliptic-lanceolate, 10-18 cm long, 4-6 cm wide, base narrow or blunt, apex acuminate, margins apical. Head sparse, skin-textured, densely covered hairs above, densely reticulate, raised high below; upper leaves small, base rounded, sessile. The head is small, with a diameter of 5-7 mm; the peduncles are thin, 3-7 mm long, densely covered with coarse hairs and needle leaf. It is nearly bell-shaped, about 4 mm long; a total of 4-5 layers of sepals, oblong-lanceolate, tip apex, slightly thick, rough hair. The inner layer is linearly lanceolate, the upper part is short-pile, slightly ciliate. Yellow rayed tongue; tongue oblong, as long as 5 mm, style branched apically; tubular corolla 5 mm long, with ovoid-tip apex; anther tip apically. Achene cylindrical, 2 mm long, yellowish white. *Flowering & fruiting*: July-December. *Distribution*: Bhutan, India, Laos, Myanmar, Nepal, Pakistan, Thailand and Vietnam. *Specimen examined*: Sylhet, 1832, Wallich, N., 3225/335(K000250057).

35. Jasminum adenophyllum Wall. ex C.B. Clarke, Fl. Brit. India 3: 597. 1882.

Oleaceae

Shrubs. Leaves elliptic-oblong, acuminate, penninerved, 12.7×7.0 cm, base cuneate; primary nerves 8 pairs, subequally distant, the lowest short. Cymes lax few-flowered. bracts subulate or linear, sometimes leafy. Flowers bisexual, usually heterostylous, usually fragrant. Calyx-teeth very long and linear, scandent, glabrous; petiole 0.5 cm. Peduncles 1-flowered; bracts obsolete; pedicels 2.5 cm. Calyx campanulate, cupular, or funnelform, 4-16-lobed. Corolla white or yellow, salverform or funnelform; lobes 4-16, imbricate in bud, sometimes doubled in cultivation. Stamens 2, included, inserted about middle of corolla tube; filaments short; anthers dorsifixed, introrse. Ovules 1 or 2 in each locule. Style filiform; stigma capitate or 2-lobed. Fruit a berry, didymous or one half aborted. Seeds without endosperm; radicle downward. *Flowering & fruiting*: November-February. *Distribution*: India. *Specimen examined*: Sylhet, 1830, Wallich, 2876 (K000901379).

36. *Jasminum flexile* Vahl, Symb. Bot. 3: 1. 1794.**Oleaceae**

Vines. Branchlets terete, glabrous. Leaves opposite, 2 or 3-foliolate; petiole 1.5-2.5 cm long; leaflet blade ovate-lanceolate, membranous, glabrous adaxially, tufted hairy in vein axils abaxially, base rounded-cuneate, apex caudate-acuminate; primary veins 6-8 on each side of midrib; terminal leaflet 7-8.5 × 2.3-3.5 cm, petiolule 1.6-1.8 cm long; lateral ones 4.5-6.5 × 1.3-2.5 cm, petiolule 1-3 mm long. Cymes or paniculate cymes axillary, 3-7-flowered; bracts linear, 1.5-2 mm long, sparsely puberulent. Pedicels 2-11 mm long. Calyx cupular, glabrous; lobes 5, minutely deltate or almost truncate, less than 0.5 mm. Corolla white; tube 2 cm long; lobes 5, oblong, 6-8 mm long. Fruit a berry. *Flowering & fruiting*: November-March. *Distribution*: China, India and Sri Lanka. *Specimen examined*: Sylhet, date unknown, S. Coll., 2882 (K000901369).

37. *Knoxia roxburghii* (Spreng.) M.A.Rau., Bull. Bot. Surv. India 10(Suppl. 2): 40 1969.

Spermacoce brunonis Wall. ex G. Don

Rubiaceae

Herbs, 30-70 cm tall. Leaves sessile or subsessile, opposite or often ternate; blade drying papery, linear-lanceolate, 5-16 × 0.5-2.5 cm, base acute to rounded, apex obtuse to acuminate; stipules persistent, 8-10 mm long. Inflorescences congested-cymose to subcapitate, puberulent or villosulous to glabrescent, ebracteate; peduncles 3-12 cm long; dense flower groups 1-1.5 × 1-2.5 cm, borne singly or 3-5 on cymose axes; pedicels 0.5-1.0 mm long. Calyx glabrescent; ovary portion ellipsoid, 0.5 mm long; limb deeply lobed; lobes triangular, 0.1-0.5 mm long, often unequal on an individual flower. Corolla red, purplish red or white, salverform or tubular, externally densely villosulous or glabrous; tube 3-4 mm long; lobes triangular to ovate, 1 mm long. Schizocarps oblong-ellipsoid, 1.5 mm long; 1.3 mm long. *Flowering & fruiting*: May-October. *Distribution*: India, Cambodia, India, Myanmar, Nepal and Thailand. *Specimen examined*: Gangachora, 22 vii 1809, S. Coll., 822 (K001111983).

38. *Lindera nacusua* (D. Don) Merr., Lingnan Sci. J. 15(3): 419. 1936. *Benzoin nacusuum* (D. Don) Kuntze; *Laurus nacusua* D. Don**Lauraceae**

Shrubs or trees, up to 15 m tall. Leaves alternate; petiole stout, 5-7 mm long, densely yellow-brown pubescent. Umbels solitary or 2-4-fascicled in leaf axil, with 2-3 mm long peduncle and involucre bracts, male umbel 8-flowered, female umbel 3-6-flowered. Male flowers yellow; pedicels 4.0-5.5 mm long, densely yellow-brown pubescent; tepals 6, ovate, 3.5 × 2 mm, glabrous inside; stamens 9, 4.0-4.5 mm long; filaments glabrous, 2-glandular near middle in 3rd whorl; glands broadly reniform, cornute; ovary ovate, 1.5 mm long; style 1 mm long. Female flowers yellow; pedicels 3-5 mm long; tepals 6, broadly ovate, 2 × 1.5 mm; reduced stamens 9, 1.5 mm long, 2-glandular at middle of filament in 3rd whorl; glands rounded-reniform; ovary obovate, 2 mm long, glabrous; style stout, 1 mm long, glabrous; stigma capitate. Fruits subglobose, red at maturity. *Flowering & fruiting*: May-October. *Distribution*: Bhutan, India, Myanmar, Nepal, Vietnam. *Specimen examined*: East Bengal, 1880, Griffith, W., 1227 (K000815647).

39. *Liparis luteola* Lindl., Gen. Sp. Orchid. Pl. 32. 1830. *Leptorkis luteola* (Lindl.) Kuntze**Orchidaceae**

Herbs. Leaves 2; petiole 1.0-1.5 cm long, articulate; blade linear or linear-oblongate, 6-14 × 0.4-0.9 cm, papery, apex acuminate. Inflorescence 6-16 cm long; narrowly winged, sometimes with 1 sterile bract; rachis 3-6 cm long, several to 10-flowered; floral bracts lanceolate, 3-4 mm. Flowers whitish green or yellowish green; pedicel and ovary 9-14 mm long. Sepals lanceolate-linear or linear, 4 × 1 mm, midvein slightly raised abaxially, apex obtuse; lateral sepals to 1.5 mm

wide. Petals filiform, 4×0.3 mm; lip oblong-obovate, 3.5×2.8 mm, with a thick longitudinal ridge near base, with a bilobed callus in front of ridge, apex emarginate and sinus apiculate. Capsule obovoid, $7-9 \times 3-4$ mm; fruiting pedicel 6-9 mm long. *Flowering & fruiting*: December-February. *Distribution*: China, India, Myanmar, Thailand and Vietnam. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 1944 (K001114789).

40. *Luculia pinceana* Hook., Bot. Mag. 71: t. 4132. 1845.

Rubiaceae

Shrubs or trees, up to 10 m tall. Leaves elliptic, elliptic-oblong or oblanceolate, $5-22 \times 2-8$ cm, adaxially glabrous, abaxially glabrous or hirtellous to strigillose on principal veins to throughout, base cuneate, acuminate or obtuse, apex acuminate. Inflorescence corymbiform, many flowered, glabrous; peduncle 2-8 cm; branched portion $2-6 \times 3-8$ cm; bracts stipuliform, linear-lanceolate, 12-15 mm long, glabrous, acute; pedicels 2-6 mm long. Calyx glabrous or sparsely hirtellous; ovary portion cylindrical-obovoid, 4-5 mm long; lobes lanceolate to narrowly oblanceolate, $8-18 \times 2-6$ mm, often ciliate, acute. Corolla red, glabrous; tube slenderly cylindrical, 30-32 mm long; lobes suborbicular, $15-22 \times 11-15$ mm, at base with a lamellate appendage on each side inside, apex rounded. Capsules obovoid to ellipsoid-obovate, $15-25 \times 5-10$ mm; seeds 4 mm long. *Flowering & fruiting*: March-December. *Distribution*: China, India, Myanmar, Nepal and Vietnam. *Specimen examined*: Sylhet, 1821, De Silva, F., 6117 (K000030912).

41. *Lysimachia laxa* Baudo, Ann. Sci. Nat., Bot., sér. 2. 20: 347. 1843. *Lysimachia ramosa* Wall. exDuby

Myrsinaceae

Herbs, up to 60 cm tall. Leaves alternate, subsessile or petiole to 1 cm; leaf blade lanceolate to elliptic-lanceolate, $3-11 \times 0.5-2.8$ cm, tapering to both ends, abaxially glabrous, adaxially \pm setulose; midvein and veins prominent; veinlets conspicuously reticulate. Pedicel 2-4 cm long. Flowers solitary, in axils of medial and upper leaves. Calyx lobes ovate-elliptic, 3-4 mm long, margin submembranous, often stalked glandular, apex acuminate; veins 7-9. Corolla yellow, 6-8 mm long, deeply parted; tube 2 mm long; lobes elliptic-obovate, apex obtuse. Filaments connate basally into a 0.5 mm high ring, free parts 2.3 mm, flattened; anthers 2.5-3 mm long, basifixed, opening by lateral slits. Style 3 mm long. Capsule slightly depressed-globose, 5 mm in diam., 5-valved to base. *Flowering & fruiting*: April-July. *Distribution*: China, India, Indonesia, Myanmar, Nepal, Sri Lanka, Thailand and Vietnam. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 1490 (K001113217).

42. *Maesa rugosa* C.B. Clarke, Fl. Brit. India 3(9): 508-509. 1882. *Maesa rugosa* var. *griffithii* C.B. Clarke; *Maesa indica* var. *retusa* Hand.-Mazz.

Myrsinaceae

Shrubs, 1-3 m tall. Leaves densely brown scaly, glabrescent. Leaf blade broadly obovate, $6-16 \times 5-12.5$ cm, leathery, rugose, base broadly obtuse to acute, margin serrulate, apex cuspidate-acuminate, lateral veins 8-12 on each side of midrib. Inflorescences axillary, paniculate, 3-4 cm long, glabrous or puberulent; bracteoles triangular ovate, acute. Flowers creamy yellow, 2-3 mm long. Pedicel 1 mm long. Calyx lobes broadly ovate, 0.7 mm long, orange punctate-lineate, margin entire and ciliate, apex acute or obtuse. Corolla campanulate; lobes as long as tube, ovate or suborbicular, subentire, obtuse or rounded at apex, orange punctate-lineate. Stamens inserted at middle of corolla tube; filaments very short; anthers ovoid. Pistil included. Style cylindrical; stigma lobed. Fruit ovoid, 3 mm in diam. *Flowering & fruiting*: July-October. *Distribution*: China and India. *Specimen examined*: East Bengal, date unknown, Griffith, H., 3554 (K000756240).

- 43. *Mollugo nudicaulis*** Lam., Encycl. 4: 234. 1797. *Lampetia nudicaulis* (Lam.) Raf.

Molluginaceae

Herbs. Leaves all in a basal rosette, sessile; leaf blade elliptic-spatulate or obovate-spatulate, 1-5 × 0.8-1.5 cm, base attenuate, apex obtuse. Inflorescence a dichasium arising from a rosette of basal leaves, spreading; peduncle and pedicel wiry, stiff. Tepals 5, yellowish white, oblong, 2-3 mm long. Stamens 3-5. Ovary subglobose, 3-loculed; stigmas 3, very short. Capsule subovoid or ellipsoid, as long as persistent tepals. Seeds numerous, black, subreniform, granulose, 0.5-0.7 mm long. *Flowering & fruiting*: Throughout the year. *Distribution*: China, Afghanistan, India, Pakistan; tropical Africa, Cuba and New Caledonia. *Specimen examined*: Jamuna River, date unknown, S. Coll., 648 (K001111473).

- 44. *Nephelephyllum pulchrum*** Blume, Bijdr. 373. 1825. *Anoetochilus pulcher* (Blume) Rollisson; *Nephelephyllum latilabre* Ridl.; *Tainia latilabris* (Ridl.) Gagnep.; *Tainia pulchra* (Blume) Gagnep.

Orchidaceae

Terrestrial herbs, up to 4 cm tall. Leaf 1 per pseudobulb, convolute, petiolate; petiole suborbicular, channeled; blade ovate to cordate, main veins prominent, often mottled. Inflorescence an erect raceme, unbranched, 2-16-flowered; peduncle and rachis usually elongating after anthesis, peduncle with few internodes, scales persistent, tubular; rachis erect, unbranched; floral bracts sessile. Flowers turned to all sides, most open simultaneously. Scape from the base of the pseudo-bulb, sheathed, 7 or 10 cm long, bearing at its apex a few-flowered short raceme. Flowers 1.65 to 1.9 cm long, floral bract ovate-lanceolate, shorter than the shortly stalked ovary. Sepals and petals sub-equal, linear-oblong, acute, reflexed on the ovary. Lip almost flat, appressed to the column, broadly oblong, the apex broad and emarginated, the edges minutely crenulate. Capsule with persistent perianth. *Flowering & fruiting*: June-July. *Distribution*: China, Myanmar, Cambodia, Vietnam, Thailand, Malaysia, Singapore, Indonesia, the Philippines. *Specimen examined*: East Bengal, date unknown, Griffith, W., 5 (K000387858).

- 45. *Otochilus porrectus*** Lindl., Gen. Sp. Orchid. Pl. 36. 1830. *Coelogyne porrecta* (Lindl.) Rchb.f.; *Otochilus fragrans* (Wall. ex Lindl.) G. Nicholson; *Tetrapeltis fragrans* Wall. ex Lindl.

Orchidaceae

Epiphytic or lithophytic herbs. Leaf blade narrowly elliptic to narrowly elliptic-lanceolate, 7-20 × 2.1-4.1 cm, acuminate or obtuse; petiole 1.0-2.5 cm long. Inflorescence synanthous, 15-20 cm long; rachis 7-10 cm long, laxly several flowered; floral bracts caducous. Flowers white, sometimes slightly tinged with yellowish on abaxial surface of sepals and lip; pedicel and ovary 5-8 mm long. Dorsal sepal suboblong or oblong-oblongate, 11-13 × 2.5 mm, 5-veined, apex acute or obtuse; lateral sepals suboblong, similar in size to dorsal sepal. Petals sublinear, 11-13 × 0.8 mm, 3-veined; lip 3-lobed; lateral lobes erect, embracing column, oblong, 3-4 × 1.5-2.0 mm; mid-lobe ovate-elliptic, 6-7 × 4-5 mm, base narrowed into a claw 1 mm, apex acute. Anther with long beak to 2 mm long. Capsule obovoid-ellipsoid, 2 cm × 9 mm. *Flowering & fruiting*: October-December. *Distribution*: China, India, Myanmar, Nepal, Thailand and Vietnam. *Specimen examined*: Pundua, Sylhet, 1821, De Silva, F., 1968 (K000639692).

- 46. *Pholidota articulata*** Lindl., Gen. Sp. Orchid. Pl. 38. 1830. *Coelogyne articulata* (Lindl.) Rchb.f.

Orchidaceae

Epiphytic herbs. Leaves 2; leaf blade obovate-elliptic, oblong or narrowly elliptic, 7.0-17.5 × 2.7-6.2 cm, veins plicate, subacute or obtuse; petiole 1.0-1.5 cm long. Inflorescence at apex of new

pseudobulb, 6-18 cm long; rachis 10- or more flowered, ± flexuous, narrowly ovate-oblong, 1.5-2.5 × 0.5-0.7 cm. Flowers greenish white or white; pedicel and ovary 6-7 mm long. Dorsal sepal oblong or elliptic, concave, 9-10 × 4-5 mm, dorsally carinate, 5-veined; lateral sepals ovate, oblique, slightly wider than dorsal sepal. Petals oblong-lanceolate or suboblanceolate, 7 × 2.0-2.5 mm, 5-veined. Column 2.5-3.0 mm, 1 mm wide, stout, apex winged; rostellum broadly ovate, 1.4-1.8 mm long. Capsule ellipsoid to obovoid-ellipsoid, 1.8-2.0 cm long. *Flowering & fruiting*: June-August. *Distribution*: China, Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand and Vietnam. *Specimen examined*: Noakhali, 1821, De Silva, F., 1992 (K001114862).

47. *Photinia integrifolia* Lindl., Trans. Linn. Soc. London, Bot. 13: 103. 1822. *Eriobotrya integrifolia* (Lindl.) Kurz **Rosaceae**

Evergreen trees, 5-7 m tall. Leaves glabrous; leaf blade oblong, lanceolate, or oblanceolate, 6-12 × 3-5 cm, leathery, veins 12-17 pairs, both surfaces glabrous, base cuneate, margin entire, apex acute or shortly acuminate. Compound corymbs terminal, much branched, 7-12 × 8-15 cm, many flowered; rachis and pedicels glabrous. Pedicel 3-5 mm long. Flowers 4-5 mm in diam. Hypanthium cupular, 1.0-1.5 mm long, abaxially glabrous. Sepals broadly triangular, 1.0-1.5 mm long, apex obtuse. Petals white or yellowish, orbicular, 1-2 mm in diam., glabrous, base shortly clawed. Stamens 20, nearly as long as or slightly longer than petals. Ovary pilose apically; styles 2, shorter than or nearly as long as stamens. Fruit purplish red, subglobose, 5-6 mm in diam., glabrous. *Flowering & fruiting*: May-October. *Distribution*: China, Bhutan, India, Laos, Myanmar, Nepal, Thailand and Vietnam. *Specimen examined*: East Bengal, date unknown, Griffith, 2098 (K000758325).

48. *Pinalia pumila* (Lindl.) Kuntze. Revis. Gen. Pl. 2: 679. 1891. *Eria pumila* Lindl.

Orchidaceae

Epiphytic herbs, up to 14 cm tall. Rhizome thick, covered with many fibrous sheaths. Stems sub-cylindric or in many cases compressed, 8-10 cm long and around 1-2 cm thick. Leaves 4-6 in numbers arising from the apex of the stem, 6-8 cm long and 1-2.2 cm in width, lanceolate, tapering to both sides, with 2.2-3.1 cm long translucent and veined sheaths. Flowers in dense capitulum, arising in short peduncles from the axils of the leaves. Sepals and petals translucent, pale pink. Lip of a creamy white shade. Capitulum 2.1-2.5 cm across with 12-26 minute flowers. Sepals oblong to obtuse, erect. Petals much narrower, spreading. *Flowering & fruiting*: May and October. *Distribution*: India, Bhutan, Nepal and Myanmar. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 1972 (K001114828).

49. *Pluchea linearifolia* C.B. Clarke, Comp. Ind. 95. 1876.

Asteraceae

Herbs, up to 90 cm long. Leaves alternate, simple, sessile, linear, 12-20 × 0.6-0.8 cm, rigid-coriaceous, margins recurved toothed. Synflorescences elongate panicles or flat-topped. Corymb very scabrid, branches naked, stiff, erecto-patent. Capitula many flowered, disciform, 0.6 cm diam.; involucre bracts scaberulous. Marginal florets numerous, in several rows, filiform, female fertile. Central florets far fewer than marginal ones, tubular, bisexual, functionally male; anthers obtuse at apex, tailed at base; style entire, sometimes divided. Achenes 4 or 5-angled, longitudinally grooved; pappus snow-white. *Flowering & fruiting*: November-March. *Distribution*: Eastern India. *Specimen examined*: East Bengal, date unknown, Griffith, W., 3167 (K000974684).

50. Podochilus microphyllus Lindl., Gen. Sp. Orchid. Pl. 234. 1833.**Orchidaceae**

Epiphytic herbs. Leaves distichous, alternate, lying in one plane by twisting of sheathing bases, articulate on the sheaths, 7-9 nerved usually small, short, sheaths tubular, articulate. Inflorescences terminal, lateral, or both, few to many flowered; floral bracts persistent. Flowers resupinate, 0.25 cm long, white and purplish. Sepals adnate at base, or free; dorsal sepal ovate, 1-nerved, lateral subacute, lateral sepals broad at base and adnate to column foot forming an often spurlike mentum. Petals often slightly smaller than dorsal sepal; oblong, obtuse, 1-nerved; lip variable, obtuse or subacute; basal appendage erect, 0.25-0.35 the length of the blade, concave or margins convolute; rostellum narrow; anther lanceolate, acute, lip attached to end of column foot, entire or obscurely 3-lobed, narrow, with a simple or bilobed basal appendage. Capsule 0.85 cm, ellipsoid. *Flowering & fruiting*: MAY-July. *Distribution*: Cambodia, India, Myanmar, Thailand, Vietnam, Malaysia and Indonesia. *Specimen examined*: Sylhet, date unknown, Wallich, N., 7335 (K000810730).

51. Pogostemon linearis (Benth.) Kuntze. Revis. Gen. Pl. 2: 530. 1891. *Dysophylla linearis* Benth.**Lamiaceae**

Herbs, up to 100 cm tall. Leaves petiolate or subsessile, ovate to narrowly ovate, margin dentate, hairy or tomentose, in whorls of 4, linear or linear-lanceolate, 2.5-6.0 × 0.25-0.75 cm long, acute; margin serrulate, teeth distant; glabrous with ciliate margins, lower surface gland-dotted. Inflorescence spike like, either solitary or terminal and axillary. Calyx ovoid-tubular or campanulate, equally or subequally 5-toothed, with crystals. Flowers sessile, calyx 2.5 mm long; lobes triangular, 0.6 mm long. Corolla white, pinkish or purple, 5-7 mm long, corolla limb nearly 2-lipped, upper lip 3-lobed, lower lip entire, as long as to slightly longer than upper. Stamens 4, exserted, erect, free; filaments bearded at middle; anthers globose, 1-locular, cell apex dehiscent. Style completely gynobasic. Stamens exserted for 4-6 mm long, straight or declinate. Nutlets ovoid to globose, smooth. *Flowering & fruiting*: July-September. *Distribution*: Bhutan, India and China. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 1540 (K001113696).

52. Polygonum molle D. Don, Prodr. Fl. Nepal. 72. 1825. *Persicaria mollis* (D. Don) H. Gross**Polygonaceae**

Herbs. Leaves 1.0-1.5 cm long, densely pubescent or glabrous; leaf blade abaxially light green, adaxially green, elliptic or elliptic-lanceolate, 10-20 × 3-6 cm, abaxially sericeous, adaxially sparsely sericeous, densely so along veins or both surfaces glabrous throughout, base cuneate, margin entire, apex acuminate; ocrea dark brown, tubular, 2-3 cm long, membranous, oblique, pubescent or glabrous. Inflorescence spreading, paniculate, large; rachis and branches densely pubescent or glabrous; bracts ovate. Pedicel articulate at apex. Perianth white, 5-parted; tepals elliptic, 1.5-2.0 mm long, accrescent and fleshy in fruit, darkened. Stamens 8, included. Styles 3, free; stigmas capitate. Achenes slightly exceeding perianth, black, shiny, ovoid, trigonous, 2.0-2.5 mm long. *Flowering & fruiting*: August-November. *Distribution*: China, Bhutan, India, Indonesia, Myanmar, Nepal and Thailand. *Specimen examined*: Sylhet, ix 1829, De Silva, F., 1685 (K001113855).

53. Polygonum paleaceum Wall., Fl. Brit. India. 5: 32. 1886.**Polygonaceae**

Herbs. Leaves long petiolate; petiole 5-15 cm long; leaf blade gray-green abaxially, green adaxially, narrowly oblong or lanceolate, 6-18 × 2-3 cm, leathery, both surfaces glabrous or abaxially sparsely curved pubescent, base cuneate, margin with thickened vein tips, slightly

revolute, apex acute or slightly acuminate. Cauline leaves shortly petiolate, lanceolate; uppermost leaves linear, sessile; orchreae: lower part green, upper part brown, membranous, dehiscent. Inflorescence densely spicate, 4-6 cm long; bracts ovate-lanceolate, membranous, apex long acuminate; pedicels spreading, 5-6 mm long. Perianths pinkish or whitish, 5-parted; tepals elliptic, 2.0-2.5 mm long. Stamens 8; anthers red-brown. Styles 3; stigmas capitate. Achenes included in persistent perianth, shiny, ovoid, sharply trigonous, 2.5 mm long. *Flowering & fruiting*: November-February. *Distribution*: China, India and Thailand. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 1684 (K001113852).

54. *Premna punduana* Wall. *ex* Schauer., Prodr. 11: 637. 1847. *Gumira punduana* (Wall. *ex* Schauer) Kuntze; *Surfacea punduana* (Wall. *ex* Schauer) Moldenke **Verbenaceae**

Shrubs. Leaves simple, opposite, elliptic, 15-20 × 5-7 cm, base cuneate, margin entire or 3-5-crenate, apex acuminate, nerves stellately tomentose, mature punctulate glabrate on both surfaces, nerves 7 pairs; petiole 3 cm long. Inflorescences terminal, trichotomous panicles, 15-20 cm, pyramidal, densely stellate-tomentose. Flowers small. Calyx minutely 5 toothed, stellately tomentose, 0.25 cm long, obscurely 2 lipped. Corolla 0.3-0.4 cm long, 2 lipped; lobes without stellately tomentose. Stamens 4, often didynamous, shorter than corolla or sometimes slightly exerted. Style capillary; stigma 2-cleft. Fruit a small drupe, drupe 0.4-0.8 cm long, globose. *Flowering & fruiting*: May-October. *Distribution*: India. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 2651 (K001116740).

55. *Rapanea wightiana* (Wall. *ex* A. DC.) Mez, Pflanzenr. IV. 236(Heft 9): 360. 1902. *Myrsine wightiana* Wall. *ex* A. DC. **Myrsinaceae**

Trees, up to 10 m tall. Young branchlets terete, glabrous with scars of fallen leaves. Bark greyish, lenticellate, blaze red. Leaves simple, alternate, clustered towards the tip of branchlets; petiole to 10 mm long; lamina 7-8 × 1.5-3.5 cm, oblanceolate, base attenuate, apex acute, margin entire, recurved, glabrous, coriaceous, punctate; lateral nerves 6-8 pairs, obscure. Inflorescence sessile or shortly pedicelled umbels. Flowers polygamous, 4 mm across, in 5-8 flowered fascicles; pedicel to 1 mm long; bracts ovate; calyx tube 1 mm long; lobes 5, 0.1-0.15 cm long, cuneate, punctate, acute, ciliate; corolla lobes 5, 2-3 mm long, glandular hairy along the margin; stamens 5, sessile, basifixed; ovary superior, ovoid, 1-celled; style short; stigma slightly 2-lobed. Fruit a berry, subglobose, 3 mm wide, purple; seed single, globose. *Flowering & fruiting*: March-July. *Distribution*: South India and Sri Lanka. *Specimen examined*: Sylhet, date unknown, S. Coll., 2297 (K000756356).

56. *Rubus buergeri* Miq., Prolusio Florae Japonicae, 1865: 224. 1867. **Rosaceae**

Shrubs. Leaves chartaceous, deep green, nearly orbicular, 5-10 cm long and as wide, cordate, rounded to subacute at apex, with short-awned small teeth, obsolete 3 to 5-lobulated with rounded depressed lobules, petiole 3-10 cm long, densely pubescent. Inflorescence axillary, densely few flowered, often aggregated in a terminal panicle. Flowers bisexual and plants dioecious, short-pedicelled. Calyx with long yellowish hairs, 8-10 mm long. Petals usually 5, white, pink, or red, glabrous or hairy, margin entire. Stamens numerous, inserted at mouth of hypanthium; filaments filiform; anthers didymous. Drupelets or drupaceous achenes aggregated on semispherical, conical, or cylindrical torus, forming an aggregate fruit; seed pendulous, testa membranous; cotyledons plano-convex. *Flowering & fruiting*: August-November. *Distribution*: Japan, South Korea, Taiwan and China. *Specimen examined*: Gangachora, Rangpur, 19 v 1809, S. Coll., 748 (K001111774).

57. *Rumex microcarpus* Campd., Monogr. Rumex 143. 1819.**Polygonaceae**

Herbs. Stems erect, 40-80 cm tall, branched above, glabrous, grooved. Lower leaves: petiole 2-4 cm long; leaf blade oblong, 10-15 × 2-5 cm, both surfaces glabrous, midvein large, base cuneate, margin entire, apex acute or subobtuse; cauline leaves shortly petiolate, narrowly elliptic; ocrea fugacious, membranous. Inflorescence paniculate, usually leafy. Flowers bisexual. Pedicel slender, articulate near base. Perianth yellow-green; outer tepals lanceolate, 1 mm long; inner tepals enlarged in fruit; valves narrowly triangular-ovate, 3-4 × 1.5-2.0 mm, all valves with tubercles, base truncate, margin entire, apex acute; tubercles oblong, 1.5-2.0 mm long. Achenes brown, shiny, ovoid, sharply trigonous, 1-2 mm long. *Flowering & fruiting*: April-July. *Distribution*: China, Taiwan, India and Vietnam. *Specimen examined*: Sylhet, 1830, Wallich, N., 1731 (K000831341).

58. *Sambucus adnata* Wall. ex DC., Prodr. 4: 322. 1830.**Caprifoliaceae**

Herbs or shrubs, 1-2 m tall. Leaves imparipinnate; stipules bladelike or linear; leaflets 3-5 pairs, narrowly elliptic to narrowly ovate or lanceolate, 4-15 × 1.5-2.5 cm, abaxially sparsely pubescent, more densely pubescent on veins, base obtuse and oblique, margin serrate, apex acuminate; terminal pair of leaflets often connate at base along rachis, remaining leaflets alternate or sometimes subopposite. Inflorescences terminal, pedunculate, with 3-5 rays, umbellate cymes, 12-15 cm broad and tall, with dense yellow pubescence when young and ± glandular hairy. Flowers all normal, 4-5 mm in diam.; calyx urceolate, pubescent; corolla white; filaments dilated at base, anthers yellow; ovary locules 3; styles short; stigma 3-lobed. Fruit orange or red, becoming black on drying, globose, 3-4 mm in diam. *Flowering & fruiting*: May-October. *Distribution*: Bhutan, China and India. *Specimen examined*: Gangachora, 25 vi 1809, S. Coll., 482 (K001111115).

59. *Saxifraga stolonifera* Curtis, Philos. Trans. 64(1): 308, no. 2541. 1774.**Saxifragaceae**

Herbs, up to 45 cm tall. Basal leaves blade spotted, subcordate or reniform to orbicular, 1.5-7.5 × 2-12 cm, 7-11-lobed, glandular hairy, base subtruncate or rounded-cordate, margin irregularly dentate, apex obtuse or acute; petiole 15-21 cm long, glandular piliferous; cauline leaves and bracts 1-4, lanceolate, 6 × 2 mm. Inflorescence 7-61 flowered. Sepals spreading to reflexed, ovate, 1.5-3.5 × 1.0-1.8 mm, abaxially and marginally glandular hairy, 3-veined; veins confluent at apex. Petals 5, white, spotted, lanceolate-oblong, 0.6-1.5 cm × 2-4 mm, base clawed, apex acute, pinniveined; smallest three petals ovate, 2.0-4.4 × 1.3-2 mm. Stamens 4.0-5.2 mm long. Ovary ovoid, with a semiannular nectary disc; styles divergent. *Flowering & fruiting*: April-November. *Distribution*: China, Taiwan, Japan and Korea. *Specimen examined*: Pundua, Sylhet, date unknown, Wallich, N., 449 (K001111051).

60. *Senecio ramosus* Wall. ex DC., Prodr. 6: 365. 1838.**Asteraceae**

Herbs. Leaves sessile, blades linear-oblong, pinnatifid, 2.5-7.6 cm long, lobes obtuse bases simple or amplexicaul and dilated. Heads many, 0.4-0.6 cm diam., subbracteolate, long-peduncled in loose terminal corymbs. Involucres calyculate, hemispheric, campanulate, or cylindrical; receptacle flat; phyllaries 5-22, usually free, herbaceous or leathery, margin scarious or membranous. Ray florets 1-17; lamina yellow, 2-9-veined. Disk florets 3 to many; corolla yellow, lobes 5, limb funnellform or cylindrical; anthers oblong to linear; style branches truncate. Achenes cylindrical, ribbed, glabrous or pubescent; pappus capillary-like, uniform, white. *Flowering & fruiting*: November-January. *Distribution*: India. *Specimen examined*: Sylhet, 1830, Wallich, N., 3129 (K000102348).

61. *Sphenodesme involucrata* (C.Presl) B.L.Rob., Proc. Amer. Acad. Arts 51: 531. 1916.**Verbeaceae**

Shrubs. Leaves simple, opposite, elliptic-oblong, 8-18×3.4-5.1 cm, base rounded or subacute, margin entire, apex obtuse, coriaceous, chartaceous, dark green. Inflorescence terminal panicles composed of 8-15 opposite dichotomously branched cymes, 11-31×5-15 cm across. Cymes 7-flowered, with rusty pilose and stellate hairs; peduncle with dense stellate hairs; involucre bracts oblanceolate to obovate. Flowers bisexual, many, cream colored sessile in involucre heads. Calyx cupular or subcampanulate, 5 toothed, teeth acute, stellate-tomentose, obconic, corolla infundibular. Calyx 5 mm long, 4- or 5-dentate, with yellow stellate hairs. Corolla white or pink, 4-6 mm long, 4- or 5-lobed. Stamens 4 or 5, included. Ovary yellow, glabrous, apex glandular dotted. Capsules enclosed in calyx, glabrous. *Flowering & fruiting*: November-June. *Distribution*: India, China, Taiwan and Malaysia. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 1736 (K001114027).

62. *Stauntonia elliptica* Hemsl., Hooker's Icon. Pl. 29: pl. 2844. 1907.**Lardizabalaceae**

Woody climbers. Leaves slender, 10-17 cm long; leaf blade pinnately 3-foliolate; leaflets elliptic, oblong, ovate-oblong or obovate, 3-11 × 2-6 cm, papery, abaxially pale green to grayish green, adaxially dark green. Racemes several, 4-6 cm long, many flowered; bracts persistent, broadly ovate, less than 1 mm; peduncle slender. Flowers pale green to whitish; bracteoles subulate, less than 1 mm. Male flowers: pedicel 1.0-1.2 cm long. Outer 3 sepals ovate, 8 mm long; inner 3 sepals lanceolate. Petals ovate-lanceolate. Filaments connate into a tube to near apex. Female flowers: pedicel 1.8-2.0 cm long. Outer 3 sepals narrowly lanceolate, 15 × 3-4 mm; inner 3 sepals linear-lanceolate, 14 × 2 mm. Staminodes 1 mm long. Fruit pale brown, grayish brown when dry, oblong to subglobose. Seeds subtriangular, slightly compressed; seed coat blackish, shiny. *Flowering & fruiting*: May-December. *Distribution*: China and India. *Specimen examined*: East Bengal, date unknown, S. Coll., 116 (K000644968).

63. *Stilbanthus scandens* Hook.f., Hooker's Icon. Pl. 13: 67, pl. 126. 1879.**Amaranthaceae**

Climbing herbs. Leaves opposite; petiole 1.2-2.5 cm long; leaf blade broadly elliptic, 4-7 × 2.5-4.5 cm, sparsely tomentose especially at margin, apex acuminate. Flowers perfect, large. Inflorescences terminal or axillary spikes, 3-5 cm long, less branched; rachis hairy. Bracts persistent, ovate, 2.6 mm long, bracteoles equaling bracts, falling off with perianth in fruit. Tepals straight, ovate-lanceolate, 4.5 mm long, enlarging to 9 mm in fruit, hairy at apex. Stamens 5; filaments linear, hairy, shortly connate at base, alternating with oblong, fimbriate pseudostaminodes; anthers 2-loculed. Ovary oblong, compressed, 4.5 × 3 mm; style 3.5 mm long, slender, hairy at base; stigmas minute. Utricles oblong, 3.5 mm long, hairy at apex. Seeds shiny. *Flowering & fruiting*: November-January. *Distribution*: China, Bhutan, India and Myanmar. *Specimen examined*: East Bengal, date unknown, Griffith, 4191 (K000848078).

64. *Streblus ilicifolius* (Vidal) Corner, Gard. Bull. Singapore 19(2): 227. 1962. *Taxotrophis ilicifolius* Vidal**Moraceae**

Trees or shrubs. Leaves 4 mm long; leaf blade rhombic to oblong-obovate, 1.0-4.5 × 0.6-2.5 cm, thickly leathery, abaxially with cystoliths, adaxially glabrous and shiny, base cuneate to decurrent, margin loosely revolute with 5 or fewer spiny teeth, apex acute, with two spiny teeth. Male inflorescences axillary, spicate, 0.5-1.2 cm; bracts conspicuous, imbricate, margin dark. Female inflorescences shortly spicate, 2-6-flowered. Male flowers: shortly pedicellate; calyx lobes

4, margin inflexed and ciliate; pistillode 3-5-branched. Female flowers: calyx lobes 4, outer 2 smaller; ovary oblique. Drupes on brachyblasts, oblate, 1 cm in diam., with persistent bracts, half enclosed by persistent calyx lobes. *Flowering & fruiting*: April-June. *Distribution*: India, Indonesia, Malaysia, Myanmar, Philippines, Thailand and Vietnam. *Specimen examined*: Chittagong, vii 1831, Hooker, J.D.; Thomson, T., 550 (K001050061).

65. *Strychnos lucida* R. Br., Prodr. 469. 1810.

Loganiaceae

Trees, up to 12 m tall. Leaves 2-4 mm long; leaf blade 2.5-10.0 × 1.5-6.0 cm, thinly papery, both surfaces glabrous, abaxially granular, base cuneate to slightly cordate, apex rounded, obtuse or acute, basal veins 3-5. Thyrses terminal, 9-flowered, pubescent. Calyx lobes broadly ovate. Corolla salverform, 1.0-1.5 cm long; tube 7-12 mm, outside pubescent. Stamens inserted at corolla mouth, glabrous; filaments short; anthers oblong, 1.5-1.7 mm, apex exserted. Ovary globose, 1 mm in diam. Style 1.2 mm; stigma truncate. Berries globose, 2-2.5 cm in diam., smooth, glabrous, 2- or 3-seeded. Seeds nearly disc-shaped, 1.2-1.5 × 1.0-1.2 cm, densely pubescent. *Flowering & fruiting*: March-November. *Distribution*: Australia, China, Indonesia and Thailand. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 1590(K001113538).

66. *Syzygium khasianum* (Duthie) N.P.Balacr., Bull. Bot. Surv. India 22: 174. 1980 publ. 1982.

Eugenia khasiana Duthie

Myrtaceae

Trees or shrubs. Leaves opposite or sometimes whorled, petiolate to subsessile; 7.6-10.0 × 2.5 cm, narrowly lanceolate acuminate at both ends nerves and dots pellucid, smooth and shining above, finely reticulate between the lateral nerves which unite close within the margin, branchlets terete, petiole 0.8 cm long. Inflorescences terminal or axillary, usually panicles of cymes, 3- to many-flowered; bracts small, caducous after flowering, branches long and slender, acutely quadrangular. Calyx spreading above after flowering, limb of calyx truncate, lobes 4 or 5 or rarely more, usually short, caducous or persistent, apex usually obtuse. Petals 4 or 5, distinct and then expanding separately or coherent and then caducous as a unit. Stamens numerous, distinct; anthers minute, versatile, 2-celled. Fruit drupaceous, 1-2 seeded. *Flowering & fruiting*: March-July. *Distribution*: India. *Specimen examined*: East Bengal, date unknown, Griffith, W., 2391 (K000821345).

67. *Syzygium mishmiense* Chatterjee, Kew Bull. 3: 61. 1948.

Myrtaceae

Shrubs, up to 4 m tall. Leaves opposite, shortly petioled, narrowly elliptic lanceolate, base cuneate, apex acute, margin entire, reflexed, subcoriaceous, both surfaces glabrous. Inflorescence axillary, racemose, 2-3 cm. long. Flowers subsessile, subglobose, small, about 4 mm in diam. Sepals 4, subequal, broadly semiorbicular. Petals 4 almost free, semilunar, imbricating and bent inwards, 2.5 mm. in diam. Stamens many, introrse, filament 3 mm. long, anthers broadly elliptic, basifixed. Carpels 2 united, style filiform, straight, stigma simple, capitate. Style and stigma 1 mm. long. Fruit drupaceous, 1-2 seeded. Seeds sometimes with or without a testa, often with a pseudotesta ± adhering to pericarp, embryo usually uniembryonic, sometimes polyembryonic. *Flowering & fruiting*: April-August. *Distribution*: India and Myanmar. *Specimen examined*: East Bengal, 20 x 1830, Griffith, W., 2409 (K000821390).

68. *Tarenna asiatica* (L.) Kuntze ex K.Schum., Bot. Tidsskr. 24: 332. 1902.

Rubiaceae

Trees or shrubs. Leaves opposite, sometimes with domatia; stipules persistent or occasionally tardily deciduous, interpetiolar or united around stem, triangular, often aristate. Stipules

interpetiolar, usually persistent. Inflorescences terminal, corymbose. Flowers (4 or) 5-7 merous, pedicellate or sessile, bisexual, monomorphic, often fragrant protandrous. Calyx variously toothed or lobed, 5-lobed. Corolla infundibular, glabrous or pubescent without, sparsely to densely pubescent within, the lobes contorted in bud. Stamens 5, attached in corolla throat, filaments short or reduced; anthers dorsifixed and usually exerted. Style usually conspicuously elongating in age, the stigmas coherent. Ovary 2-locular, the ovules 1-many per locule. Fruit indehiscent, hard, the seeds angular, with entire or ruminant endosperm. *Flowering & fruiting*: March-July. *Distribution*: India, Myanmar, Thailand, Vietnam and Laos. *Specimen examined*: Chittagong, date unknown, Bruce, H., 8401 (K001125408).

69. *Torenia cordifolia* Roxb., Pl. Coromandel 2: 52, pl. 161. 1798. **Scrophulariaceae**

Herbs, 15-20 cm tall. Leaves 0.8-1.5 cm; leaf blade ovate to cordate, 2.5-3.5 × 1.5-2.5 cm, sparsely villous, base cuneate and decurrent, margin coarsely triangular-serrate. Inflorescences 3-5-flowered axillary fascicles; bracts linear, 5 mm long. Pedicel 1.5-2.0 cm long, often ascending. Calyx ovate-oblong, 1.3 × 0.7 cm, base truncate to somewhat rounded, never decurrent, 5-winged; wings subundulate, 2 mm wide, sometimes upper wing 1 mm wide; lips triangular, 5 lobes becoming evident in fruit. Corolla blue-purple, 1.3-2.0 cm; lower lip lobes subequal; upper lip wider than long, margin somewhat involute, apex entire or emarginate. Anterior stamens appendages toothlike to filiform. Capsule oblong, 9 × 4 mm. *Flowering & fruiting*: September-November. *Distribution*: China, Bhutan, Cambodia, India, Vietnam. *Specimen examined*: Chittagong, date unknown, Bruce, H., 3954 (K001117715).

70. *Viburnum foetidum* Wall., Pl. Asiat. Rar. 1: 49, pl. 61 1830. *Viburnum rectangulatum* Graebn. **Adoxaceae**

Shrubs, up to 4 m tall. Leaves opposite; petiole reddish purple, robust, 5-10 mm long, stellate-pubescent; ovate or elliptic to oblong-rhombic or obovate, 4-10 × 1.5-2.5 cm. Inflorescence a compound umbel-like cyme, 5-8 cm in diam.; peduncles 2-5 cm; bracts and bracteoles late deciduous or persistent, leaflike, green, linear-lanceolate, sparsely hairy. Flowers shortly pedicellate or sessile. Calyx green, 1.5 mm long, stellate-pubescent. Corolla white, rotate, 5 mm in diam., sparsely pubescent; tube 2-2.5 mm, orbicular-ovate, 1.5 mm, apex rounded. Stamens equaling or slightly exceeding corolla, filaments 3 mm long; anthers yellow-whitish, elliptic, less than 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid-ellipsoid, compressed, 6-8 × 4-5 mm, glabrous. *Flowering & fruiting*: May-October. *Distribution*: China and Taiwan. *Specimen examined*: Pundua, Sylhet, date unknown, De Silva, F., 461 (K001111074).

71. *Viola arcuata* Blume, Bijdr. Fl. Ned. Ind. 2: 58. 1825. **Violaceae**

Herbs. Leaves linear, lanceolate, ovate or spatulate, 5-25 × 1-8 mm, glabrous, margin denticulate or ciliate, apex acuminate or acute; petioles 5-20 cm long. Flowers light purplish or white; pedicels long, 2-bracteolate above middle; bracteoles linear. Sepals ovate-lanceolate, 4 mm, apex acute. Petals narrowly obovate, 7.5 mm long, subequaling anthers, apex rounded. Ovary glabrous; styles clavate, base slightly geniculate, gradually thickened upward; stigmas 2-lobed, lobes thick, erect, raised in central part. Capsule oblong, 6-8 mm long, 3 mm in diam., glabrous, apex acute. Seeds yellowish, ovoid, 1.5 mm long. *Flowering & fruiting*: March-June. *Distribution*: China, Bhutan, India, Indonesia, Japan, Korea, Malaysia, Mongolia, Myanmar, Papua New Guinea, Nepal, Russia, Thailand and Vietnam. *Specimen examined*: Sylhet, date unknown, Wallich, N., 4022 (K000254190).

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