

Eudicots - Eudicotyledon (Zweikeimblättrige)**Peripheral Eudicots - Periphere Eudicotyledonen****Order: Ranunculales** Dumortier (1829)**Menispermaceae** A. Jussieu, Gen. Pl. 284. 1789; *nom. cons.***Key to the genera:**

- 1a. Main basal veins and their outer branches leading directly to margin2
- 1b. Main basal vein and their outer branches are not leading to margin 3
- 2a. Sepals 6 in 2 whorls *Tinospora*
- 2b. Sepals 8–12 in 3 or 4 whorls *Pericampylus*
- 3a. Flowers and fruits in pedunculate umbel-like cymes or discoid heads, these often in compound umbels, sometimes forming a terminal thyrse *Stephania*
- 3b. Flowers and fruits in a simple cymes, these flat-topped or in elongated thyrses, sometimes racemelike *Cissampelos*

CISSAMPELOS Linnaeus, Sp. Pl. 2: 1031. 1753.

Cissampelos pareira Linnaeus, Sp. Pl. 1031. 1753; H. Kanai in Hara, Fl. E. Himal. 1: 94. 1966; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 336. 1984; Prain, Beng. Pl. 1: 208. 1903. *Cissampelos argentea* Kunth, Nov. Gen. Sp. 5: 67. 1821. *Cissampelos pareira* Linnaeus var. *hirsuta* (Buchanan–Hamilton *ex de* Candolle) Forman, Kew Bull. 22: 356. 1968.

Woody vines. Branches slender, striate, usually densely pubescent. Petioles shorter than lamina; leaf blade cordate-rotunded to rotunded, 2–7 cm long and wide, papery, abaxially densely pubescent, adaxially sparsely pubescent, base often cordate, sometimes subtruncate, rarely slightly rounded, apex often emarginate, with a mucronate acumen, palmately 5–7 veined. Male inflorescences axillary, solitary or few fascicled, corymbose cymes, pubescent. Female inflorescences thyrsoid, narrow, up to 18 cm, usually less than 10 cm; bracts foliaceous and suborbicular, overlapping along rachis, densely pubescent. Female flowers: sepals broadly obovate; petals minute. Drupes pubescent; endocarp broadly obovate.

Flowers & Fruits: August to January.

Specimen Cited: Forest, Rajib & AP Das 0032, dated 05. 02. 2007.

Local Distribution: Forested areas, on bushes.

General Distribution: Pantropical in Asia.

STEPHANIA Loureiro, Fl. Cochinch. 2: 598, 608. 1790.

Key to the species:

- 1a. Perianth in female flowers asymmetrical *S. glabra*
- 1b. Perianth in female flowers symmetrical *S. japonica*

Stephania glabra (Roxburgh) Miers, Ann. Mag. Nat. Hist., ser. 3 18: 14. 1866; Contrib. Bot. 3: 217. 1817; H. Hara in Hara, Fl. E. Himal. 2: 36. 1971; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 336. 1984; Sharma *et al.*, Fl. Ind. 1: 334. 1993. *Cissampelos glabra* Roxburgh, Fl. Ind. 3: 840. 1832. *Stephania rotunda* Loureiro, Fl. Cochinch. 608. 1790.

Vernacular name: Bhuin kumra.

Rootstock often tuberous. Lamina ovate or suborbicular, acute or subacute, base rounded, glabrous. Inflorescence usually axillary; pedunculate umbel-like cymes or discoid heads, these often in compound

umbels, sometimes forming a terminal thyrse peduncles umbels slender in male, generally stouter in female; Perianth in female flowers asymmetric. Fruits suborbicular, reddish on ripening.

Flowers & Fruits: April to July.

Specimen Cited: Forest, Rajib & AP Das 0098, dated 07. 02. 2007.

Local Distribution: Forested areas.

General Distribution: India: Arunachal Pradesh, Assam, Manipur, Nagaland, Tropical Himalayas, Western Peninsula; Nepal, Bhutan, Bangladesh, China.

Stephania japonica (Thunberg ex J.A. Murray) Miers, Ann. Mag. Nat. Hist. ser. 3, 18: 14. 1866; H. Kanai in Hara, Fl. E. Himal. 1: 95. 1966; Hooker f. et Thomson in Hooker f., Fl. Brit. Ind. 1: 103. 1872; Grierson in Grierson et Long, Fl. Bhut. 1(2): 337. 1984; Sharma et al., Fl. Ind. 1: 335. 1993; *Menispermum japonicum* Thunberg ex J.A. Murray, Syst. Veg., ed. 14: 892. 1784.

Slender twiner. Lamina deltoid, acuminate, rounded, entire, sparsely pubescent beneath. Umbels axillary; male flowers sessile in dense capitate clusters; sepals oblanceolate, petals obovate; female inflorescence a pedunculate umbel-like cyme or discoid heads, these often in compound umbels, sometimes forming a terminal thyrse; female flowers similar to male; perianth in female flowers symmetric. Fruits suborbicular, red on ripening.

Flowers & Fruits: May to December.

Specimen Cited: Forest, Rajib & AP Das 0518, dated 23. 07. 2007.

Local Distribution: Forest areas.

General Distribution: Tropical to temperate regions of Asia and Africa.

TINOSPORA Miers, Ann. Mag. Nat. Hist., ser. 2, 7: 35, 38. 1851, *nom. cons.*

Tinospora cordifolia (Willdenow) Miers, Ann. Mag. Nat. Hist., ser. 2 7: 35, 38. 1851. *Menispermum cordifolium* Willdenow, Sp. Pl. 4: 826. 1806. *Tinospora cordifolia* (Willdenow) Hooker f. et Thomson, Fl. Indica. 184. 1855; Hooker f. et Thomson in Hooker f., Fl. Brit. Ind. 1: 97. 1872; Grierson in Grierson et Long, Fl. Bhut. 1(2): 335. 1984; Sharma et al., Fl. Ind. 1: 347. 1993.

Vernacular name: Gulancha.

Large twiner with long slender (thread-like) arial roots. Lamina broadly ovate, abruptly acuminate, base cordate, glandular domatia in veins axils on lower surface, otherwise glabrous. Male flowers in few-flowered clusters, female flowers borne singly along axis. Outer sepals ovate in male, inner elliptic; petals obovate. Female flowers with sepals and petals similar to male; staminodes linear, carpels ellipsoid. Drupes red.

Flowers & Fruits: January to May.

Specimen Cited: Forest, Rajib & AP Das 0551, dated 24. 07. 2007.

Local Distribution: Forest areas.

General Distribution: India, Sri Lanka, Bangladesh and Myanmar.

PERICAMPYLUS Miers, Ann. Mag. Nat. Hist., ser. 2, 7: 36, 40. 1851, *nom. cons.*

Pericampylus glaucus (Lamarck) Merrill, Interpr. Rumph. Herb. Amboin. 219. 1917; H. Kanai in Hara, Fl. E. Himal. 1: 95. 1966; Grierson in Grierson et Long, Fl. Bhut. 1(2): 336. 1984; Sharma et al., Fl. Ind. 1: 330. 1993. *Menispermum glaucum* Lamarck, Encycl. Meth. 4: 100. 1797. *Pericampylus formosanus* Diels, Pflanzenr. IV. 94: 221, f. 75, 221. 1910.

Base with a globose woody tuber. Lamina triangular-ovate to triangular-oblong, base subtruncate to cordate, rarely broadly cuneate, margin crenate or subentire, apex obtuse or rounded, rarely mucronate, apiculate. Inflorescences corymbose cymes. Drupes red or purple.

Flowers & Fruits: April to October.

Specimen Cited: Forest, Rajib & AP Das 0254, dated 10. 02. 2007.

Local Distribution: Forest areas.

General Distribution: India: Eastern Himalaya, West Bengal, Assam; Bhutan, Myanmar, China, Thailand, Taiwan, Japan, Malaysia.

Papaveraceae A. Jussieu, Gen. Pl. 235. 1789; *nom. cons.*

Key to the Genera:

- 1a. Spinescent stem with yellow latex, lamina prickly on lower surface ... *Argemone*
- 1b. Stem spineless with watery latex, lamina prickly less *Fumaria*

ARGEMONE Linnaeus, Sp. Pl. 1: 508. 1753.

Argemone mexicana Linnaeus, Sp. Pl. 1: 508. 1753; H. Hara in Hara, Fl. E. Himal. 1: 103. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 402. 1984; Hooker *f. et* Thomson in Hooker *f.*, Fl. Brit. Ind. 1: 117. 1872; Prain, Beng. Pl. 1: 215. 1903; Sharma *et al.*, Fl. Ind. 2: 2. 1993; Hajra *et al.*, Fl. West Beng. 1: 405, 1997. *Argemone mexicana* var. *lutea* Kuntze, Revis. Gen. Pl. 1: 12. 1891. *Argemone vulgaris* Spach, Hist. Nat. Veg. 7: 26. 1839. *Argemone spinosa* Gaterau, Descr. Pl. Montauban 99. 1789. [PLATE: 8, Figure-76]

Vernacular name: Sheyalkanta.

Annuals, 40 – 90 cm high, much spinescent with yellow latex. Leaves sessile, elliptic – obovate, cordate, pinnatifid, 2 – 18 x 1.5 – 8 cm; segments dentate, spiny along margins, glaucous green, prickly on lower surface, smooth above. Flowers in terminal cluster, bright yellow, 3 – 6 cm in diameter, sessile. Sepals elliptic, 8 – 15 x 6 – 9 mm, prickly out side. Petals 4 – 6, imbricate, obovate. Stamens many, 9 – 10 mm long, filaments yellow, anthers 2 mm, yellow. Ovary ovoid, 10 – 12 x 3 – 5 mm. Capsules oblong; seeds many, deeply reticulate, blackish brown.

Flowers & Fruits: February to July.

Specimen Cited: Batikata Beel, Rajib & AP Das 0294, dated 10. 02. 2007.

Local Distribution: Marginal areas of Beels.

General Distribution: Throughout India. Native of tropical America.

FUMARIA Linnaeus, Sp. Pl. 2: 699. 1753; Gen. Pl. ed. 5, 314, 1754.

Fumaria indica (Hasskarl) Pugsley, Jour. L. Soc. Bot. 44: 313. 1919; Long in Grierson *et* Long, Fl. Bhut. 1(2): 384. 1984; *Fumaria vaillantii* Loisel var. *indica* Hasskarl., Fl. Ind. 56: 443. 1873; *Fumaria parviflora sensu* Wight *et* Arnott, Prodr. 1: 18. 1834; Prain, Beng. Pl. 1: 143. 1963; Sharma *et al.*, Fl. Ind. 2: 34. *Fumaria parviflora* var. *indica* (Haussk) Parsa, Fl. Iran 2: 490. 1986. *Fumaria vaillantii* Loiseleur in Desvaux, Jour. de Bot. 2: 358. 1809; H. Hara in Hara, Fl. E. Himal. 1: 104. 1966.

Small, erect much branched herbs. Stem glabrous, much branched, grooved. Leaves decomposed, multifid, glaucous, 3 x 2 cm; ultimate lobes flat, narrowly linear to linear – lanceolate, entire, acute, mucronate. Flowers pink in a 18 – 22 flowered racemes; bracts lanceolate, acuminate, equal, membranous. Sepal lanceolate, caduceous. Filament connate. Ovary glabrous; style slender.

Flowers & Fruits: December to March.

Specimen Cited: Children Park, *Rajib & AP Das 0331*, dated 21. 07. 2007.

Local Distribution: Behind the Panchayet Samiti Guest House.

General Distribution: India: West Bengal, Assam, Bihar, Orissa, Uttar Pradesh, Punjab, Haryana, Maharashtra, Karnataka, Tamilnadu; Bhutan, Nepal, Bangladesh, Pakistan to West Asia.

Ranunculaceae A. Jussieu, Gen. Pl. 231. 1789; *nom. Cons.*

Key to the Genera:

- 1a. Climbing shrubs. Leaflets reniform to broadly ovate *Naravelia*
 1b. Annual herbs leaflets ovate *Ranunculus*

NARAVELIA Adanson, Fam. Pl. 2: 460, 581. 1763, *nom. et orth. cons.*

Naravelia zeylanica (Linnaeus) DC., Syst 1: 167, 1817; H. Hara in Hara, Fl. E. Himal. 1: 89. 1966; Hajra *et al.*, 1: 127, 1997; Prain, Beng. Pl. 1: 124, 1963; Grierson in Grierson *et Long*, Fl. Bhut. 1(2): 291. 1984. *Atragene zeylanica* Linnaeus, *Sp. Pl. 1: 542. 1753. Naravelia pilulifera* var. *yunnanensis* Y. Fei, Acta Bot. Yunnan. 19(4): 406. 1997.

Climbing shrubs. Leaves alternate, leaflets ovate, 8 – 10 x 5 – 7cm, acuminate, base cordate, glabrous above but densely pubescent beneath. Flowers on branched panicles, numerous. Sepals elliptic, densely appressed pubescent. Petals spatulate, greenish yellow. Achenes hairy, stalked.

Flowers & Fruits: November to January.

Specimen Cited: Forest, *Rajib & AP Das 0014*, dated 05. 02. 2007.

Local Distribution: Forested areas.

General Distribution: India: Tropical and sub tropical parts; Nepal, Bhutan, Bangladesh, Myanmar, China.

RANUNCULUS Linnaeus, Sp. Pl. 1: 548. 1753.

Ranunculus sceleratus Linnaeus, Sp. Pl. 1: 551. 1753; H. Hara in Hara, Fl. E. Himal. 2: 32. 1971; Hooker *f. et Thomson* in Hooker *f.*, Fl. Brit. Ind. 1: 19. 1872; Grierson in Grierson *et Long*, Fl. Bhut. 1(2): 303. 1984; Sharma *et al.*, Fl. Ind. 1: 128. 1993; Prain, Beng. Pl. 1: 193. 1903; Bora *et Kumar*, Flor. Div. Ass. 38. 2003. *Ranunculus holophyllus* Hance, Ann. Sci. Nat., Bot., sér. 4 5: 220. 1861. *Ranunculus oryzetorum* Bunge, Enum. Pl. China Bor. 2. 1833. [PLATE: 5, Figure-44]

Rosette annual herbs. Roots fibrous. Stems up to 60 cm, glabrous, much branched above. Basal leaves 5 – 13; petiole 2 – 10 cm; blade 3-partite, pentagonal, reniform to broadly ovate, base broadly cordate, central lobe cuneate to rhombic, 3-lobed; lateral lobes obliquely broadly obovate to obliquely cuneate. Compound monochasium terminal, corymbose; bracts leaflike. Receptacle glabrous. Sepals 5, ovate-elliptic. Petals 5, obovate, yellow, apex rounded. Stamens 10 – 19; anthers ellipsoid. Aggregate fruit cylindrical; carpels numerous.

Flowers & Fruits: May to November.

Specimen Cited: Khottamari Beel, *Rajib & AP Das 0026*, dated 05. 02. 2007.

Local Distribution: Marginal side of the beel.

General Distribution: India: tropical and subtropical part of the country; Bhutan, Nepal, Afghanistan, Japan, Kazakhstan, Korea, N Pakistan, Russia (Siberia), Thailand, SW Asia, Europe, North America.

Core-Eudicots, non-Rosid, non-Asterid**unassigned to order - Keine Ordnungseinteilung****Dilleniaceae** Salisbury in W. Hooker, *Parad. Lond.* 2(1): t. 73. 1807.**Key to the genera**

- 1a. Woody climbers *Tetracera*
 1b. Large trees *Dillenia*

DILLENIA Linnaeus, *Sp. Pl.* 1: 535. 1753.**Key to the species:**

- 1a. Flowers solitary; flower buds and fruits more than 5 cm in diameter;
 carpels 14–20 *D. indica*
 1b. Flowers 2–7 in fascicles or racemes; flower buds and fruits less than 5
 cm in diameter; carpels 5 *D. pentagyna*

Dillenia pentagyna Roxburgh, *Pl. Corom.* 1: 21. t. 20. 1795; Clarke in Hooker *f.*, *Fl. Brit. Ind.* 1: 38. 1872; Hajra *et al.*, *Fl. Ind.* 1: 156. 1993; Grierson & Long, *Fl. Bhut.* 1(2): 355. 1984, Hajra *et al.*, *Fl. W. Beng.* 1: 153, 1997; Prain, *Beng. Pl.* 1: 195. 1903. *Colbertia augusta* Wallich *ex* G. Don, *Gen. Hist.* 1: 77. 1831. *Colbertia coromandelina* de Candolle, *Syst. Nat.* 1: 435. 1817. *Dillenia augusta* Roxburgh, *Fl. Ind.* 2: 652. 1832. *Dillenia hainanensis* Merrill, *Lingnan Sci. J.* 13: 64. 1934.

Vernacular name: Tartari.

Deciduous tree, up to 20m. Leaves simple, alternate, exstipulate; lamina obovate, 27–45 x 10–20 cm, serrate, obtuse, base cuneate. Flowers actinomorphic, bisexual, 2–7 in fascicles or racemes on older branches; buds less than 5 cm in diameter. Sepals 5, imbricate, persistent, ovate, reddish, acute. Petals free, imbricate, deciduous, obovate, yellow, rounded at apex. Stamens in 2 series, the outer numerous. Carpels 5, oblong. Fruits less than 5 cm in diameter; pseudocarp orange, 1–2 seeded, seeds ovoid, black, glabrous.

Flowers & Fruits: March to April.*Specimen Cited:* Atiamochar, Rajib & AP Das 0695, dated 14. 02. 2008.*Local Distribution:* Takomari Forest.*General Distribution:* India: tropical part throughout; Myanmar, China, Vietnam.

Dillenia indica Linnaeus, *Sp. Pl.* 1: 535. 1753; Hajra *et al.*, *Fl. W. Beng.* 1: 135, 1997. Grierson & Long, *Fl. Bhut.* 1(2): 355. 1984; Prain, *Beng. Pl.* 1: 195. 1903. *Dillenia elongata* Miquel, *Fl. Ned. Ind.* 1(2): 12. 1858. *Dillenia indica* f. *elongata* (Miquel) Miquel, *Ann. Mus. Bot. Lugduno-Batavi* 4: 79. 1868.

Vernacular name: Chalta.

Evergreen tree, up to 20m. Leaves simple, alternate, exstipulate; lamina elliptic to oblanceolate, 20–35 x 6–15 cm, serrate, acute, base attenuate. Flowers actinomorphic, bisexual, solitary, terminal; buds more than 5 cm in diameter. Sepals 5, imbricate, persistent, obovate. Petals free, imbricate, deciduous, obovate, white, rounded at apex. Stamens in 2 series, the outer numerous; anther opening by apical pores. Carpels 14–20, styles white, narrowly oblanceolate, flattened. Fruits more than 5 cm in diameter; pseudocarp yellowish green, each with 5 seeds embedded in pulp, seeds reniform, reddish.

Flowers & Fruits: February to July.

Specimen Cited: Atiamochar, Rajib & AP Das 0666, dated 13. 02. 2008.

Local Distribution: Forests.

General Distribution: India: tropical part throughout; Bhutan, Myanmar, China.

TETRACERA Linnaeus, Sp. Pl. 1: 533. 1753.

Tetracera sarmentosa (Linnaeus) Vahl, Symb. Bot. 3: 70. 1794. *Seguieria asiatica* Loureiro, Fl. Cochinch. 1: 341. 1790. *Tetracera asiatica* (Loureiro) Hoogland, Fl. Males. Bull. 1(4): 143. 1951. *Tetracera levinei* Merril, Philipp. J. Sci. 13(3): 147. 1918. *Delima sarmentosa* Linnaeus, Gen. Pl., ed. 5, App. 1754; Prain, Beng. Pl. 1: 195. 1903.

Evergreen woody climbers up to 20m. Leaves simple, alternate, lamina orbicular, 4–9 2–4 cm, finely serrate distally, apex acute, base broadly cuneate or approximately rounded, leathery. Panicles terminal, many flowered; peduncle pubescent, zigzag. Sepals 5, free, broadly ovate, unequal, persistent in fruit, apex obtuse, glabrous, ciliate. Petals 3, white, ovate, as long as sepals. Stamens numerous. Carpels 1, glabrous; style longer than stamens. Follicles orange, pericarp thinly leathery, with persistent style. Seed 1, black.

Flowers & Fruits: April to May.

Specimen Cited: Takomari, Rajib & AP Das 0696, dated 14. 02. 2008.

Local Distribution: Forests.

General Distribution: India: West Bengal, Assam, Bihar, Orissa; Bhutan, China, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand.

Order: Caryophyllales Perleb (1826)

clade of ‘core caryophyllids’:

Amaranthaceae A. Jussieu, Gen. Pl. 87. 1789 (*nom. cons.*).

Key to the Genera:

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|--|----------------------|
| 1.a. Perianth scarious and dry; stamens often connate below | 2 |
| 1.b. Perianth not scarious; stamens free | 8 |
| 2.a. Leaves alternate | 3 |
| 2.b. Leaves opposite | 5 |
| 3.a. Ovary with 2 to many ovules | 4 |
| 3.b. Ovary with 1 ovule | <i>Amaranthus</i> |
| 4.a. Fruit a red berry, indehiscent | <i>Deeringia</i> |
| 4.b. Fruit a utricle or capsule, dehiscent by a lid | <i>Celosia</i> |
| 5.a. Inflorescences heads or complex thyrsoid; anthers 1 loculed | <i>Alternanthera</i> |
| 5.b. Inflorescences spikes; anthers 2 loculed | 6 |
| 6.a. Pseudostaminodes fringed or long fimbriate | <i>Achyranthes</i> |
| 6.b. Pseudostaminodes triangular ro rectangular | 7 |
| 7.a. Tepals of perfect flowers light green, glabrous; yellow, villous in imperfect ... | <i>Pupalia</i> |
| 7.b. Tepals densely puberulous abaxially, pink | <i>Aerva</i> |
| 8.a. Plants covered with glandular hairs | <i>Dysphania</i> |
| 8.b. Plants covered with vesicular hairs, occasionally glabrous | <i>Chenopodium</i> |

ACHYRANTHES Linnaeus, Sp. Pl. 1: 204. 1753.

Key to the Species:

- 1a. Flowers in long slender spike, bracts subulate, tepal ovate to lanceolate ... *A. aspera*
 1b. Flowers dense, bracts broadly ovate, tepal lanceolate *A. bidentata*

Achyranthus aspera Linnaeus, Sp. Plant. 204. 1753; H. Hara in Hara, Fl. E. Himal. 1:76. 1996; Hooker f. in Hooker f., Fl. Brit. Ind. 4: 4. 1885; Long in Grierson *et* Long, Fl. Bhut. 1(2): 227. 1984; Prain, Beng. Pl. 2: 875.1903. *Achyranthes australis* R. Brown, Prodr. Fl. Nov. Holl. 417. 1810. *Achyranthes canescens* R. Brown, Prodr. Fl. Nov. Holl. 417. 1810.

Vernacular name: Apang.

Perennial herbs, erect or spreading up to 80 cm. Leaves opposite, ovate–elliptic; petiole 10 to 13 mm; lamina 3 – 12 x 2 – 7 cm, acute, base cuneate, pubescent. Flowers in long slender spike, up to 30 cm; bracts subulate, occasionally spinous, concave. Perianth segments rigid, ovate to lanceolate; stamens 5; anthers 2 celled, filament connate at base; ovary oblong, style filiform; stigma capitate. Fruits 1 seeded.

Flowers & Fruits:

Specimen Cited: Forest, Rajib & AP Das 0102, dated 07. 02. 2007.

Local Distribution: Roadside forest.

General Distribution: India, Bhutan, Nepal, Bangladesh, China.

Achyranthes bidentata Blume, Bijdr. 545. 1826; Hooker f. in Hooker f., Fl. Brit. Ind. 4:730. 1885; H. Hara in Hara, Fl. E. Himal. 1:76. 1966; Hara *et al.*, Enn. Fl. Pl. Nep.3:168. 1982; Long in Grierson *et* Long, Fl. Bhut. 1(2): 227.1984; Prain, Beng. Pl. 2: 875.1903. *Achyranthes chinensis* Osbeck, Dagb. Ostind. Resa 205. 1757. *Achyranthes fruticosa* Lamarck, Encycl. 1: 545. 1785.

Vernacular name: Apang.

Annual or biennial erect herbs. Stem green, quadrangular, appressed pubescent to nearly glabrous; branches opposite. Petioles hairy; leaf blade elliptic to elliptic – lanceolate, rarely oblanceolate, both surfaces spreading pubescent, base cuneate, caudate. Spikes terminal or axillary, up to 25 cm; rachis white hairy. Flowers dense. Bracts broadly ovate, apex acuminate; bracteoles spiny, base 2-parted, apex curved. Tepals lanceolate, apex acute. Utricles yellowish brown, shiny. Seeds brownish, oblong.

Flowers & Fruits: August to November.

Specimen Cited: Forest, Rajib & AP Das 0113, dated 07. 02. 2007.

Local Distribution: Road side forest area.

General Distribution: India, Bhutan, Nepal, Bangladesh, Myanmar, China.

ALTERNANTHERA Forsskål, Fl. Aegypt.-Arab. 28. 1775.

Key to the Species:

- 1a. Heads solitary, globose *A. philoxeroides*
 1b. Heads all sessile 2
 2.a. Tepals abaxially hairy *A. paronychioides*
 2.b. Tepals abaxially glabrous *A. sessilis*

Alternanthea philoxeroides (Martius) Grisebach, Abh. Koen. Ges. Wiss. Goett. Phys. Cl. 24: 36.1983; Bora *et al.*, Flor. Div. Ass., 275. 2004. *Bucholzia philoxeroides* Martius, Beitr. Amarantac.

107. 1825; Nova Acta Leop. 13: 315. 1826. *Achyranthes paludosa* Bunbury, Proc. Linn. Soc. London 1: 109. 1841.

Vernacular name: Jalchhenchi.

Perennial herb. Stem ascending from a creeping base, branched; young stem and leaf axil white hairy; old ones glabrous. Petiole glabrous. Lamina oblong, oblong obovate to ovate – lanceolate, entire, acute with a mucro, base attenuate, glabrous. Heads solitary at leaf axil, globose. Bracts and bracteoles white, acuminate; bracts ovate; bracteoles lanceolate,. Tepals white, oblong, 5 mm, glabrous, acute. Filaments connate at base. Ovary obovoid, with short stalk.

Flowers & Fruits September to February.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0172*, dated 08. 02. 2007.

Local Distribution: Beel margin.

General Distribution: India; native of tropical Brazil.

Alternanthera paronychioides St. Hill, Voy. Bres. 2 (2): 39. 1833; Panda *et al.*, Fl. Sambalp. 308. 2004. *Achyranthes chacoensis* (Morong) Standley, Jour. Wash. Acad. Sci. 5: 74. 1915. *Alternanthera ficoidea* (Linnaeus) R. Brown, Prodr. 417. 1810. *Gomphrena ficoidea* Linnaeus, Sp. Pl. 225. 1753. *Illecebrum ficoideum* Linnaeus, Sp. Pl. (ed. 2) 1: 300. 1762. [PLATE: 6, Figure-58]

Perennial herb. Stem hairy to glabrescent. Leaf blade oblanceolate to spatulate, abaxially hairy, apex obtuse to rounded. Heads sessile, ovoid to globose. Tepals white, ovate - oblong, scarious, hairy on the veins, outer 3 segments: 3-veined in proximal half, inner 2 somewhat laterally compressed, apex acute to mucronate. Stamens 5; anthers yellow, ellipsoid; staminodes 3- or 4-toothed; stigma capitate. Utricle brown, obcordate.

Flowers & Fruits: January to December.

Specimen Cited: Varveri Beel, *Rajib & AP Das 0068*, dated 06. 02. 2007; Raichangmari Beel, *Rajib & AP Das 0650*, dated 12. 02. 2008.

Local Distribution: Beel margin.

General Distribution: India; a native of tropical America; naturalized in tropics.

Alternanthera sessilis (Linnaeus) R. Brown *ex de Candolle*, Cat. Pl. Hort. Mon sp. 4: 77. 1813; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 4: 731. 1885; H. Hara in Hara, Fl. East. Himal. 1: 77. 1966; Long in Grierson *et Long*, Fl. Bhut. 1(2): 228. 1984. *Gomphrene sessilis* Linnaeus, Sp. Pl. 1: 225. 1753. *Achyranthes sessilis* (Linnaeus) Besser, Cat. Jard. Bot. Krzemieniec 12. 1810. *Alternanthera nodiflora* R. Brown, Prodr. 417. 1810. *Alternanthera triandra* Lamarck, Encycl. 1: 95. 1785. *Achyranthes triandra* Roxburgh, Fl. Ind. 1: 678. 1820; Prain, Beng. Pl. 2: 875. 1903. *Achyranthes villosa* Blanco, Fl. Filip. 189. 1837. *Allaganthera forskalli* Martius, Pl. Hort. Erlang. 69. 1814. *Alternanthera angustifolia* R. Brown, Prodr. Fl. Nov. Holl. 417. 1810. *Alternanthera denticulata* R. Brown, Prodr. Fl. Nov. Holl. 417. 1810.

Vernacular name: Chhenchi.

Prostrate herb, rooting at nodes, often perennial, stems with 2 lines of hairs. Lamina elliptic, 2 – 4.5 x 0.5 – 1.5 cm, acute, attenuate at base, sessile, glabrous. Flower clusters sessile, globose, white. Perianth segments all similar, 2 – 3mm, papery, unarmed. Stamens 5, 3 bearing anthers, basal cup very short, pseudostaminodes minute. Capsule rounded, 2 mm diameter, compressed, emerginate at apex; seed 1mm, surrounded by a thick wing.

Flowers & Fruits: March to August.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0082*, dated 06. 02. 2007; *Rajib & AP Das 0710*, dated 14. 02. 2008.

Local Distribution: Beel margin and cultivated land.

General Distribution: India, Sri Lanka, Myanmar, China, Pantropical.

AMARANTHUS Linnaeus, Sp. Pl. 2: 989. 1753.

Key to the Species:

- 1a. Tepals 3; stamens 3; utricles indehiscent 2
- 1b. Tepals 5; stamens 5; utricles usually dehiscent by lid *A. spinosus*
- 2a. Stem erect, somewhat branched; utricles very rugose *A. viridis*
- 2b. Stem ascending, much branched; utricles smooth *A. blitum*

Amaranthus blitum subsp. *oleraceus* (Linnaeus) Costea, Sida 19: 984 2001. *Amaranthus blitum* Linnaeus, Sp. Pl. 1: 990. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 4: 721. 1885; Prain, Beng. Pl. 2: 871.1903. *Amaranthus lividus* Linnaeus, Sp. Pl. 1: 990. 1753; H. Hara in Hara, Fl. East. Himal. 1:77. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 224. 1984. *Amaranthus circinnatus* Poirat, Encycl. Suppl. 1: 311. 1810. *Blitum lividum* (Linnaeus) Moench, Methodus 359. 1794. *Amaranthus oleraceus* Linnaeus, Sp. Pl. 1403. 1753.

Prostrate or semi erect, annual herbs; branches in rosette. Leaves broadly ovate, 3 – 7 x 2 – 5cm, obtuse. Flowers in clusters densely aggregated in to slender spikes, up to 7 cm. Flowers unisexual, mostly female with a few males above; perianth segments 3, 1 mm long; tepal 3; stamens 3; stigma 3, minute; Capsules distinctly exceeding perianth, seeds strongly glossy, faintly striate without scurfy warts.

Flowers & Fruits: April to August.

Specimen Cited: Park, Rajib & AP Das 0424, dated 22.07.2007.

Local Distribution: Garden.

General Distribution: India, Bhutan, Bangladesh, Myanmar, China.

Amaranthus spinosus Linnaeus, Sp. Pl. 2: 991. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 4: 718.1885; H. Hara in Hara, Fl. East. Himal. 1:77. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 225. 1984; Prain, Beng. Pl. 2: 879.1903. *Galliardia spitosa* (Linnaeus) Nieuwland, Amer. Midl. Naturalist 3(9): 278. 1914. *Amaranthus spinosus* var. *viridicaulis* Hasskarl, Flora 25: litt. 20 litt. 20. 1842.

Vernacular name: Kantanotey.

Perennial herb. Stem erect, green, terete, branched, glabrous. Petiole 1.8 cm, glabrous; leaf blade ovate-lanceolate, 3 – 1.5 cm, glabrous or slightly pubescent along veins when young, base cuneate, margin entire, apex obtuse. Terminal spike usually with all male flowers at or toward apex. Bracts becoming very sharply spiny in proximal part of spike. Tepals green, transparent at margin, apex acute; male flowers oblong; female flowers oblong-spatulate. Filaments slightly shorter than perianth. Stigmas 3. Utricles included in perianth, oblong. Seeds brownish black, subglobose.

Flowers & Fruits: May to September.

Specimen Cited: Park, Rajib & AP Das 0117, dated 07. 02. 2007.

Local Distribution: Garden and Park side.

General Distribution: India: West Bengal, Assam, Bihar, Madhyapradesh, Uttar Pradesh; Myanmar, China

Amaranthus viridis Linnaeus, Sp. Pl. ed. 2: 1405. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 4: 720. 1885; Prain, Beng. Pl. 2: 651. 1903; Long in Grierson *et* Long, Fl. Bhut. 1(2): 224. 1984;

Prain, Beng. Pl. 2: 871.1903; Bora *et al.*, Flor. Div. Ass., 277. 2003. *Pyxidium viride* (Linnaeus) Moquin, Prodr. 13(2): 274. 1849. *Amaranthus polystachyus* Willdenow, Sp. Pl. 4: 385. 1805. *Galliardia adscendens* Bubani, Fl. Pyren. 1: 186. 1897. *Amaranthus fasciatus* Roxburgh, Fl. Ind. ed. 1832 3: 609. 1832. *Amaranthus gracilis* Desfontaines *ex* Poirat, Encycl., Suppl. 1(1): 312. 1810. *Amaranthus gracilis* Desfontaines, tabl. Ecole Bot. 43. 1804.

Vernacular name: Notey.

Erect annual herbs, up to 50 cm high. Leaves broadly ovate, 3 – 7 x 2 – 5 cm, obtuse. Flowers in clusters densely aggregated in to slender spikes, up to 7 cm. Flowers unisexual, mostly female with a few males above; perianth segments 3, 1 mm long; tepal 3; stamens 3; stigma 3, minute; Capsules 1 seeded, seeds somewhat glossy, minutely reticulate with scurfy warts.

Flowers & Fruits: April to June.

Specimen Cited: Park, Rajib & AP Das 0135, dated 07. 02. 2007.

Local Distribution: Garden.

General Distribution: India: West Bengal, Assam, Sikkim, Bihar, Orisa, Uttar Pradesh; Bhutan, Bangladesh, Myanmar, China.

CELOSIA Linnaeus, Sp. Pl. 1: 205. 1753.

Celosia argentea Linnaeus, Sp. Pl. 1: 205. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 4: 714. 1885; H. Hara in Hara, Fl. East. Himal. 1:77. 1966; Prain, Beng. Pl. 2: 867. 1903; Long in Grierson *et* Long, Fl. Bhut. 1(2): 221. 1984. *Amaranthus purpureus* Nieuwland, Amer. Midl. Nat. 3: 279. 1914. *Celosia pallida* Salisbery, Prodr. Stirp. Chap. Allerton 145. 1796.

Erect annual herbs; branches grooved. Leaves alternate, variable, shortly petiolate, linear – lanceolate, acute, base tapering, glabrous. Flowers bisexual, white or tinged pink in dense, terminal, lanceolate spikes. Capsules ellipsoid; seeds 4-8, sub-reniform, black, shining.

Flowers & Fruits: March to August.

Specimen Cited: Park, Rajib & AP Das 0019, dated 05. 02. 2007.

Local Distribution: Garden.

General Distribution: Tropical regions of Asia, Africa and America.

DEERINGIA R. Brown, Prodr. 413. 1810.

Deeringia amaranthoides (Lamarck) Merrill, Interpr. Rumph. Herb. Amboin. 211. 1917; H. Hara in Hara, Fl. East. Himal. 1:78. 1966; Hara *et al.*, Enn. Fl. Pl. Nep.3:169.1982; Long in Grierson *et* Long, Fl. Bhut. 1(2): 221. 1984. *Achyranthes amaranthoides* Lamarck, Encycl. Meth. B. 1: 548. 1785. *Celosia baccata* Retzius, Observ. Bot. 5: 23. 1788. *Cladostachys amaranthoides* (Lamarck) K.C.Kuan, Fl. Xizangica 1: 645. 1983. *Deeringia indica* Retzius *ex* Blume, Bijdr. 542. 1826.

Climbing shrub, up to 6 m. Stem with pendulous branches, hairy when young. Petiole 1.5 cm, glabrous; Leaves opposite; lamina ovate, 3 – 7 x 2 – 3.5 cm, acuminate, base rounded, puberulous beneath; petioles 5 – 15 mm. Spikes 10 – 20 cm; flowers bisexual, pedicels 1 – 2mm. Perianth segments 5, concave, 2.5 mm. Stamens 5, anthers 2 – celled. Ovary subglobose, stigmas 3, linear. Berry subglobose, red.

Flowers & Fruits: August to February.

Specimen Cited: Conservation sector, Rajib & AP Das 0056, dated 07. 02. 2007.

Local Distribution: Forest area near conservation sector.

General Distribution: Tropical parts of India; Bhutan, Nepal, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam; Australia.

PUPALIAA. Jussieu, Ann. Mus. Natl. Hist. Nat. 2: 132. 1803.

Pupalia lappacea (Linnaeus) A. Jussieu, Ann. Mus. Hist. Nat. Paris 2:132.1803; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 4:724. 1885; Long in Grierson *et* Long, Fl. Bhut. 1(2): 207. 1984 ; Prain, Beng. Pl. 2: 872.1903. *Achyranthes lappacea* Linnaeus, Sp. Pl. 204.1753. *Pupalia atropurpurea* (Lamarck) Moquin in DC., Prodr. 13(2): 331.1849;

Annual to perennial herb. Stem ascending to semi-erect, tinged red, obtusely quadrangular, inflated at nodes. Lamina ovate to rhombic-oblong, entire, obtuse, base rounded, both surfaces densely hairy and ciliate. Racemes terminal, erect and straight, with 2 or 3 hermaphroditic and some unisexual flowers, unisexual flowers gradually decreasing upward; flower clusters shortly stalked. Bracts acuminate. Tepals of perfect flowers light green, ovate-oblong, glabrous, acuminate. Stamens 5; pseudostaminodes rectangular, truncate. Tepals of imperfect flowers and bracts yellow, villous, hooked. Utricles globose, glabrous. Seeds brown, very small, smooth.

Flowers & Fruits: June to November.

Specimen Cited: Park, Rajib & AP Das 0115, dated 07. 02. 2007.

Local Distribution: Road side, Garden and Park.

General Distribution: Tropical parts of India; Myanmar, Bhutan, Nepal, Bangladesh, China.

AERVA Forssk 1, Fl. Aegypt.-Arab. 170. 1775, nom. cons.

Aerva sanguinolenta (Linnaeus) Blume, Bijdr. 547.1826; H. Hara in Hara, Fl. East. Himal. 1:77. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 226. 1984. *Achyranthes sanguinolenta* Linnaeus, Sp. Pl. ed. 2: 294. 1762. *Achyranthes scandens* Roxburgh, Fl. Ind. 1: 676. 1820. *Aerva sanguinea* Miquel, Prodr. 13(2): 3. 1849. *Aerva scandens* (Roxburgh) Wallich, Icon. Pl. Orient. 2: t. 724. 1840; Prain, Beng. Pl. 2: 874.1903.

Vernacular name: Lopang.

Perennial herbs. Stem erect to slightly stoloniferous, less branched. Leaves ovate-elliptic to oblong-lanceolate, 2–8 x 1–5 cm. Inflorescences purple sericeous. Bracts, bracteoles, and tepals densely puberulous abaxially. Tepals pink. Pseudostaminodes triangular. Utricles ovate, glabrous. Seeds reniform.

Flowers & Fruits: January to June.

Specimen Cited: Park, Rajib & AP Das 0093, dated 07. 02. 2007.

Local Distribution: Garden.

General Distribution: India: widely grown in gardens; Bhutan, Nepal, Bangladesh, Cambodia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

CHENOPODIUM Linnaeus, Sp. Pl. 1: 218. 1753.

Key to the Species:

- 1a. Plants up to 2 – 3 m; lower leaves to 20 cm; inflorescence pendulous *C. giganteum*
- 1b. Plants usually smaller; lower leaves less than 8 cm; inflorescence panicles *C. album*

Chenopodium album Linnaeus, Sp. Pl. 1: 219. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 3. 1886; H. Hara in Hara, Fl. E. Himal. 1: 76. 1966; Prain, Beng. Pl. 2: 657.1903; Long in Grierson *et* Long, Fl. Bhut. 1(2): 217. 1984. *Chenopodium candicans* Lamarck, Fl. Franç. 3: 248. 1779. *Chenopodium browneanum* Schultes, Syst. Veg. 6: 275. 1820. [PLATE: 9, Figure-104]

Vernacular name: Bothua.

Herbaceous, up to 80 cm. Leaves ovate – deltoid, 3 – 7 x 1 – 3.5 cm, acute, base cuneate, margin entire, sometimes weakly 3 – lobed, petioles 1 – 3 cm. Flower clusters dense, sessile, slender panicles. Flower bisexual, 0.7mm diameter. Perianth segments 5. Stamens 5. Seeds black.

Flowers & Fruits: November to May.

Specimen Cited: Village, Rajib & AP Das 0072, dated 06. 02. 2007.

Local Distribution: Village and area of Beel occupied for cultivation.

General Distribution: Tropical America and common in tropics.

Chenopodium giganteum D. Don, Prodr. Fl. Nepal. 75 1825; H. Hara in Hara, Fl. E. Himal. 2: 24. 1971, sensu *Chenopodium album* Linnaeus; Long in Grierson *et* Long, Fl. Bhut. 1(2): 218. 1984; Prain, Beng. Pl. 2: 879.1903. *Chenopodium atriplicis* Linnaeus *f.*, Suppl. Pl. 171. 1782. *Chenopodium punctulatum* Scopoli, Delic. Fl. Faun. Insubr. 1: 26. 1786.

Vernacular name: Bothua.

Herbaceous, reddish up to 3 m. Leaves rhombic - ovate, 6 – 20 x 4 – 7 cm, acute, base cuneate, margin coarsely irregular - dentate, sometimes weakly 3 – lobed, petioles 5 – 9 cm. Flower clusters dense, sessile, slender panicles. Flower bisexual, 0.7mm diameter. Perianth segments 5. Stamens 5. Seeds black.

Flowers & Fruits: September to February.

Specimen Cited: Village, Rajib & AP Das 0066, dated 06. 02. 2007.

Local Distribution: Village.

General Distribution: Cultivated widely in tropical Asia, America.

DYSPHANIA R. Brown, Prodr. 411. 1810.

Dysphania ambrosioides (Linnaeus) Mosyakin *et* Clemants, Ukrayins'k. Bot. Zhurn. 59: 382. 2002. *Chenopodium ambrosioides* Linnaeus, Sp. Pl. 219. 1753; Hooker *f.* in Hooker *f.*, in Fl. Brit. Ind. 5: 4. 1886, H. Hara in Hara, Fl. E. Himal. 76. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 218. 1984; Prain, Beng. Pl. 2: 879. 1903; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 170. 1982; *Ambrina ambrosioides* Spach, Hist. Nat. Veg. 4: 297. 1836; *Chenopodium integrifolium* Voroschilov, Bot. Zhurn. 27: 42. 1942; *Chenopodium suffruticosum* Willdenow, Enum. Pl. Hort. Berol.: 290. 1809.

Aromatic herb, up to 100cm. Leaves lanceolate, 3 – 7 x 1 – 2cm, acuminate, base attenuate, serrate – dentate, yellowish gland –dotted beneath; petiole 0.5 – 1cm. Flower clusters subglabrous, elongate panicles. Flowers bisexual. Perianth segments 5. Stamens 5. Seeds smooth.

Flowers & Fruits: April to November.

Specimen Cited: Children Park, Rajib & AP Das 0145, dated 08. 02. 2007.

Local Distribution: Beel Margin throughout.

General Distribution: Tropical parts of India; native to Tropical America.

Caryophyllaceae A. Jussieu, Gen. Pl. 299. 1789; *nom. cons.*

Key to the Genera :

- 1a. Stipules present, rarely obscure2
- 1b. Stipules absent *Stellaria*
- 2a. Sepals green, leaflike; petals 2 – 6 parted *Drymaria*
- 2b. Sepals white, scarious; petals entire *Polycarpon*

DRYMARIA Willdenow *ex* Schultes in Roemer *et* Schultes, Syst. Veg. 5: 31. 1819.

Drymaria cordata (Linnaeus) Willdenow *ex* Roemer *et* Schultes, Syst. Veg. 5: 406.1819; Hooker *f. et* Thomson in Hooker *f.*, Fl. Brit. Ind. 1: 244. 1874; Grierson in Grierson *et* Long, Fl. Bh. 1(2): 215.1984; Prain, Beng. Pl. 1: 238.1903. *Holosteum cordatum* Linnaeus, Sp. Pl. 1: 88. 1753. *Drymaria diandra* Blume, Bijdr. 62. 1825; Masami Mizushima in Hara, Fl. East. Himal. 1: 80. 1966; Sharma *et al.*, Fl. Ind. 2:533. 1993. *Holosteum diandrum* Swartz, Prodr. 27. 1788. *Stellaria adenophora* Le n, Fl. Cuba 2: 154. 1950. *Drymaria procumbens* Rose, Contr. U. S. Natl. Herb. 1: 304. 1895.

Stems elongate, rooting at nodes. Leaves broadly ovate or suborbicular, Leaves broadly ovate, 0.5 – 1.5 x 0.5 – 1.5 cm, acute or obtuse, mucronate, base rounded, glabrous, 5 veined, petiole 2 – 3mm; stipules lacerate into 1 – 2 mm filaments. Flowers broadest above middle. Sepals elliptic – ovate, green, leaflike, 3 veined, inflexed, glandular-papillose on veins. Petals white, 2 – 6 parted. Seeds finely tuberculate.

Flowers & Fruits: May to July.

Specimen Cited: Park, Rajib & AP Das 0030, dated 05. 02. 2007.

Local Distribution: Throughout study area.

General Distribution: India; Tropical and Subtropical Asia, Formosa, W. & S. China, Oceania, Hawaii.

STELLARIA Linnaeus, Sp. Pl. 1: 421. 1753.

Key to the Species:

- 1a. Sepals connate at base into obconic calyx; stamens perigynous ... *S. uliginosa*
- 1b. Sepals distinct; stamens hypogynous 2
- 2a. Sub erect herb, rooting at nodes *S. media*
- 2b. Decumbent or prostrate, nodes rootless *S. wallichiana*

Stellaria media (Linnaeus) Villars, Hist. Pl. Dauphin 3: 615. 1789; M. Mizushima in Hara, Fl. East. Himal. 1: 82. 1966; Grierson in Grierson *et* Long, Fl. Bh. 1(2): 207. 1984; Prain, Beng. Pl. 1: 237.1903. *Alsine media* Linnaeus, Sp. Pl. 272. 1753. *Stellaria media* (Linnaeus) Cirillo, Essent. Pl. Char. Comment. 36. 1784. *Stellaria apetala* Ucria *ex* Roemer, Pl. Linn. Op. Arch. I (1): 68. 1796. *Stellaria vulgaris* Raunkiaer, Bot. Studier 13, 22. 1934.

Diffuse prostrate to sub-erect herb, 12 – 45 cm, rooting at nodes. Lamina ovate, 1 – 2 x 1 – 1.5cm, acute, base cordate, glabrous, petioles minute, veins indistinct. Few flowers in terminal leafy cymes, pedicels 1 – 1.5 cm. Sepals ovate, 3 – 4m, petals shorter than sepals, deeply bifid. Stamens 4 – 8. Capsule ovoid.

Flowers & Fruits: March to November.

Specimen Cited: Park, Rajib & AP Das 0053, dated 05. 02. 2007.

Local Distribution: Throughout study area.

General Distribution: India, Bhutan, Afghanistan, Japan, Korea, Pakistan, Russia, Europe.

Stellaria uliginosa Murray, Prodr. Strip. Gotting. 55. 1770; Hara *et al.*, Enn. Fl. Pl. Nep. 1:58. 1979; Grierson in Grierson *et* Long, Fl. Bh. 1(2): 208. 1984. *Alsine uliginosa* (Murray) Britton, Mem. Torrey Bot. Club 5(10): 150. 1894. *Alsine uliginosa* (Murray) E.H.L. Krause, Deutschl. Fl. ed. 2, 5: 54. 1901. *Stellaria dilleniana* Leers, Fl. Herborn. 107. 1775.

Diffuse, sub-erect or decumbent herb, stems 4–30 cm, 4-angular, with a line of pubescence along one side, rooting at nodes. Lamina elliptic, 0.5–1.5 x 0.15 – 0.45 (-0.55) cm, acute or acuminate,

sessile, glabrous. Flowers few in terminal cymes; bracts ovate, acute c 1.5 mm, scarious; sepals 2.5 – 3.5 mm, glabrous; stamens 10 or sometimes 3 -5, hypogynous.

Flowers & Fruits: April to august.

Specimen Cited: Conservation sector, *Rajib & AP Das 0712*, dated 14. 02. 2008.

Local Distribution: Conservation sector.

General Distribution: India, Bhutan, Nepal, Japan, Korea, Pakistan, China, Vietnam.

Stellaria wallichiana Bentham *ex* Haines, Bull. Misc. Inf. Kew 1920: 66.1920; Sharma *et al.*, Fl. Ind 2: 591. 1993; Bora *et al.*, Flor. Div. Ass., 56. 2003. *Stellaria media* (Linnaeus) Villars, Hist. Pl. Dauph 3: 615. 1789, p.p.; Hooker *f. et* Thomson in Hooker *f.*, Fl. Brit. Ind. 1: 230. 1874.

Decumbent or prostrate, annual herbs. Lamina flat, entire, simple. Inflorescence cymose. Flower actinomorphic; corolla white, bisexual; sepals 5, petals 5, stamens hypogynous. Fruits capsule; seeds compressed, embryo annular.

Flowers & Fruits: January to May.

Specimen Cited: Park, *Rajib & AP Das 0363*, dated 21. 07. 2007.

Local Distribution: Garden near Beel side.

General Distribution: India, Nepal, Bhutan, Bangladesh, Myanmar, China.

POLYCARPON Linnaeus, Syst. Nat., ed. 10. 2: 881. 1759.

Polycarpon prostratum (Forssk 1) Ascherson *et* Schwein. F. Ost. Bot. Zoitschr. 39: 128. 1889. Sharma *et al.*, Fl. Ind. 2: 553. 1993; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 216. 1984. Guha Bakshi, Fl. Mur. Dist. 57. 1984. *Alsine protrata* Forsskal, Fl. Aegypt. – Arab. 207. 1775. *Hepalasia loeflingiae* Wught *et* Arnott, Prodr. 358. 1834. *Polycarpon loeflingiae* (Wight *et* Arnott) Bentham *et* Hooker *f.*, Gen. Pl. 1: 153. 1862; Hooker *f. et* Thomson in Hooker *f.*, Fl. Brit. Ind. 1: 245. 1874; Prain, Beng. Pl. 1: 238. 1903. *Polycarpon indicum* (Retzius) Merrill, Philipp. Jour. Sci. 10(5): 302-303. 1915. *Loeflingia indica* Retzius, Observ. Bot. 4: 8. 1786.

Plants annual. Stems prostrate to ascending, base rigid, 10 – 22 cm, glabrous. Lamina obovate to spatulate, 5 – 20 x 1.5 – 4 mm, glabrous, entire, acute, base attenuate. Cymes often axillary, sometimes rather lax, 2 – 4 cm; bracts stipule like. Pedicel short or absent, pilose. Sepals lanceolate, white, apex obtuse, hooded. Petals often fewer than 5, oblong, entire. Stamens 3, shorter than sepals. Capsules ovoid, shorter than sepals. Seeds light brown, cylindric, reticulate.

Flowers & Fruits: February to June.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0414*, dated 22. 07. 2007.

Local Distribution: Beel margin and cultivated areas.

General Distribution: Tropical India; tropical region of Asia and Africa.

‘succulent’ clade:

Cactaceae Jussieu, Gen. Pl. 310. 1789; *nom. cons.*

CEREUS Miller, Gard. Dict., ed. 4. 308. 1754.

Cereus repandus (Linnaeus) Miller, Gard. Dict. ed. 85. 1768. *Cactus repandus* Linnaeus, Sp. Pl. 467. 1753. *Cereus peruvianus* (Linnaeus) Miller, Gard. Dict. ed. 84. 1768; Long in Grierson *et* Long, Fl. Bhut. 1(2): 233. 1984. *Cactus peruvianus* Linnaeus, Sp. Pl. 467. 1753.

Vernacular name: Kata.

Columnar shrub or tree up to 10m. Branch segments elongate, 10 – 12 cm diameter, slightly glaucous – green. Ribs 6, when young almost flat, becoming broadly triangular when old. Areoles whitish, bearing 9 – 12 yellowish – brown spines. Flowers white, 15 mm long; stamens numerous, not exserted. Fruit orange yellow, subglobose.

Flowers & Fruits: March to June.

Specimen Cited: Park, Rajib & AP Das 0020, dated 05. 02. 2007.

Local Distribution: Garden.

General Distribution: India: cultivated throughout; Bhutan, Bangladesh, Myanmar, China.

Portulacaceae Jussieu, Gen. Pl. 312. 1789; *nom. cons.*

PORTULACA Linnaeus, Sp. Pl. 1: 445. 1753.

Portulaca oleracea Linnaeus, Sp. Pl. 1: 445. 1753; Hooker *f. et* Thomson in Hooker *f.*, Fl. Brit. Ind. 1: 246. 1874; H. Hara in Hara, Fl. East. Himal. 1: 79. 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 196. 1984; Sharma *et al.*, Fl. Ind. 3: 4. 1993; Prain, Beng. Pl. 1: 240. 1903. *Portulaca intermedia* Link *ex* Schlechtendal, Bot. Zeitung (Berlin) 11(38): 667. 1853. *Portulaca consanguinea* Schlechtendal, Linnaea 24: 693. 1851. *Portulaca marginata* Kunth, Nov. Gen. Sp. 6: 72. 1823. *Portulaca latifolia* Hornemann, Hort. Bot. Hafn. 2: 491. 1815.

Annual herbs. Stems sometimes flushed red to purple, prostrate or decumbent, diffuse, much branched. Leaves alternate to subopposite; petiole short; lamina flat, obovate, 1 – 3 cm x 0.5 cm, obtuse-rounded, base cuneate. Flowers in clusters of 3 to 5. Sepals green, apex acute, keeled. Petals 5, yellow, obovate, slightly connate at base, apex retuse. Stamens 7 – 12; anthers yellow. Ovary glabrous. Stigmas 4. Capsule ovoid. Seeds glossy black when mature.

Flowers & Fruits: March to September.

Specimen Cited: Park, Rajib & AP Das 0057, dated 07. 02. 2007.

Local Distribution: Garden and Park at Beel side.

General Distribution: Tropical India; tropical and temperate regions worldwide.

‘third’ clade:

Molluginaceae Bartling *et* H.L. Wendland, Beitr. Bot. 2: 158. 1825 ; *nom. cons.*

GLINUS Linnaeus, Sp. Pl. 1: 463. 1753.

Key to the Species:

- 1a. Plant densely stellate tomentose; styles 5; capsule 5 valved *G. lotoides*
- 1b. Plant subglabrous or pilose; styles 3 or 4; capsule 3 valved *G. oppositifolius*

Glinus lotoides Linnaeus, Sp. Pl. 463. 1753; Bora *et al.*, Flor. Din. Ass. 169. 2003; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 195. 1984. *Mollugo lotoides* (Linnaeus) Kuntze, Revis. Gen. Pl. 1: 264. 1891. *Molluga hirta* Thunberg, Prodr. Pl. Cap. 24. 1794; C.B. Clarke in Hooker *f.*, Fl. Brit. Ind. 2: 662. 1879; Kanjilal *et al.*, Fl. Ass. 2: 338. 1938 ; Prain, Beng. Pl. 1: 533. 1903. *Mollugo hirta* var. *lotoides* (Linnaeus) C.B. Clarke, Fl. Brit. India 2(6): 662. 1879. *Glinus dictamnoides* Burman *f.*, Fl. Indica 113. 1768. *Mollugo glinus* A. Richard, Tent. Fl. Abyss. 1: 48. 1847.

Herbs, densely stellate tomentose. Stems decumbent, 10 – 30 cm, much branched. Petiole very short; basal leaves in a rosette, drying soon; upper leaves verticillate to opposite, obovate to oblong-

spatulate, base attenuate, decurrent, margin entire, obtuse, rounded or acute. Flowers several, subsessile. Tepals elliptic to oblong. Stamens usually free. Ovary ovoid, 5 loculed; styles 5, free. Capsule ovoid, 5 valved. Seeds numerous, chestnut brown, reniform.

Flowers & Fruits: March to July.

Specimen Cited: Children Park, *Rajib & AP Das 0083*, dated 06. 02. 2007. Village, *Rajib & AP Das 0129*, dated 07. 02. 2007.

Local Distribution: Beel margin throughout.

General Distribution: India, Bhutan, Nepal, Bangladesh, Indonesia, Malaysia, Philippines, Sri Lanka; North and tropical Africa, S to S.E. Asia, S. Europe, tropical America, Oceania.

Glinus oppositifolius (Linnaeus) A. DC., Bull. Herb. Boiss. 2, 1: 552. 1901; Guha Bakshi, Fl. Mur. Dist. 148. 1984. *Mollugo oppositifolia* Linnaeus, Sp. Pl. 89. 1753. *Molluga spergula* Linnaeus, Syst. ed. 10: 881. 1759; C. B. Clarke in Hooker f., Fl. Brit. Ind. 2: 662. 1879. *Glinus mollugo* Fenzl, Ann. Wiener Mus. Naturgesch. 1: 359. 1836. *Mollugo glinoides* A. Richard, Tent. Fl. Abyss. 1: 48. 1847.

Vernacular name: Gima.

Herbs 10 – 30 cm, much branched, pilose to subglabrous. Leaves in pseudowhorls of 3 – 6; leaf blade spatulate-oblongate to elliptic, 1 – 2.5 cm 3 – 6 mm, base attenuate, margin with sparse teeth, obtuse to acute. Pedicel slender. Flowers usually 2 – 7 in a cyme. Tepals greenish white, oblong, margin membranous, 3 veined. Stamens 3 to 5. Styles 3. Capsule ellipsoid, slightly shorter than persistent tepals. Seeds chestnut-brown, subreniform, granulose.

Flowers & Fruits: January to June.

Specimen Cited: Park, *Rajib & AP Das 0021*, dated 05. 02. 2007.

Local Distribution: Garden.

General Distribution: Tropical parts of India; Bhutan, Bangladesh, China, Pantropical Africa and Asia, N Australia.

Nyctaginaceae Jussieu, Gen. Pl. 90. 1789; *nom. cons.*

Key to the Genera:

- 1a. Small tree ***Nyctanthes***
- 1b. Climbing shrubs or herbs 2
- 2a. Climbing shrubs ***Bougainvillea***
- 2b. Prostrate or erect herbs 3
- 3a. Flowers enclosed by a calyxlike involucre; fruit globose, obovoid, oblong, fusiform or terete, sometimes ribbed, without sticky glands ***Mirabilis***
- 3b. Flowers in cymose umbels; fruit clavate, obconic to obovoid, 5 or 10 ribbed, with sticky glands ***Boerhavia***

BOERHAVIA Linnaeus, Sp. Pl. 1: 3. 1753.

Boerhavia coccinea Miller, Gard. Dict., ed. 8. n. 4. 1768; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 194. 1984. *Boerhavia bracteata* T. Cooke, Bull. Misc. Inform. Kew 1909: 421. 1910. *Boerhavia viscosa* Lagasca *et* Rodrigues, Anales Ci. Nat. 4: 256. 1801. *Boerhavia coccinea* var. *viscosa* (Lagasca *et* Rodrigues) Moscoso, Cat. Fl. Doming. 1: 180. 1943.

Vernacular name: Punarnaba.

Perennial herb, stems up to 50 cm, diffuse. Leaves opposite, ovate elliptic to broadly ovate, 3 – 5 x 2 – 3 cm, subacute, base cordate, subglabrous, petiole 2 cm. Flowers in cymose, umbels, 3 – 5

flowered, bract minute. Perianth campanulate, purple, fruit 3mm., obconic to obovoid, 5 or 10 ribbed, with sticky glands.

Flowers & Fruits: April to August.

Specimen Cited: Park, Rajib & AP Das 0017, dated 05. 02. 2007.

Local Distribution: Park and Garden areas, road sides.

General Distribution: India: throughout; Native of tropical America.

BOUGAINVILLEA Commerson ex Jussieu, Gen. Pl. 91. 1789 [*“Buginvillea”*], *nom. et orth. cons.*

Key to the Species:

- 1a. Leaves sparsely pubescent; bracts oblong to elliptic, as long as flowers; perianth tube distinctly angled *B. glabra*
- 1b. Leaves densely pubescent; bracts elliptic-ovate, longer than flowers; perianth tube rounded *B. spectabilis*

Bougainvillea glabra Choisy, Prodr. 13(2): 437 1849; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 194. 1984; Prain, Beng. Pl. 2: 863.1903. *Bougainvillea brachycarpa* Heimerl, Bot. Jahrb. Syst. 11: 88. 1889.

Vernacular name: Kagajful.

Large scrambling shrubs. Leaves alternate, ovate, 3 – 5 x 2 – 3cm, acute, base attenuated, sparsely pubescent, petiole ± 1cm. Flowers in terminal. Bracts papery, oblong to elliptic, subacute, base cordate, red, sessile, flowers on its midrib. Perianth 2 cm, minutely puberulous, distinctly angled.

Flowers & Fruits: February to May.

Specimen Cited: Park, Rajib & AP Das 0051, dated 05. 02. 2007.

Local Distribution: Park.

General Distribution: India: cultivated throughout; Native of tropical America.

Bougainvillea spectabilis Willdenow, Sp. Pl. 2: 348. 1799; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 194. 1984 ; Prain, Beng. Pl. 2: 863.1903. *Bougainvillea bracteata* Persoon, Syn. Pl. 1: 418. 1805. *Bougainvillea virescens* Choisy, Prodr. 13(2): 437. 1849.

Vernacular name: Kagajful.

Large climbing shrubs. Leaves alternate, ovate, 3 – 5 x 2 – 3cm, acute, base rounded, densely pubescent; petiole 1cm. Flowers in terminal. Bracts papery, elliptic – ovate, subacute, base cordate, red, sessile, longer than flowers; flowers on its midrib. Perianth 2 cm, pubescent, perianth tube rounded.

Flowers & Fruits: February to May.

Specimen Cited: Park, Rajib & AP Das 0048, dated 05. 02. 2007.

Local Distribution: Park.

General Distribution: India: cultivated throughout. Native of tropical America.

MIRABILIS Linnaeus, Sp. Pl. 1: 177. 1753.

Mirabilis jalapa Linnaeus, Sp. Pl. 177. 1753; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 167. 1982; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 192. 1984; Prain, Beng. Pl. 2: 862.1903. *Nyctago jalapae* (Linnaeus) DC., Fl. Fran . ed. 3, 3: 426. 1805.

Vernacular name: Sandhyamalati.

Robust erect herb, up to 150cm. Leaves opposite, triangular ovate, 5 – 9 x 2 – 4 cm, acuminate, base truncate, glabrous, petioles 2 – 3cm. Flowers in terminal corymbose cymes. Involucre campanulate, 1cm. Perianth red, narrowly funnel – shaped, tube 5cm, limb 5 lobed. Stamens 5. Fruit globose, obovoid, oblong, fusiform or terete, sometimes ribbed, without sticky glands.

Flowers & Fruits: April to February.

Specimen Cited: Park, Rajib & AP Das 0034, dated 05. 02. 2007.

Local Distribution: In the Park and Garden.

General Distribution: India: cultivated throughout. Native of tropical America.

NYCTANTHES Linnaeus, Sp. Pl. 1: 6. 1753.

Nyctanthes arbor-tristis Linnaeus, Sp. Pl. 1: 6. 1753; C. B. Clarke in Hooker *f.*, Fl. Brit. Ind. 3: 603. 1882; Long in Grierson *et* Long, Fl. Bhut. 2(2): 937. 1999; Prain, Beng. Pl. 2: 660. 1903.

Nyctanthes dentata Blume, Mus. Bot. 1: 282 1851. *Nyctanthes tristis* Salisbery, Prodr. Stirp. Chap. Allerton 11 1796. *Scabrita triflora* Linnaeus, Mant. Pl. 1: 37 1767.

Vernacular name: Sheuli.

Shrubs; branches quadrangular. Leaves rigid, ovate, acuminate, base rounded or cuneate, margin entire or coarsely serrate, scabrid-hairy above, appressed pubescent on veins beneath. Flowers fragrant, sessile; corolla tube orange; lobes white. Capsule elliptic or suborbicular, 2 – lobed.

Flowers & Fruits: September to December.

Specimen Cited: Village sector, Rajib & AP Das 0047, dated 05. 02. 2007.

Local Distribution: Village.

General Distribution: India: cultivated throughout. Native of tropical America.

Droseraceae Salisbery in W. Hooker, Parad. Lond. t. 95. 1808 ('Drosereae').

DROSERA Linnaeus, Sp. Pl. 1: 281. 1753.

Drosera burmannii Vahl, Symb. Bot. 3: 50. 1794; Long in Grierson *et* Long, Fl. Bhut. 1(2): 379. 1984; Prain, Beng. Pl. 1: 472. 1903. *Drosera burmanni* var. *dietrichiana* (Reichenbach *f.*) Diels, Pflanzenr. IV, 112: 76. 1906. *Drosera dietrichiana* Reichenbach *f.*, Beitr. Syst. Pflanzenk. 73. 1871. [PLATE: 7, Figure-63]

Small herbs. Stem unbranched, extremely short. Leaves forming a flat rosette, subsessile, lamina yellowish green or red to reddish violet, 8 – 9 x 6 – 8 mm, obovate, obtuse, prostrate, densely covered with glandular hairs, greenish pink; petioles absent. Flowers few in erect racemes; scape 6–8 cm high; calyx glandular. Sepals 5, united at base, light green, red, or reddish violet, narrowly oblong. Petals white to light red to reddish violet, obovate; style 3, free.

Flowering & Fruiting: August to December.

Specimen Cited: Bochamri cultivation land, Rajib & AP Das 0111, dated 07. 02. 2007.

Local Distribution: Grass land.

General Distribution: India: tropical part throughout; Bhutan, S. E. Asia and Australia.

Tamaricaceae S. F. Gray, Arr. Brit. Pl. 2: 554. 1821 ('Tamaricinae'); *nom. cons.*

TAMARIX Linnaeus, Sp. Pl. 1: 270. 1753.

Tamarix dioca Roxburgh *ex* Roth. Nov. Pl. Sp. 185. 1821; Dyer in Hooker *f.*, Fl. Brit. Ind. 1: 249. 1874; Prain, Beng. Pl. 1: 162. 1963; Shetty & Pandey in Sharma *et al.*, Fl. Ind. 3: 24. 1993; Grierson in Grierson *et Long*, Fl. Bhutan 2 (1): 232. 1991. [PLATE: 7, Figure-72]

Local Name: Jhaoa.

Shrubs or small tree. Branches gray-green, robust. Leaves of growing branches lanceolate; those of vegetative branches lanceolate to ovate-lanceolate, unequal in size, 1–4 mm, acuminate, base decurrent, amplexicaul, auriculate, imbricate. Racemes in branches of previous year and at apices of growing branches of current year forming a lax panicle. Flowers 4 merous. Sepals triangular-ovate, base slightly united, green, membranous, denticulate, apex obtuse. Petals obovate orbicular to elliptic, pink or purplish, deciduous after anthesis. Disk purple-red, thick. Stamens 4 or 5. Styles 3. Capsule large.

Flowers & Fruits: July to January.

Specimen Cited: Batikata Beel margin, *Rajib & AP Das 0186*, dated 09. 02. 2007.

Local Distribution: Riverine Grassland.

General Distribution: India: tropical part; Bangladesh, Nepal, Pakistan, Myanmar and Afghanistan.

Plumbaginaceae A. L. de Jussieu, Gen. Pl. 92. 1789 ('Plumbagines'); nom. cons.

PLUMBAGO Linnaeus, Sp. Pl. 1: 151. 1753.

Plumbago zeylanica Linnaeus, Sp. Pl. 1: 151. 1753; Clarke in Hooker *f.*, Fl. Brit. Ind. 3: 480. 1882; H. Ohashi in Hara, Fl. E. Himal. 249. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 61. 1982; Rae *et Aitken* in Grierson *et Long*, Fl. Bhut. 2(2): 570. 1999; Prain, Beng. Pl. 1: 639. 1903. *Plumbago scandens* Linnaeus, Sp. Pl. ed. 2, 215. 1762. *Findlaya alba* Bowdich, Exc. Madeira 258. 1825.

Scrambling bushy shrubs. Leaves ovate, entire, acute or acuminate, base cuneate or attenuate, glabrous. Petioles narrowly winged above, broadly auriculate at base. Racemes many-flowered, glandular. Corolla white. Capsules pale yellow-brown, ellipsoid.

Flowers & Fruits: September to February.

Specimen Cited: Cultivate in Bochamari village, *Rajib & AP Das 0727*, dated 14. 02. 2008.

Local Distribution: Panted in Villages.

General Distribution: Pantropical.

Polygonaceae A.L. de Jussieu, Gen. Pl. 82. 1789 ('Polygoneae'); nom. cons.

Key to the genera:

- 1a. Perianth 3 – 5 cleft; stigma capitate 2
- 1b. Perianth 6 cleft; stigma fimbriate ***Rumex***
- 2a. Petioles bearing reflexed prickles or bristles ***Persicaria***
- 2b. Petioles articulate ***Polygonum***

PERSICARIA (Linnaeus) Miller, Gard. Dict. Abr., ed. 4. vol. 3. 1754.

Key to the species:

- 1a. Flowers in axillary fascicles; ocrea 2-cleft *P. plebeium*
- 1b. Inflorescence spicate, capitate, or paniculate; ocrea not 2-cleft 2
- 2a. Stems and petioles with retrorse prickles *P. strigosum*
- 2b. Stems and petioles without retrorse prickles 3

3a. Perennial herb	<i>P. barbatum</i>
3b. Annual herb	4
4a. Peduncles glandular hairy or glandular	<i>P. lapathifolium</i>
4b. Peduncles not glandular hairy and glandular	5
5a. Apex of ocrea usually with green leaflike wing	<i>P. orientale</i>
5b. Apex of ocrea without wing	6
6a. Perianth punctuate	<i>P. hydropiper</i>
6b. Perianth not punctuate	<i>P. chinense</i>

Persicaria chinensis (Linnaeus) H. Gross, Engl. Bot. Jaharb. Syst. 49(2): 269. 277 & 315. 1913; Grierson *et* Long in Grierson *et* Long, Fl. Bhu. 1(1): 163. 1983. *Polygonum chinense* Linnaeus, Sp. Pl. ed. 1, 1: 363. 1753; Hooker *f.*, Fl. Br. Ind. 5: 44. 1886; Hara *et al.* Fl. E. Him. 3: 175. 1982; Prain, Beng. Pl. 2: 887. 1963. *Persicaria chinensis* var. *ovalifolia* (Meisner) Hara & Ohashi, Fl. E. Him. 71. 1966; 2: 22. 1971; Hara *et al.*, Enum. Fl. Pl. Nepal 3: 175. 1982. *Polygonum chinense* var. *ovalifolia* Meisner *sensu* Hooker *f.*, Fl. Br. Ind. 5: 45. 1885.

Scandent shrubs; stem glabrous. Stipules obliquely truncate tube and enclosed to entire internode, white. Lamina ovate, oblique, abruptly acuminate, cordate at base, glabrous except the midrib below; nerves many. Ochrea 2-3 cm long, membranous, ribbed, oblique at mouth, glabrous. Spike paniced, globose; peduncles glandularhairy; bracts ovate, obtuse, 1-flowered; flowers pedicelled; tepals 4, white, oblong, obtuse, glabrous; stamens 8, styles 3. Nut trigonous, glabrous, acute, brown.

Flowers & Fruits: Throughout the year.

Specimen Cited: Forest, Rajib & AP Das 0395, dated 22.07.2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: India, Bhutan, Nepal, China, Japan, Malaysia.

Persicaria strigosa (R. Brown) Nakai, Rigakkwai 24: 299. 1926; Grierson *et* Long in Grierson *et* Long, Fl. Bhu. 1(1): 160. 1983. *Polygonum strigosum* R. Brown, Prodr. Fl. Nov. Holl. 420. 1810; Prain, Beng. Pl. 2: 888. 1963. *Polygonum bodinieri* H. L v & Vaniot, Bull. Acad. Int. G ogr. Bot. 11: 343. 1902. *Truellum strigosum* (R. Brown) Soj k, Preslia 46: 149. 1974. *Tracaulon strigosum* (R. Brown) Greene, Leaf. Bot. Observ. Crit. 1: 22. 1904.

Annual herbs. Stems decumbent, branched, angulate, with retrorse prickles along angles. Petiole with recurved prickles; leaf blade elliptic or lanceolate, 6 – 2 – 3 cm, acuminate or acute, retrorse prickles along midvein, base weakly cordate or truncate, ciliate; ocrea tubular, membranous, with dense retrorse prickles at base, apex truncate, long ciliate. Inflorescence spicate; peduncle branched, each 2 or 3 flowered. Perianth pinkish, 5 parted; tepals elliptic. Styles 2 or 3; stigmas capitate. Achenes dark brown.

Flowers & Fruits: August to October.

Specimen Cited: Batikata Beel, Rajib & AP Das 0421, dated 22.07.2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: India: Bangladesh, Nepal, Bhutan, Indonesia, Malaysia, Myanmar, New Guinea, Thailand, Vietnam, Australia.

Persicaria barbata (Linnaeus) Hara, Fl. E. Him. 1: 70. 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhu. 1(1): 162. 1983. *Polygonum barbatum* Linnaeus, Sp. Pl. 362. 1753; Hooker *f.*, Fl. Brit. Ind. 5: 37. 1886; Prain, Beng. Pl. 2: 887. 1903. *Polygonum rivulare* Roxburgh Fl.

Ind. 2: 290. 1824. *Polygonum kotoshoense* Ohki, Bot. Mag. (Tokyo) 39: 362. 1925. *Persicaria omerostroma* (Ohki) Sasaki, List Pl. Formos. 170. 1928. [PLATE: 10, Figure-119]

Erect stout herbs. Lamina subsessile, 6-12 x 2-3 cm, elliptic-lanceolate, acuminate at both ends, glabrate or pubescent; nerves many, slender; ochrea strigose, mouth oblique, shortly bristled, pubescent. Spike 2-4 cm long, shortly peduncled, stout, in 15-20 cm long panicles; bracts obovate, obtuse, long-ciliate; flowers white, 4-10 in each bracts, longpedicelled; pedicels persistent; tepals 5, free, oblong, obtuse, glandular; stamens 8; styles 3. Nut trigonous, acute, glabrous.

Flowers & Fruits: July to December.

Specimen Cited: Batikata Beel, *Rajib & AP Das 0415*, dated 22.07.2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: India (Warmer part), Tropical part of Asia, Africa and America.

Persicaria hydropiper (Linnaeus) Delarbre, Fl. Auvergne ed. 2: 518. 1800. *Persicaria hydropiper* (Linnaeus) Spach, Hist. Veg. 10: 536. 1841; Fl. Eastern. Himal. 2: 23. 1971; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 162. 1983. *Polygonum hydropiper* Linnaeus, Sp. Pl. 1: 361. 1753; Hooker *f.*, Fl. Brit. Ind. 5: 39. 1886; Datta & Majumdar, Bull. Bot. Soc. Beng. 20(2): 49. 1966; Prain, Beng. Pl. 2: 887. 1903. *Persicaria hydropiper* (Linnaeus) Opiz, Seznam 72. 1852. *Polygonum schinzii* J. Schuster, Bull. Herb. Boissier 2(8): 711. 1908. [PLATE: 6, Figure-57]

Vernacular name: Bish jhar.

Slender erect herbs. Lamina subsessile, 3-7 x 1.5-2.5 cm, elliptic, acuminate, base acute, scabrous along the nerves, nerves many, slender. Ochrea with immersed hairs, mouth ciliate. Racemes 3-10 cm long, paniced, slender, sometimes drooping; bracts obovate, ciliate; flowers solitary or paired in each bract; tepals oblong, obtuse, red-glandular; stamens 5; styles 3-fid. Nut trigonous, apiculate.

Flowers & Fruits: May to December.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0130*, dated 07. 02. 2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: India (Plains and wet places), Pantropica Europe and N. Africa.

Persicaria lapathifolia (Linnaeus) Delarbre, Fl. Auvergne ed. 2: 519. 1800. *Persicaria lapathifolia* (Linnaeus) S.F. Gray, Nat. Arr. Br. Pl. 2: 270. 1821; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. (1): 161. 1983. *Polygonum lapathifolia* Linnaeus, Sp. Pl. 360. 1753; Hooker *f.*, Fl. Brit. Ind. 5: 35. 1886; Prain, Beng. Pl. 2: 886. 1963. *Polygonum nodosum* Persoon, Syn. Pl. 1: 440. 1805. *Polygonum incarnatum* Elliott, Sketch Bot. S. Carolina 1(5): 456. 1817.

Annual herbs. Stems erect, branched, swollen at nodes. Lamina lanceolate or broadly lanceolate, ciliate, acuminate or acute, base cuneate; ochrea brownish, tubular, membranous, glabrous, apex truncate. Inflorescence terminal or axillary, densely flowered, several spikes aggregated panicle like; bracts funnel-shaped, margin sparsely shortly ciliate. Perianth pink or white. Stamens usually 6. Styles 2, connate at base. Achenes black-brown, shiny, broadly ovoid, biconcave.

Flowers & Fruits: June to December.

Specimen Cited: Raichangmari Beel, *Rajib & AP Das 0074*, dated 06. 02. 2007.

Local Distribution: Near Tourist Bunlow.

General Distribution: India: Bhutan, Nepal, Bangladesh, Pakistan, Indonesia, Japan, Kazakhstan, Korea, Malaysia, Mongolia, Myanmar, New Guinea, Philippines, Russia, Tajikistan, Thailand, Turkmenistan, Uzbekistan, Vietnam; N Africa, Australia, Europe, North America.

Persicaria orientalis (Linnaeus) Spach, Hist. Nat. V g. 10: 537 1841. *Persicaria orientalis* (Linnaeus) Assenov, Fl. Reip. Pop. Bulgar. 3: 250. 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. (1): 161. 1983. *Polygonum orientale* Linnaeus, Sp. Pl. 1: 362. 1753. Hooker *f.*, Fl. Brit. Ind. 5: 30. 1886; Prain, Beng. Pl. 2: 886. 1903. *Persicaria tibetica* Rendle, J. Bot. 428. 1900. *Polygonum orientale* var. *pilosum* (Roxburgh *ex* Meisner) Meisner, Prodr. 14(1): 123. 1856. *Polygonum pilosum* Roxburgh *ex* Meisner, Fl. Ind., ed. 1820 2: 286. 1824.

Annual herbs. Stems erect, much branched above, densely spreading villous. Lamina broadly ovate to ovate-lanceolate, 10 – 20 5 – 10 cm, both surfaces densely pubescent, densely ciliate, acuminate, base rounded or subcordate, slightly decurrent. Ocrea tubular, membranous, margin truncate, long ciliate, usually with green leaflike wing. Inflorescence terminal or axillary, slightly pendulous, several spikes aggregated and panicle-like; bracts green, broadly funnel shaped. Flowers dimorphic. Perianth white. Stamens 7, exserted. Styles 2, connate to below middle; stigmas capitate. Achenes, black-brown, shiny.

Flowers & Fruits: June to August.

Specimen Cited: Batikata Beel, Rajib & AP Das 0041, dated 05. 02. 2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: India through out; Bhutan, Bangladesh, China, Indonesia, Japan, Korea, Myanmar, Philippines, Russia, Sri Lanka, Thailand, SW Asia, Australia and Europe.

POLYGONUM Linnaeus, Sp. Pl. 1: 359. 1753, nom. cons.

Key to the species

- 1a. Flowers in axillary fascicles, 2 cleft *P. plebeium*
 1b. Inflorescence spicate, pendulous; ocrea truncate to ciliate *P. pubescens*

Polygonum plebeium R. Brown, Prodr. Fl. Nov. Holl. 420. 1810 (“*Plebejum*”); Hooker *f.*, Fl. Brit. Ind. 5: 27. 1886; Grierson *et* Long in Grierson *et* Long, Fl. Bhu. 1(1): 170. 1983; Prain, Beng. Pl. 2: 885. 1903; Guha Bakshi, Fl. Mur. Dist. 274. 1984. *Avicularia indica* Didrichsen, Bot. Not. 1850: 187. 1850. *Polygonum herniarioides* Sprengel, Syst. Veg. 2: 256. 1825.

Prostrate woody herbs with radiate branches; stems glabrous. Lamina 0.8 – 1 x 0.3 – 0.5 cm, oblong, sessile, acute, glabrous. Ocrea chartaceous, white, ciliate. Flowers 3 – 7 together, sessile, axillary; tepals 5, ovate, acute, glabrous; stamens 5. Nut trigonous, acute, glabrous, brown.

Flowers & Fruits: October to March.

Flowers & Fruits: June to November.

Specimen Cited: Rasik Beel, Rajib & AP Das 0081, dated 06. 02. 2007.

Local Distribution: Throughout the study areas.

General Distribution: India: tropical part; Tropical and Sub Tropical Asia, Africa and Australia.

Polygonum pubescens Blume, Bijdr. Fl. Ned. Ind. 2: 532. 1925; Steward Contr. Gray Herb. 88: 62. 1930. *Persicaria pubescens* (Blume) Hara in Jour. Jap. Bot. 17(6): 335. 1941; Hara, Fl. Eastern Himal. 73: 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhu. 1(1): 163. 1983. *Polygonum burbatum sensu* Willdenow, Roxburgh Fl. Ind. 2: 289. 1832 non L. *Polygonum flaccidum* Meisner, Prodr. 14(1): 107. 1856; Hooker *f.*, Fl. Brit. Ind. 5: 39. 1886; Prain, Beng. Pl. 2: 664. 1903. *Polygonum hispidum* Buchanan-Hamilton *ex* D. Don, Prodr. Fl. Nepal. 71. 1825. *Polygonum flaccidum* var. *hispidum* (Buchanan-Hamilton *ex* D. Don) Hooker *f.*, Fl. Brit. India 5: 40. 1886. [PLATE: 9, Figure-94]

Annual or perennial herbs. Stems erect, hispidulous. Lamina 3 – 8 1-4 cm ovate-lanceolate or broadly lanceolate, both surfaces hispidulous, ciliate, acuminate or acute, base cuneate. Ocrea tubular, hispid, apex truncate, ciliate. Inflorescence terminal or axillary, spicate, pendulous, lax; funnel-shaped, margin ciliate, each 3 or 4 flowered; pedicels longer than bracts. Perianth green, red above, 5 parted, densely purplish glandular punctate; tepals elliptic; stamens 8, included; styles 3, connate to below middle. Achenes black, ovoid.

Flowers & Fruits: March to October.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0062*, dated 07. 02. 2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: India, Malaya and Archipelago.

RUMEX Linnaeus, Sp. Pl. 1: 333. 1753.

Key to the species:

- 1a. Inner fruiting sepals margin narrow, few toothed *R. maritimus*
- 1b. Inner fruiting sepals margin wide, more toothed *R. dentatus*

Rumex dentatus Linnaeus, Mant. Pl. 2: 226. 1771; Hooker *f.*, Fl. Brit. Ind. 5: 59. 1886; Grierson *et Long* in Grierson *et Long*, Fl. Bhu. 1(1): 174. 1983; Prain, Beng. Pl. 2: 889. 1903. *Rumex klotzschianus* Meisner, Prodr. 14(1): 57. 1856. *Rumex dentatus* subsp. *klotzschianus* (Meisner) Rechard *f.*, Beib. Bot. Jahr. 49(2): 19. 1932. [PLATE: 6, Figure-51]

Annual herbs. Stems erect, branched from base, grooved; branches ascending to nearly divaricate, glabrous. Lower leaves: lamina oblong to narrowly elliptic, 4 – 12 2 – 3 cm, both surfaces glabrous, slightly undulate, obtuse or acute, base rounded, truncate or subcordate; cauline leaves smaller; ocrea fugacious, membranous. Inflorescence racemose, several racemes aggregated and panicle like. Flowers bisexual. Outer tepals elliptic; inner tepals enlarged in fruit; valves triangular ovate, base rounded, each margin with 2 to 4 teeth, apex acute to subacute. Achenes yellow-brown, shiny, ovoid, sharply trigonous.

Flowers & Fruits: May to August.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0040*, dated 05. 02. 2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: India: tropical. Nepal, Afghanistan, India, Kazakhstan, Kyrgyzstan, Russia; N Africa, SE Europe.

Rumex maritimus Linnaeus, Sp. Pl. 335. 1753; Hooker *f.*, Fl. Brit. Ind. 5: 59. 1886; Grierson *et Long* in Grierson *et Long*, Fl. Bhu. 1(1): 174. 1983; Prain, Beng. Pl. 2: 888. 1903. *Lapathum minus* Lamarck, Fl. Fran. 3: 4. 1778. *Rumex aureus* Miller, Gard. Dict. (ed. 8) no. 7 no. 7. 1768. *Rumex fueginus* Philip, Anales Univ. Chile 91: 493-494. 1895.

Annual herbs. Stems erect, branched below middle, grooved, glabrous. Lower leaves: lamina lanceolate to lanceolate-oblong, both surfaces glabrous, entire and smooth or occasionally slightly undulate, acute, base narrowly cuneate; cauline leaves shortly petiolate, smaller than basal ones; ocrea fugacious, membranous. Inflorescence paniculate. Flowers bisexual. Outer tepals elliptic; inner tepals enlarged in fruit; valves narrowly triangular ovate, base truncate. Achenes yellowbrown, shiny, ellipsoid, sharply trigonous.

Flowers & Fruits: May to July.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0050*, dated 05. 02. 2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: India: throughout; Bhutan, Bangladesh, Kazakhstan, Mongolia, Myanmar, Russia, Europe, introduced in North America.

Order: Saxifragales Dumortier (1829)

possible subclass 1:

Crassulaceae De Candolle, Bull. Soc. Philom. no. 49: 1. 1801; *nom. cons.*

BRYOPHYLLUM Salisbury, Parad. Lond. t. 3. 1805.

Bryophyllum pinnatum (de Lamarck) Oken, Allg. Naturgesch. 3(3): 1966. 1841. *Bryophyllum pinnatum* (de Lamarck) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 40(2): 52. 1871. *Kalanchoe pinnata* (Lamarck) Persoon, Syn. 446. 1805. Grierson in Grierson *et* Long, Fl. Bhut. 1 (3): 473. 1987. *Cotyledon pinnata* Lamarck, Dict. 2: 141. 1786.

Vernacular Name: Pathar kuchi.

Herbs, up to 140 cm, glabrous. Stems usually branched. Leaves pinnately compound with 3 – 5 leaflets; petiolules 3 cm; leaflet blades oblong to elliptic, 4 – 8 2 – 5 cm, margin crenate, apex obtuse. Inflorescences terminal, paniculate, up to 40 cm, many flowered. Flowers pendulous. Calyx tubular. Corolla reddish to purple, base sparsely ciliate; lobes ovate-lanceolate. Stamens inserted basally on corolla. Nectar scales oblong. Follicles included in calyx and corolla tube. Seeds striate.

Flowers & Fruits: January to March.

Specimen Cited: Cultivate in Bochamari village, *Rajib & AP Das 0223*, dated 09. 02. 2007.

Local Distribution: Cultivate in villages.

General Distribution: Native of Africa and naturalized throughout the tropics.

Rosids:

Order: Vitales Jussieu *ex* Berchtet *et* J.Presl (1820).

Vitaceae A. L. de Jussieu, Gen. Pl. 267. 1789 ('Vites').

Key to the genera:

- 1a. Plants climbers; tendrils present 2
- 1b. Plants shrubs or trees; tendrils absent *Leea*
- 2a. Inflorescence a loose thyrse or panicle, base subtended by a tendril *Ampelocissus*
- 2b. Inflorescence a loose dichasium, corymbose cyme, or umbel, base without tendrils 3
- 3a. Inflorescence leaf-opposed *Cissus*
- 3b. Inflorescence usually axillary or pseudo-axillary *Tetrastigma*

LEE A D. Royen *ex* Linnaeus, Syst. Nat., ed. 12, 2: 608, 627; Mant. Pl. 1: 17, 124. 1767, *nom. cons.*

Key to the species:

- 1a. Abaxial leaflet surface pubescent with dense peltate glands *L. aequata*
- 1b. Abaxial leaflet surface pubescent without peltate glands 2
- 2a. Leaves simple to 1–3-pinnate, blade large and broadly ovate *L. macrophylla*
- 2b. Leaves pinnate, blade ovate-oblong *L. asiatica*

Leea aequata Linnaeus, Syst. Nat. (ed. 12) 2: 627. 1767; Mant. Pl. 1: 124. 1767; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 149. 1991; Prain, Beng. Pl. 1: 340. 1963. *Leea hirta* Roxburgh *ex* Hornemann, Hort. Bot. Hafn. 1: 231. 1813. *Leea hispida* Gagnepain, Notul. Syst. (Paris) 1: 229. 1910.

Small trees, up to 5m. Leaves 1 to 2 pinnate; stipules cuneate to lanceolate; lamilets elliptic-lanceolate to ovate-lanceolate, 6 – 25 3 – 7 cm, acuminate or caudate acuminate, irregular teeth, base cuneate to rounded. Inflorescence leaf-opposed; densely ferruginous pubescent. Calyx tube cupulate; sepals triangular and densely with glands. Petals elliptic, glabrous. Staminal tube 2 – 2.5 mm. Stamens 5; anthers elliptic. Ovary globose; stigma slightly capitate. Berry obovate, 4–6-seeded.

Flowers & Fruits: April to September.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0386*, dated 21.07.2007.

Local Distribution: Forests.

General Distribution: India: tropical part; Bhutan, Nepal, Bangladesh, Cambodia, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

Leea macrophylla Roxburgh *ex* Hornemann, Hort. Bot. Hafn. 1: 231. 1813; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 164. 1991; Prain, Beng. Pl. 1: 341. 1963. *Leea aspera* Wallich *ex* G. Don, Gen. Hist. 1: 713. 1831. *Leea robusta* Roxburgh, Fl. Ind., ed. 1820 2: 468. 1824. *Leea integrifolia* Roxburgh, Fl. Ind., ed. 1820. 2: 472. 1820.

Erect shrubs to small trees, up to 4m. Leaves variable in shape and size, simple, 3 foliolate, or 1 to 3 pinnate; stipules large and obovate; simple lamella broadly ovate, 35 – 60 30 – 50 cm, acuminate, dentate, base rounded. Inflorescences opposite to leaves, compound corymbose-ichasial. Calyx tube cupulate, with 5 triangular teeth. Petals elliptic. Stamens 5; anthers elliptic. Ovary nearly globose; stigma slightly capitate. Berry obovate, 6-seeded.

Flowers & Fruits: October to December.

Specimen Cited: Takomari forest, *Rajib & AP Das 0442*, dated 22.07.2007.

Local Distribution: Forests.

General Distribution: India: tropical parts; Bhutan, China, Nepal, Cambodia, Laos, Myanmar, Thailand.

Leea asiatica (Linnaeus) Ridsdale, Bot. Hist. Hort. Malab. 189. 1980; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 163. 1991. *Leea aspera* Edgeworth, Trans. Linn. Soc. London 20(1): 36. 1846. *Leea crispa* Linnaeus, Mant. Pl. 1: 124. 1767. *Leea herbacea* Buchanan-Hamilton, Trans. Linn. Soc. London 14(1): 228-229. 1823; Prain, Beng. Pl. 1: 340. 1963. *Phytolacca asiatica* Linnaeus, Sp. Pl. 1: 441. 1753.

Erect shrubs. Branchlets terete with longitudinal ridges. Leaves pinnate; stipules large and obovate; simple lamella ovate-oblong, 40 – 60 30 – 50 cm, acuminate, dentate, base rounded. Inflorescences opposite to leaves, compound corymbose-dichasial; bracts triangular to narrow. Calyx tube cupulate, with 5 triangular teeth. Petals elliptic. Stamens 5; anthers elliptic. Ovary nearly globose. Berry obovate, 6 seeded.

Flowers & Fruits: June to November.

Specimen Cited: Takomari forest, *Rajib & AP Das 0375*, dated 21.07.2007.

Local Distribution: Forests.

General Distribution: India: through out India to Eastern India; Bhutan, China, Nepal, Cambodia, Laos, Myanmar, Thailand.

AMPELOCISSUS Planchon, Vigne Am r. Vitic. Eur. 8: 371. 1884, *nom. cons.*

Ampelocissus sikkimensis (M. Lawson) Planchon in J. Vigne Amer. Vitic. Eur. 8: 375. 1884; Fl. Ind. 5: 259. 2000; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 152. 1991. *Vitis sikkimensis* M. Lawson in Hooker *f.*, Fl. Brit. India 1(3): 650. 1875.

Woody lianas. Branchlets terete, with longitudinal ridges, glabrous. Leaves simple; petiole 6 cm, glabrous; leaflets cordate-oval, 20–15 cm, glabrous, basal veins 5, veinlets slightly prominent abaxially, inconspicuous adaxially, base cordate, margin finely toothed, apex mucronate. Compound dichasium leaf-opposed, base with a bifurcate tendril. Pedicel 2–5 mm, nearly glabrous. Berry red, globose, 2 seeded. Seeds oblong, base rostrate, apex subrounded.

Flowers & Fruits: November.

Specimen Cited: Atiamochar forest, Rajib & AP Das 0519, dated 23.07.2007.

Local Distribution: Forests.

General Distribution: Tropical Asia and America.

TETRASTIGMA (Miquel) Planchon in A. Candolle & C. Candolle, Monogr. Phan. 5: 320, 423. 1887.

Key to the species:

1a. Leaves pedately 5 foliolate; tendrils biforked *T. serrulatum*

1b. Leaves palmately 3 to 5 foliolate; tendrils unbranched *T. campylocarpum*

Tetrastigma campylocarpum (Kurz) Planchon in A. Candolle & C. Candolle, Monogr. Phan. 5: 437. 1887; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 156. 1991. *Vitis campylocarpa* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 41: 302. 1872.

Woody lianas. Branchlets terete, with longitudinal ridges; tendrils unbranched. Leaves palmately 3 to 5 foliolate; lamilets obovate–elliptic, 8–16–5–8 cm, base broadly cuneate; lateral leaflets rhombic-ovate, acute, base asymmetric and subrounded. Inflorescence a large compound dichasium, axillary. Flowers small. Calyx teeth inconspicuous, pubescent, margin undulate. Petals galeate, pubescent. Anthers yellow, ovoid. Disk well developed. Ovary cylindrical; style absent; stigma truncate. Berry purple-black when mature, elliptic. Seeds elliptic and flat.

Flowers & Fruits: October to April.

Specimen Cited: Atiamochar forest, Rajib & AP Das 0376, dated 21.07.2007.

Local Distribution: Forests.

General Distribution: India: tropical part; Bhutan, China, Myanmar, Thailand.

Tetrastigma serrulatum (Roxburgh) Planchon in A. Candolle & C. Candolle, Monogr. Phan. 5: 432. 1887; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 155. 1991. [PLATE: 10, Figure-122]

Slender lianas. Branchlets terete, with longitudinal ridges; tendrils biforked or sometimes unbranched. Leaves pedately 5 foliolate; petiole 3–5 cm; leaflets ovate-lanceolate, 3–6–1–4 cm, lateral veins 4 to 8 pairs, veinlets conspicuously raised, base rounded or cuneate, base of lateral leaflets asymmetric, margin undulate fine teeth on each side, apex caudate, acuminate. Inflorescence umbelliform, axillary; peduncle up to 5 cm. Buds ovoid-elliptic. Calyx minute; teeth inconspicuous. Petals ovate-elliptic, apex corniculate, glabrous. Filaments filiform; anthers yellow, oval. Disk developed. Lower part of ovary adnate to disk; style short; stigma expanded and irregularly divided. Berry purple-black at maturity, spheroid. Seeds obovoidelliptic, base attenuate to a short rostrum, apex subrounded.

Flowers & Fruits: March to November.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0391*, dated 21.07.2007.

Local Distribution: Forests.

General Distribution: India: West Bengal, Assam, Bihar; Bhutan, Nepal, Myanmar, Thailand.

CISSUS Linnaeus, Sp. Pl. 1: 117. 1753.

Key to the species:

- 1a. Ramblers; branches quadrangular with angles usually winged, succulent; tendrils simple
..... *C. quadrangularis*
- 1b. Woody lianas; branchlets terete, not angled or winged; tendrils racemosely 5 branched
..... *C. repens*

Cissus quadrangularis Linnaeus, Syst. Nat. ed. 12(2): 124. 1767. *Cissus quadrangula* Linnaeus, Mant. Pl. 1: 39. 1767; Fl. Ind. 5: 288. 2000; Prain, Beng. Pl. 1: 338. 1963 *Vitis quadrangularis* (Linnaeus) Wallich ex Wight, Cat. Indian Pl. 26 26 1833. *Cissus tetraptera* Hooker f., Niger Fl. 263. 1849.

Vernacular Name: Harjora.

Ramblers; branches quadrangular with angles usually winged, succulent; tendrils stout, simple. Leaves ovate to reniform, sometimes 3–7–lobed, acute-obtuse at apex, truncate-cordate at base, subentire – denticulate at margins, glabrous; stipules broadly ovate, obtuse. Flowers glabrous; petals ovate-oblong. Berries obovoid or globose, apiculate, 1–2–seeded. Seeds obovoid.

Flowers & Fruits: June to January.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0461*, dated 23.07.2007.

Local Distribution: Cultivated in village areas.

General Distribution: India: cultivated throughout; Bhutan, Bangladesh, China, Myanmar, Sri Lanka, Africa, Indonesia and Philippines.

Cissus repens Lamarck, Encycl. 1: 31. 1783; Long et Rae in Grierson et Long, Fl. Bhut. 2(1): 159. 1991. *Cissus cordata* Roxburgh, Fl. Ind. 1: 425. 1820. *Cissus glauca* Roxburgh, Fl. Ind. 1: 406. 1820. *Vitis repens* (de Lamarck) Wight & Arnott, Prodr. Fl. Ind. Orient. 1: 125-126. 1834; Prain, Beng. Pl. 1: 338. 1963.

Woody lianas. Branchlets terete, villous; tendrils racemosely 5 branched. Leaves simple, undivided to slightly 3-lobed; petiole 7 cm; stipules ovate-elliptic to oval, herbaceous, apex rounded; leaf blade ovateorbicular, 5–15 3–7 cm, adaxially with sparse versatile and villous, then glabrescent, basal veins 5 to 7, lateral veins 4 to 5 pairs, veinlets inconspicuously raised, base cordate, margin with irregular teeth or undulate, fine teeth in curves of wavy margin, apex acuminate to acute. Compound umbel terminal or leaf-opposed. Pedicel up to 6 mm. Buds oval, apex rounded. Calyx teeth inconspicuous. Petals oval. Anthers oval, abortive in female flowers. Disk undulately 4 lobed. Lower part of ovary adnate to disk; style conical, base slightly thick; stigma slightly expanded. Berry 1 seeded. Seed surface with slightly raised ridges.

Flowers & Fruits: July to May.

Specimen Cited: Forest, *Rajib & AP Das 0384*, dated 21.07.2007.

Local Distribution: Forests.

General Distribution: India: West Bengal; Assam, Bihar, Orissa, Maharastra; Bhutan, Nepal, Cambodia, Laos, Malaysia, Philippines, Thailand, Vietnam, Australia, Tropical and sub-tropical parts of the world.

Core-Eudicots: Rosids: Eurosids (I) (fr.: Fabid es ou Eurosids I)**Order: Celastrales Link (1829)**

Celastraceae R. Brown in Flinders, Voy. Terra Austr. 2: 554. 1814 ('Celastrineae'); *nom. cons.*

CELASTRUS Linnaeus, Sp. Pl. 1: 196. 1753, *nom. cons.*

Celastrus paniculatus Carl L. Willdenow, Sp. Pl. 1: 1125. 1798; Long, in Grierson *et* Long, Fl. Bhut. 2(1): 111. 1991. Prain, Beng. Pl. 1: 329. 1963. *Ceanothus paniculatus* Roth, Nov. Pl. Sp. 154. 1821. *Celastrus alnifolius* D. Don, Prodr. Fl. Nepal. 190. 1825. *Diosma serrata* Blanco, Fl. Filip. 168. 1837. *Celastrus paniculatus* Willdenow, Sp. Pl. 1: 1125. 1797.

Large deciduous twining shrubs; bark pale brown, rough and cracked, exfoliating in small scales. Lamina elliptic – oblong to ovate, 5 – 10 2 – 5 cm, glabrous, serrate, mucronate to acuminate, base cuneate. Thyrses terminal, 5–10 cm. Flowers greenish, 5 merous, dioecious; sepals free; petals oblong to obovate-rectangular. Disk membranous, cupulate, slightly 5 lobed. Stamens inserted on margin of disk. Ovary globose. Capsule globose, 3 valved.

Flowers & Fruits: April to August.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0539*, dated 23.07.2007.

Local Distribution: Through out Forest.

General Distribution: India: through out; Bhutan, Nepal, Sri Lanka, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam; Australia, Pacific islands.

Order: Oxalidales Bercht. & J. Presl (1820)

Elaeocarpaceae A. L. de Jussieu *ex* De Candolle, Prodr. 1: 519. 1824 ('Elaeocarpeae'); *nom. cons.*

ELAEOCARPUS Linnaeus, Sp. Pl. 1: 515. 1753.

Elaeocarpus floribundus Blume, Bijdr. 120. 1825; Dyer in Fl. Brit. Ind. 1: 401. 1874; Miller in Grierson *et* Long, Fl. Bhut. 2(1): 170. 1991; Prain, Beng. Pl. 1: 287. 1963. *Elaeocarpus rigidus* Ridley in J. Asiat. Soc. Str. Settl. 54:28, 1910. *Elaeocarpus ramsoii* Kunth in Feddes Repert. 44: 131. 1938. *Elaeocarpus floribundus* var. *tahanensis* (Hend.) Ng, Tree Fl. Malaya 4: 88. 1989. *Elaeocarpus lobbianus* Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 235. 1858.

Vernacular Name: Jalpai.

Trees upto 20 m high. Lamina ovate to elliptic-ovate, acute to acuminate, base cuneate or rounded, glabrous, glandular-punctate beneath. Racemes 20 – 25-flowered. Sepals lanceolate, glabrescent or thinly appressed hairy. Petals white, obtriangular, hairy on margins only. Ovaries 3-celled. Fruits ellipsoid- obovoid.

Flowers & Fruits: March to December.

Specimen Cited: Bochamari village, *Rajib & AP Das 0085*, dated 06. 02. 2007.

Local Distribution: Panted in Villages.

General Distribution: India: cultivated throughout; Bangladesh, Bhutan, Myanmar, Malaysia and Indonesia.

Oxalidaceae R. Brown in Tuckey, Narr. Exped. Congo 433. 1818 ('Oxalideae'); *nom. cons.*

Key to the genera:

- 1a. Leaves fascicled at top of stem, even-pinnate ***Biophytum***
 1b. Leaves basal or cauline along stem, 3-foliolate ***Oxalis***

OXALIS Linnaeus, Sp. Pl. 1: 433. 1753.

Key to the species:

- 1a. Subterranean bulb 1 – 3 cm; leaves basal 2
 1b. Rootstock a slender taproot, leaves from creeping branch *O. corniculata*
 2a. Lamina triangular, apex flat, strait *O. latifolia*
 2b. Lamina obcordate, apex deeply emarginated *O. debilis* var. *corymbosa*

Oxalis corniculata Linnaeus, Sp. Pl. 435. 1753; Hooker *f.*, Fl. Brit. Ind. 1: 436. 1874; H. Ohashi in Hara, Fl. E. Himal. 1:168. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 77. 1979; Fl. Ind. 4: 242. 1997; Hajra *et al.*, Fl. W. Beng. 1:373. 1997; Long in Grierson *et Long*, Fl. Bhut. 1(3): 742. 1987; Prain, Beng. Pl. 1: 291. 1963.

Vernacular name: Ambali.

Annuals herbs, up to 50 cm, creeping, ascending to semierect. Rootstock a slender taproot, sometimes woody; stolons absent. Stipules small. Leaves petiole 3 – 8 cm; lamina obcordate, 0.3 – 2 0.4 – 2 cm, green, variably adaxially and abaxially pubescent, deeply emarginate. Inflorescences umbellate, 1–5- flowered; peduncle usually slightly longer than petioles; bracts linear-lanceolate. Sepals oblonglanceolate, margin ciliate especially at apex. Petals bright yellow, oblong-obovate. Capsule long cylindric, 5 angled, a few septate hairs on dehiscence sutures. Seeds brown to brownish red, ovoid-oblong, transversely ridged.

Flowers & Fruits: February to October.

Specimen Cited: Park, Rajib & AP Das 0706, dated 14. 02. 2008.

Local Distribution: Throughout the study area.

General Distribution: India: throughout; Bhutan, China, Nepal, Pakistan, Japan, Korea, Malaysia, Myanmar, Russia, Thailand.

Oxalis latifolia Humboldt, Bonpland & Kunth, Nov. Gen. Sp. 5:184, t. 467. 1821; H. Ohashi in Hara, Fl. E. Himal. 1: 168. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2:77. 1979; Long in Grierson *et Long*, Fl. Bhut. 1(3): 743. 1987.

Perennials herbs, up to 25 cm, stemless, pubescent. Subterranean bulb 1 – 3 cm; scales loose, papery, 3-veined. Leaves basal; petiole 5 – 15 cm, with moderately dense spreading white trichomes; lamina triangular, 2–4 1 – 3 cm, flat, strait. Inflorescences corymbose cymes, irregularly branched; peduncle 10 – 15 cm or longer; bracts lanceolate, membranous. Pedicels, bracts, and sepals pubescent. Sepals lanceolate, apex with 2 reddish brown calli. Petals purplish pink with darker veins, obcordate. Ovary pubescent.

Flowers & Fruits: March to December.

Specimen Cited: Rasik Beel, Rajib & AP Das 0675, dated 13. 02. 2008.

Local Distribution: Garden.

General Distribution: Tropical India; SE Asia, Africa.

Oxalis debilis* var. *corymbosa (de Candolle) Lourteig, Ann. Missouri Bot. Gard. 67: 840 1980 publ. 1981. *Oxalis corymbosa* de Candolle, Prodr. 1:696. 1824; H. Ohashi in Hara, Fl. E. Himal. 1: 168. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2:77. 1979; Long in Grierson *et Long*, Fl. Bhut. 1(3): 743. 1987. [PLATE: 6, Figure-49]

Perennials herbs, up to 25 cm, stemless, pubescent. Subterranean bulb 1 – 3 cm; scales loose, papery, 3-veined. Leaves basal; petiole 5 – 15 cm, with moderately dense spreading white trichomes; leaflet blades obcordate, 2 – 4 1 – 3 cm, both surfaces covered with trichomes, apex deeply emarginate. Inflorescences corymbose cymes, irregularly branched; peduncle 10 – 15 cm or longer; bracts lanceolate, membranous. Pedicels, bracts, and sepals pubescent. Sepals lanceolate, apex with 2 reddish brown calli. Petals purplish pink with darker veins, obcordate. Ovary pubescent.

Flowers & Fruits: March to December.

Specimen Cited: Garden, Rajib & AP Das 0680, dated 14. 02. 2008.

Local Distribution: Garden.

General Distribution: Tropical India; Native of tropical America naturalized in Asia.

BIOPHYTUM Candolle, Prodr. 1: 689. 1824.

Biophytum sensitivum (Linnaeus) de Candolle, Prodr. 1: 690. 1824; Hooker *f.*, Fl. Brit. Ind. 1: 436. 1874; Hajra *et al.*, Fl. Ind. 4: 238. 1997; Prain, Beng. Pl. 1: 295. 1963. *Oxalis sensitiva* Linnaeus, Sp. Pl. 434. 1753.

Annuals herbs, up to 25 cm, base woody. Stem simple, slender to robust. Leaves fascicled at top of stem, even-pinnate, 3 – 10 cm; rachis slender, moderately hispid; leaflets 6 – 14 pairs; leaflet blades oblong to obovate-oblong, 3 – 12 2 – 6 mm, usually glabrous, sparsely covered with trichomes, base almost symmetric. Umbels several flowered; peduncle subequal to leaf length; bracts several, lanceolate, densely crowded at apex of peduncle. Pedicel 1 mm at anthesis but to 3 mm in fruit. Sepals with glandular septate trichomes. Petals yellow, longer than sepals. Capsule ellipsoid-obovoid, pubescent.

Flowers & Fruits: July to December.

Specimen Cited: Conservation Sector, Rajib & AP Das 0579, dated 25.07.2007.

Local Distribution: Forest near Conservation sector.

General Distribution: India: tropical; Bhutan, China, Nepal, Sri Lanka, Indonesia, Malaysia, Philippines, Thailand, Vietnam; tropical Africa.

Order: Malpighiales Jussieu *ex* Berchtold & J. Presl (1820)

Clusiaceae Lindley, Nat. Syst. ed. 2. 74. 1836 (*nom. alt. prop.* Lindley vs. Gutti-ferae); *nom. cons.*

MESUA Linnaeus, Sp. Pl. 1: 515. 1753.

Mesua ferrea Linnaeus, Sp. Pl. (ed. 2) 1: 734. 1762; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 371. 1984; Prain, Beng. Pl. 1: 246. 1963. *Mesua nagassarium* (Burman *f.*) Kosterman, Ceylon J. Sci., Biol. Sci. 12: 71. 1976. *Calophyllum nagassarium* Burman *f.*, Fl. Indica 121. 1768.

Tree, up to 20m. Leaves elliptic lanceolate, 8 – 14 x 3 – 4cm, acuminate, base rounded, glossy above, whitish waxy beneath, young leaves pinkish. Flowers large, fragrant, terminal or axial. Pedicels 5 mm. Sepals thickened, puberulous. Petals white, obovate. Anthers large, conspicuous, yellow. Style curve, peltate stigma. Fruits ovoid, dehiscent, woody and nut like, pointed apex, 1 – 4 seeded.

Flowers & Fruits: February to April.

Specimen Cited: Garden, Rajib & AP Das 0065, dated 07. 02. 2007.

Local Distribution: Garden.

General Distribution: India: cultivated; Bhutan, China, Myanmar.

Elatinaceae Cambesshdes, Mem. Mus. Hist. Nat. Paris 18: 225. 1829 ('Elatineae').

BERGIA Linnaeus, Mant. Pl. 2: 152, 241. 1771.

Bergia ammannioides Roxburgh ex Roth, Nov. pl. Sp. 219. 1821; Roxburgh, Fl. Ind. 2: 457. 1832, "*ammanoides*"; Dyer in Hooker f., Fl. Brit. Ind. 1: 251. 1874; Prain, Beng. Pl. 1: 243. 1963. *Elatine ammannioides* (Roxburgh ex Roth) Wight & Arnott, prodr. 41.1834. *Bergia ammannioides* Roxburgh ex Roth var. *pentandra* Wight, Ill. India. Bot. 54, t. 25a.1840. Sharma et al, Fl. Ind. 3: 33.1993. *Elatine ammannioides* Wight & Arnott, Prodr. Fl. Ind. Orient. 41. 1834. *Bergia pentandra* Cambess. ex Guillemin & Berger Perrot, Fl. Seneg. Tent. 42. 1831.

Annual herbs. Stem branched at base; branches erect or obliquely ascending, densely glandular hairy. Stipules 2-fid, lobes lanceolate, margin laciniate-denticulate; lamina oblanceolate, to obovate-lanceolate or narrowly elliptic, 0.6–2 cm 2–6 mm, serrate, acute, base oblique or attenuate. Flowers numerous and clustered in leaf axils, small. Sepals narrowly ovate, margin membranous, apex acuminate. Petals reddish, narrowly ovate or elliptic, apex mucronate. Stamens 5; filaments filiform, base slightly widened. Ovary ovoid; styles 5; stigmas capitate. Capsule subglobose. Seeds brown, narrowly ovoid.

Flowers & Fruits: September to January.

Specimen Cited: Raichangmari Beel margin, Rajib & AP Das 0144, dated 08. 02. 2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: Tropical India; Tropical Asia from Iran to China, Philippines, Australia and Tropical Africa.

Euphorbiaceae A.L. de Jussieu, Gen. Pl. 384. 1789 ('Euphorbiae'); *nom. cons.*

Key to the genera

- | | |
|---|----------------------------|
| 1a. Plants usually dioecious; stamens 15–250 | <i>Mallotus</i> |
| 1b. Plants evergreen; stamens 3–15 | 2 |
| 2a. Lamina palmately lobed | 3 |
| 2b. Lamina not palmately lobed | 4 |
| 3a. Filament branched; Perianth monochlamydous | <i>Ricinus</i> |
| 3b. Filament simple; perianth into distinct calyx & corolla | <i>Jatropha</i> |
| 4a. Inflorescence cyathia | <i>Euphorbia</i> |
| 4b. Inflorescence racemose | 5 |
| 5a. Raceme terminal; lamina lanceolate | <i>Croton</i> |
| 5b. Raceme axillary; leaves ovate to ovate – elliptic | 6 |
| 6a. Fruiting calyx accrescent | <i>Baliospermum</i> |
| 6b. Fruiting calyx not accrescent | 7 |
| 7a. Stipules caducous | <i>Balakata</i> |
| 7b. Stipules triangular | <i>Acalypha</i> |

ACALYPHA Linnaeus, Sp. Pl. 2: 1003. 1753.

Key to the species:

1a. Inflorescences usually bisexual; plants herbs *A. indica*

1b. Inflorescences unisexual; plants shrubs *A. hispida*

Acalypha hispida Burman *f.*, Fl. Ind.: 303, t. 61, fig. 1. 1768; Hooker *f.*, Fl. Brit. Ind. 5: 417. 1887; Long in Grierson *et* Long, Fl. Bhutan 1(3): 797. 1987; Keng, Concise Fl. Sing.: 105. 1990; Ngerns. & Chayamarit in Chayamarit & Welzen, Fl. Thailand 8, 1: 26. 2005. *Ricinocarpus hispidus* (Burman *f.*) Kuntze, Revis. Gen. Pl. 2: 618. 1891.

Vernacular name: Moragjhuti.

Shrubs, up to 3 m. Stipules triangular. Leaves petioles 2–11 cm, longitudinally grooved above; lamina ovate to broadly ovate, 7–10 x 1–4 cm, coriaceous, acute or acuminate, crenulate-serrate, base retuse or obtuse. Inflorescences unisexual, solitary, with only pistillate flowers, axillary, pendulous. Staminate flowers unknown. Pistillate flowers 3–8 per node; bracts minute, ovate, sepals 3, ovate; ovary subglobular, tomentose, stigmas dark red.

Flowers & Fruits: April to August.

Specimen Cited: Park, Rajib & AP Das 0585, dated 25.07.2007.

Local Distribution: Park.

General Distribution: India: cultivated throughout; Bhutan, China, Bangladesh, Malay Peninsula, New guinea.

Acalypha indica Linnaeus, Sp. Pl.: 1003. 1753; Drury, Useful Pl. Ind.: 10. 1873; Hooker *f.*, Fl. Brit. Ind. 5: 416. 1887; Prain, Beng. Pl. 2: 948. 1963. *Ricinocarpus indicus* (Linnaeus) Kuntze, Revis. Gen. Pl. 2: 618. 1891. *Acalypha chinensis* Bentham, Fl. Hongk.: 303. 1861.

Erect, annual herbs, up to 90 cm; stem longitudinally grooved. Stipules narrowly triangular. Petioles longitudinally grooved above, pubescent; blades rhomboid, 3–7 x 2–6 cm, acute or obtuse, crenulate-serrate, base cuneate. Inflorescences 1 to 2 together, bisexual, axillary, pistillate flowers at base. Staminate flowers 6–10 per node; bracts ovate-oblong to ovate–lanceolate; sepals 4, ovate. Pistillate flowers 1–4 per node; bracts cup-shaped; sepals 3, ovate; ovary subglobular. Fruits 3-lobed, oblate or subglobular. Seeds ovoid.

Flowers & Fruits: April to September.

Specimen Cited: Garden, Rajib & AP Das 0544, dated 23.07.2007.

Local Distribution: Frontside of Garden.

General Distribution: India: tropical part; Bhutan, China, Sri Lanka, Japan, Taiwan, Malaysia, Singapore, Philippines, Sumatra, Java, Tropical Africa.

BALIOSPERMUM Blume, Bijdr. 603. 1826.

Baliospermum solanifolium (Burman) Suresh, Regnum Veg. 119: 106. 1988 & Interpret. Rheede's Hort. Malab. 106. 1988; *Croton solanifolius* Burman, Fl. Malab. 6. 1769. *Baliospermum montanum* (Willdenow) M. Iler Argoviensis in de Candolle, Prodr. 15(2): 1125. 1866; Long in Grierson *et* Long, Fl. Bhut. 1(3): 811. 1987; Prain, Beng. Pl. 2: 946. 1963. *Jatropha montana* Willdenow, Sp. Pl. 4: 563. 1805. *Baliospermum axillare* Blume, Bijdr.: 604. 1826. *Croton polyandrus* Roxburgh, Fl. Ind. ed. 2. 3: 682. 1832. *Baliospermum polyandrum* (Roxburgh) Wight, Icon. Pl. Ind. Or. 5. 2: 23, t. 1885.

Shrubs, up to 2 m, monoecious; young branches green. Petiole pubescent; lamina elliptic, oblong to broadly ovate, 5–15 x 1–5 cm, papery, acute to acuminate, undulate-crenulate, base rounded to broadly cuneate. Panicles axillary, male flower narrow, pubescent; sepals 5, ovate; disk urceolate. Female flowers 1–3, axillary; sepals 5, ovate to triangular; disk annular; ovary densely pubescent; style apex bifid. Fruiting calyx accrescent; capsule pendulous, subglobose. Seeds elliptic-ovoid.

Flowers & Fruits: March to September.

Specimen Cited: Takomari forest, *Rajib & AP Das 0661*, dated 13.02.2008.

Local Distribution: Takomari Forests.

General Distribution: India: tropical; Bangladesh, Bhutan, Nepal, Pakistan, Sri Lanka, Myanmar, Cambodia, Laos, Vietnam, Malay Peninsular, Borneo, Sumatra, Java, Celebes, Moluccas, Lesser Sunda Islands.

CROTON Linnaeus, Sp. Pl. 2: 1004. 1753.

Croton bonplandianus Baillon in Adansonia 4: 339. 1864; Long in Grierson *et* Long, Fl. Bhut. 1(3): 354. 1987; Guha Bakshi, Fl. Mur. Dist. 283. 1984; Panda *et* Das, Fl. Sambalp. 328. 2004. *Croton sparsiflorus* Morung in Ann. New York Acad. Sci. 7: 221. 1893; Haines, Bot. Bihar & Orissa Pt. II: 105. 1921. *Oxydectes bonplandiana* (Baillon) Kuntze, Revis. Gen. Pl. 2: 610. 1891. [PLATE: 6, Figure-52]

Vernacular name: Bontulsi.

Annual or perennial, erect herbs with watery latex. Leaves alternate, lamina lanceolate. Inflorescence terminal raceme with lower female and upper male flower; male flower with 5 sepals, 5-petals; numerous stamens. Female flower with 5 sepals, carpel-3. Fruits schizocarpic with three one seeds cocci.

Flowers & Fruits: January to December.

Specimen Cited: Road side near gate, *Rajib & AP Das 0504*, dated 23.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: India: throughout; Native to S. America and Pantropical.

JATROPHA Linnaeus, Sp. Pl. 2: 1006. 1753, nom. cons.

Jatropha curcas Linnaeus, Sp. Pl. ed. 1: 1006. 1753; Hooker *f.*, Fl. Brit. Ind. 5: 383. 1887; Long in Grierson *et* Long, Fl. Bhut. 1 (3): 790. 1987; Prain, Beng. Pl. 2: 941. 1963. *Curcas indica* A. Richard, Hist. Fis. Cuba, Bot. 11: 208. 1850. *Jatropha acerifolia* Salisbury, Prodr. Stirp. Chap. Allerton 389. 1796.

Vernacular Name: Varena.

Erect, bushy, raddish, undershrubs. Leaves alternate, palmately lobed, cordate at base; petiole, stipules glandular hairy. Flower in cyme; bracts lanceolate. Sepals with glandular hairs, persistent; corolla purplish red; stamens basally connete. Capsules oblong, 3 – lobed.

Flowers & Fruits: June to December.

Specimen Cited: Bochamari village, *Rajib & AP Das 0319*, dated 21.07.2007.

Local Distribution: Cultivated in village areas.

General Distribution: Tropical and sub-tropical parts of the world.

RICINUS Linnaeus, Sp. Pl. 2: 1007. 1753.

Ricinus communis Linnaeus, Sp. Pl. 2: 1007. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 457. 1887; Long in Grierson *et* Long, Fl. Bhut. 1(3): 808. 1987; Prain, Beng. Pl. 2: 952. 1963; Haines, Bot. Bihar & Orissa Pt. II: 112. 1921; Panda *et* Das, Fl. Sambalp., 340. 2004. *Cataputia minor* Ludwig, Def. Gen. Pl. ed. 3: 81. 1760. *Croton spinosus* Linnaeus, Sp. Pl. 2: 1005. 1753. *Ricinus africanus* Miller, Gard. Dict. ed. 8: 5. 1768. *Ricinus communis* Linnaeus, Sp. Pl. 2: 1007. 1753.

Vernacular name: Vanna.

Tall perennial, erect, fleshy, glabrous herbs. Lamina simple, palmately 7–9 lobed. Inflorescence terminal raceme with lower female and upper male flower. Male flower with bract, actinomorphic, parienth-5; stamens-5; female flower with 5-perianth, carpel-3. Fruits schizocarpic with 3 one seeded cocci.

Flowers & Fruits: January to December.

Specimen Cited: Bochamari village, *Rajib & AP Das 0371*, dated 21.07.2007.

Local Distribution: Cultivated in village areas.

General Distribution: Tropical India and Africa.

BALAKATA Esser, *Blumea* 44: 154. 1999.

Balakata baccata (Roxburgh) Esser, *Blumea* 44: 155, map 1. 1998; *Sapium baccatum* Roxburgh, *Fl. Ind. ed. 2, 3:* 694. 1832; Hooker *f.*, *Fl. Br. India* 5: 470. 1888; Long in Grierson et Long, *Fl. Bhut. 1(3):* 354. 1987; Prain, *Beng. Pl. 2:* 954. 1963. *Sapium populifolium* Wight, *Icon. Pl. Ind. Orient. 5, 2:* tab. 1950, fig. 2. 1853.

Trees, up to 26 m. Leaves ovate to elliptic, 8–20 x 4–11 cm, leathery, acuminate, margin flat, base obtuse to acute. Staminate flowers pedicel 0.5–1.5 mm long; calyx 0.5–1 mm; filaments 0.4–0.6 mm. Pistillate flowers white, pedicel 0.6–1 mm long; calyx 1 mm; style 0.1–0.5 mm; stigmata 0.75–2 mm. Fruits flattened globular; sulcate, 2 seeded.

Flowers & Fruits: March to October.

Specimen Cited: Atiamochar, *Rajib & AP Das 0231*, dated 09. 02. 2007.

Local Distribution: Forests near conservation area.

General Distribution: India: West Bengal, Bihar, Orissa, Maharastra; Bangladesh, China, Thailand, W. Malaysia, Sumatra, Borneo.

EUPHORBIA Linnaeus, *Sp. Pl. 1:* 450. 1753.

Key to the species:

- 1a. Stem prostrate; cyathia solitary *E. heyneana*
- 1b. Stem ascending to suberect; cyathia in pedunculate cymes..... 2
- 2a. Capsule pubescent *E. hirta*
- 2b. Capsule glabrous *E. hypericifolia*

Euphorbia heyneana Sprengel in Linnaeus, *Syst. Veg* (ed. 16) 3: 791. 1826; Panda et Das, *Fl. Sambalp.*, 330. 2004. *Euphorbia microphylla* Heyne ex Roth, *Nov. Pl. Sp.* 229. 1821, non Lamarck, 1788 (*nomen illegitimate*); Hooker *f.*, *Fl. Brit. Ind.* 5: 252. 1887; Prain, *Beng. Pl. 2:* 925. 1963; Haines, *Bot. Bihar & Orissa pt. II:* 148. 1921; Mooney, *Suppl. Bot. Bihar & Orissa* 35. 1950. *Chamaesyce heyneana* (Sprengel) Soj k, *Cas. N r. Mus., Odd. Pr r.* 140: 169. 1972.

Annual, prostrate, spreading herbs; stem glabrous, internodes ribbed, stipules laciniate. Leaves opposite, lamina ovate to oblanceolate, serrulate, base rounded, oblique. Cyathia radish, axillary, involucre bracts tubular, glands 4. male flowers in 4-groups, staked. Female flower laterally pendulous, ovary glabrous. Capsules glabrous, seeds 3.

Flowers & Fruits: January to December.

Specimen Cited: Park, *Rajib & AP Das 0717*, dated 14. 02. 2008.

Local Distribution: Forests near conservation area.

General Distribution: India: tropical; Bhutan, China, Bangladesh, Malaysia, Myanmar, Pakistan.

Euphorbia hirta Linnaeus, Sp. Pl. 454. 1753; Haines, Bot. Bihar & Orissa pt. II: 147. 1921; Guha Bakshi, Fl. Mur. Dist. 286. 1984; Long in Grierson *et* Long, Fl. Bhut. 1 (3): 766. 1987. *Euphorbia pilulifera auct. non* L. 1753; Hooker *f.*, Fl. Brit. Ind. 5: 250. 1887; Prain, Beng. Pl. 2: 925. 1963. *Euphorbia capitata* de Lamarck, Encycl. 2: 422. 1788. *Euphorbia nodiflora* Steudel, Nomencl. Bot. ed. 2, 1: 613. 1840.

Annual, erect herbs. Stem jointed, hairy, purplish. Leaves opposite, simple, base oblique, lanceolate, serrulate, acute, pubescent, stipules subulate. Flowers in terminal and axillary clustered cyathia; perianth green; stamens – 1. Fruits depressed, globose, hairy; cocci trigonous.

Flowers & Fruits: January to December.

Specimen Cited: Park, Rajib & AP Das 0382, dated 21.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: tropical and subtropical regions in both hemispheres.

Euphorbia hypericifolia Linnaeus, Sp. Pl. 454. 1753; Hooker *f.*, Fl. Brit. Ind. 5: 249. 1887; Long in Grierson *et* Long, Fl. Bhut. 1(3): 354. 1987; Pain, Beng. Pl., 2: 924. 1903; Guha Bakshi, Fl. Mur. Dist. 286. 1984. *Euphorbia parviflora* Linnaeus, Syst. ed. 10, 2: 1047. 1759. *Chamaesyce hypericifolia* (Linnaeus) Millspaugh, Publ. Field Columb. Mus., Bot. Ser. 2: 302. 1909. *Ditritea obliqua* Rafinesque-Schmaltz, Sylva Tellur. 115. 1838. *Euphorbia indica* Lamarck, Encycl. 2: 423. 1788.

Annual herbs, up to 50 cm. Root fibrous. Stems many from base, spreading to erect, often purplish tinged. Leaves opposite; stipules triangular; lamina ovate, 3–5 1.5–2.5 cm, rounded, obscurely toothed, base obliquely rounded. Cyathia in axillary or terminal pedunculate capitates cymes; involucre cuplike, marginal lobes triangular; glands 4, green, rounded. Male flowers slightly exerted. Female flower exerted from involucre; ovary pubescent; styles free; stigma deeply 2 lobed. Capsule 3 angular-ovoid. Seeds ovoid-tetragonal.

Flowers & Fruits: January to May.

Specimen Cited: Conservation sector, Rajib & AP Das 0713, dated 14. 02. 2008.

Local Distribution: Forests near conservation area.

General Distribution: Tropical weed in Africa and Asia.

MALLOTUS Loureiro, Fl. Cochinch. 2: 635. 1790.

Mallotus philippensis (de Lamarck) M. Iler Argoviensis, Linnaea 34: 196. 1865; Hooker *f.*, Fl. Brit. Ind. 5: 442. 1887; Long in Grierson *et* Long, Fl. Bhut. 1(3): 801. 1987; Prain, Beng. Pl. 2: 950. 1963. *Croton philippense* de Lamarck, Enc. 2: 206. 1786. *Croton punctatus* Retzius ('*punctatum*'), Obs. Bot. 5: 30. 1789. *Croton coccineus* Vahl, Symb. Bot. 2: 97. 1791. *Rottlera tinctoria* Roxburgh, Pl. Corom. 2: 36, t. 168. 1802. *Croton montanum* Willdenow, Sp. Pl. 4: 547. 1805. *Rottlera philippensis* (de Lamarck) A. Jussieu *ex* Sprengel, Syst. Veg. (ed. 16) 3: 877. 1826. *Rottlera tinctoria* Roxburgh var. *monstruosa* Hamilton *ex* Dillwyn, Rev. Hortus Malab.: 22. 1839. *Rottlera aurantiaca* Hooker *et* Arnott, Bot. Beech. Voy.: 270. 1841.

Small trees, up to 15 m. Stipules triangular. Leaves alternate; lamina ovate to elliptic, 4–22 x 2–10 cm, acuminate to cuspidate, entire, base usually rounded. Inflorescences axillary and terminal, single to 2 branches. Staminate inflorescences up to 18 cm long; flowers in small groups of 3 to 4; bracts triangular. Staminate flowers green; sepals 2–4, elliptic to obovate; stamens 15–20, whitish to light green, anthers light yellow. Pistillate inflorescences up to 21 cm long; bracts triangular. Pistillate flowers, yellow to red, scented; sepals 3–6, ovate, yellow-green; ovary 2–3 locular. Fruits capsules. Seeds subellipsoid.

Flowers & Fruits: March to August.

Specimen Cited: Atiamochar, *Rajib & AP Das 0735*, dated 14. 02. 2008.

Local Distribution: Forests near conservation area.

General Distribution: India: throughout; Bhutan, Nepal, Bangladesh, China, Sri Lanka to Taiwan, throughout Malesia to Australia and W. Pacific.

Hypericaceae A.L. de Jussieu, Gen. Pl. 254. 1789 ('Hyperica').

HYPERICUM Linnaeus, Sp. Pl. 2: 783. 1753.

Hypericum japonicum Thunburgh, Syst. Veg. ed. 14: 702. 1784; Prain, Beng. Pl. 1: 244. 1963. *Hypericum nervatum* Hance, Ann. Bot. Syst. 2: 188. 1851. *Hypericum chinense* Osbeck, Dagb. Ostind. Resa 244. 1757. *Brathys orysetum* Blume, Mus. Bot. 2: 20. 1856. *Hypericum japonicum* Murray, Syst. Veg. ed. 14: 702. 1784; Dyer in Fl. Brit. Ind. 1: 256. 1874; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 62. 1979; Fl. Ind. 3: 69. 1993; Grierson *et Long* in Grierson *et Long*, Fl. Bhut. 1(2): 376. 1984. [PLATE: 5, Figure-45]

Annular herbs, 5–25 cm. Suberect or diffuse, sometimes prostrate, stems quadrangular, branches dichotomous, rooting at basal nodes. Leaves sessile, 3–8 x 1–5 mm, lamina elliptic-ovate to oblanceolate, obtuse or rounded, cordate. Flowers in terminal dichotomous often broad cymes; bracts linear, sepals elliptic-obovate, acute to sub obtuse; petals yellow. Capsules ovoid.

Flowers & Fruits: throughout the year.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0095*, dated 07. 02. 2007.

Local Distribution: Throughout the study areas.

General Distribution: India: tropical states; Nepal, Bhutan, Bangladesh, Sri Lanka, Myanmar, China, Taiwan, Vietnam.

Putranjivaceae J.G. Agardh, Theoria Syst. Pl. Fam. Phan. 301. 1858 ('Putranjiveae').

PUTRANJIVA Wallich, Tent. Fl. Nepal. 61. 1826.

Putranjiva roxburghii Wallich, Tent. Fl. Nepal. 61. 1826; Hooker *f.*, Fl. Brit. Ind. 5: 336. 1887; Prain, Beng. Pl. 2: 936. 1963. *Nageia putranjiva* Roxburgh, Fl. Ind. ed. 1832 3: 766. 1832. *Drypetes roxburghii* (Wallich) Hurusawa, J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 6: 335. 1954.

Dioecious tree, up to 15 m, with drooping leaves. Leaves distichous; lamina oblong to elliptic, 4–14 x 2–5 cm, subcoriaceous, glabrous, acuminate to obtuse, crenate or serrate, slightly undulate, base obliquely cuneate. Flowers yellowish green. Staminate flowers axillary in dense clusters; pedicel short; sepals 4 to 5, unequal, margin ciliate; stamens 3 to 4; disc absent. Pistillate flowers 1–4 together; pedicel short; sepals 5, lobes erect, very unequal; ovary densely hairy; stigmas 2 to 3. Fruits ovoid to globose, 1 seeded.

Flowers & Fruits: May to October.

Specimen Cited: Conservation sector, *Rajib & AP Das 0466*, dated 23.07.2007.

Local Distribution: Planted near Pond for Ghorial.

General Distribution: India: cultivated throughout; China, W. Himalaya to Burma, Indo-China, Java, Papua New Guinea.

Passifloraceae A.L. de Jussieu, Ann. Mus. Hist. Nat. Paris 6: 102. t. 37-41. 1805 ('Passifloreae'); *nom. cons.*

PASSIFLORA Linnaeus, Sp. Pl. 2: 955. 1753, *nom. cons.*

Passiflora foetida Linnaeus, Sp. Pl. 959. 1753; Prain, Beng. Pl. 1: 512. 1963. *Dysosmia hircina* Sweet ex M. Roemer, Fam. Nat. Syn. Monogr. 2: 150. 1846. *Passiflora balansae* Chodat, Bull. Herb. Boissier 2: 744. 1902. *Passiflora hirsuta* Loddiges, Bot. Cab. 2(4): t. 138. 1818. *Passiflora variegata* Miller, Gard. Dict. (ed. 8) no. 8 no. 8. 1768.

Vernacular name: Jhumkolata.

Herbaceous vines, foul smelling. Stem slender, spreading pubescent. Stipules partly clasping, deeply parted. Leaves simple, opposite; lamina broadly ovate to oblong-ovate, 5–12 × 3–8 cm, irregularly undulate, acute, base cordate, membranous. Inflorescence reduced to a single flower, opposite tendril. Flowers white. Sepals awned. Petals 1–1.5 cm. Corona 3–5 seriate, membranous. Stamens coherent at base, flat; anthers oblong. Ovary shortly stipitate, ellipsoid. Berry orange-red, ovoid-globose.

Flowers & Fruits: August to February.

Specimen Cited: Rasik Beel, Rajib & AP Das 0112, dated 07.02.2007.

Local Distribution: Forest floor.

General Distribution: India: native to the West Indies and N South America.

Phyllanthaceae J.G. Agardh, Theoria Syst. Pl. Fam. Phan. 249. 1858 ('Phyllantheae').

Key to the genera:

- | | |
|--|---------------------------|
| 1a. Flowers with petals and disk | <i>Bridelia</i> |
| 1b. Flowers without petals | 2 |
| 2a. Flowers without disk | <i>Sauropus</i> |
| 2b. Flowers with a prominent, usually fleshy disk..... | 3 |
| 3a. Male flowers with prominent pistillode | <i>Flueggea</i> |
| 3b. Male flowers without pistillode | <i>Phyllanthus</i> |

BRIDELIA Willd., Sp. Pl. 4: 978. 1806;

Bridelia retusa (Linnaeus) A. Jussieu, Euphorb. Gen.: 109, t. 7, f. 22. 1824; Long in Grierson *et* Long, Fl. Bhut. 1(3): 769. 1987; Prain, Beng. Pl. 2: 927. 1963. *Clutia retusa* Linnaeus, Sp. Pl.:1042. 1753. *Clutia spinosa* Roxburgh, Pl. Corom. 2: 38, t. 172. 1802. *Bridelia spinosa* (Roxburgh) Willdenow, Sp. Pl. 4: 979. 1806. *Bridelia retusa* (Linnaeus) Sprengel, Syst. Veg. 3: 48. 1826, *pro comb. nov.*; *Bridelia squamosa* (de Lamarck) Gehrmann, Bot. Jahrb. Syst. 41, Beibl. 95: 30. 1908. *Bridelia cambodiana* Gagnepain, Bull. Soc. Bot. France 70: 432. 1923. *Bridelia pierrei* Gagnepain, Bull. Soc. Bot. France 70: 434. 1923;

Small tree, up to 15 m. Stipules ovate triangular, whitish woolly, early caducous. Petiole glabrous; lamina obovate, 6–22 × 3–11 cm, emarginate to obtuse or acute, entire to shallowly crenate, base rounded to obtuse. Inflorescences on leafless branches and spike-like. Staminate flowers pale yellowish green to brown; pistillate flowers reddish to brown. Sepals ovate-triangular. Petals variable in shape, base spatulate. Stamens white; anthers ovoid, reddish to purplish. Ovary globose; styles 2, only basally united, stigmas shortly bifid. Fruits depressed-globose. Seeds semigloboid.

Flowers & Fruits: May to December.

Specimen Cited: Atiamochar forest, Rajib & AP Das 0575, dated 25.07.2007.

Local Distribution: Forests near conservation area.

General Distribution: India, Bhutan, S. China, Sri Lanka, Myanmar, Indochina, Thailand, Malay Peninsula, Sumatra.

FLUEGGEEA Willdenow, Sp. Pl. 4: 637, 757. 1805.

Flueggea virosa (Roxburgh ex Willdenow) Voigt, Hort. Suburb. Calc.: 152. 1845; Long in Grierson et Long, Fl. Bhut. 1(3): 775. 1987. *Phyllanthus virosus* Roxburgh ex Willdenow, Sp. Pl. 4: 578. 1805. *Xylophylla obovata* Willdenow, Enum. Hort. Berol.: 329. 1809. *Flueggea microcarpa* Blume, Bijdr.: 580. 1825; Prain, Beng. Pl. 2: 931. 1963. *Securinega virosa* (Roxburgh ex Willdenow) Baillon, Adansonia 6: 334. 1866; *Securinega microcarpa* (Blume) M ller Argoviensis in de Candolle, Prod. 15, 2: 434. 1866. *Securinega obovata* (Willdenow) M ller Argoviensis in de Candolle, Prod. 15, 2: 449. 1866. *Flueggea obovata* (Willdenow) Wallich ex Villars, Novis. App.: 189. 1880.

Tall shrubs, up to 4 m, dioecious. Leaves distichous; lamina elliptic to obovate, 1 — 8 x 0.6 — 5 cm, papery; rounded to slightly acuminate, margin flat, base usually attenuate. Inflorescences fascicles. Flowers white; sepals outer two smaller than inner 3. Staminate greenish to yellowish, pendulous, sweet scented; filaments white; disc glands fleshy, yellow; pistillode deeply divided into 3 branches. Pistillate flowers green; sepals 0.7 — 1 mm diameter, disc annular; ovary 1 x 0.8 mm wide. Fruits globular.

Flowers & Fruits: April to October.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0704*, dated 14. 02. 2008.

Local Distribution: Forests near conservation area.

General Distribution: India, Bhutan, China, Tropical Africa and Asia to Japan, Australia and Polynesia.

SAUROPUS Blume, Bijdr. 595. 1826.

Sauropus quadrangularis (Willdenow) M ller Argoviensis, Linnaea 32: 73 1863; Hooker f., Fl. Br. India 5: 335. 1887; Long in Grierson et Long, Fl. Bhut. 1(3): 783. 1987; Prain, Beng. Pl. 2: 932. 1963. *Phyllanthus quadrangularis* Willdenow, Sp. Pl. 4: 585. 1805. *Ceratogynum rhamnoides* Roxburgh ex Wight, Icon. Pl. Ind. Orient. 5: t. 1900. 1852. *Sauropus compressus* M ller Argoviensis in de Candolle, Prodr. 15, 2: 243. 1866. *Sauropus pubescens* Hooker f., Fl. Brit. Ind. 5: 335. 1887. *Sauropus compressus* M ller Argoviensis var. *compressus*: Chakraborty & M.G. Gangopau, J. Econ. Tax. Bot. 20: 526, fig. 4. 1996.

Woody herbs to small shrubs, up to 2 m. Stipules triangular to sometimes strongly falcate. Lamina elliptic to obovate, 0.6 – 4 x 0.5 – 2 cm, slightly emarginated to rounded, often mucronulate, revolute, base often slightly oblique and asymmetric, rounded to cuneate. Flowers in small axillary fascicles with both sexes, yellow to deep red. Staminate flowers glabrous; calyx flat, lobes heart-shaped. Pistillate flowers glabrous; ovary 1 x 1.7 mm; stigmas erect. Fruits ovoid.

Flowers & Fruits: March to October.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0366*, dated 21.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: India throughout; Bhutan, Nepal, China, Myanmar, Thailand, Laos, Cambodia, Vietnam.

PHYLLANTHUS Linnaeus, Sp. Pl. 2: 981. 1753.

Key t the genera:

- 1a. Large or small trees 2
- 1b. Herbs or small shrubs 3
- 2a. Stipules triangular-ovate, ciliate; fruit greenish yellow *P. emblica*
- 2b. Stipules lanceolate to linear oblong; fruits blackish or purplish *P. reticulatus*
- 3a. Axillari fascicle usually bisexual *P. urinaria*

- 3b. Axillari fascicle usually unisexual 4
 4a. Filament free *P. virgatus*
 4b. Filament connate in column 5
 5a. Capsules triangular globose *P. amarus*
 5b. Capsules depressed globose *P. fraterous*

Phyllanthus amarus Schumacher *et* Thonning, Naturvidensk. Math. Afd. 4: 195. 1829; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 198. 1982. *Phyllanthus niruri* auct. non Linnaeus, Hooker *f.*, Fl. Brit. Ind. 5: 298. 1887; H. Ohashi in Hara, Fl. E. Himal. 181. 1966; Prain, Beng. Pl. 2: 936. 1963. *Phyllanthus nanus* Hooker *f.*, Fl. Brit. India 5: 298. 1887. *Diasperus nanus* (Hooker *f.*) Kuntze, Revis. Gen. Pl. 2: 601. 1891.

Annual or biennial, erect or prostrate, herbs, up to 150 cm. Leaves distichous; stipules linear to linear-lanceolate, green; lamina oblong to elliptic-oblong, 3–8 × 2–4 mm, thinly papery, obtuse, base rounded. Plants monoecious. Flower fascicles along lower part of leafy shoots usually male, middle usually bisexual with 1 female and 1 male flower. Male flowers: sepals 5, elliptic to ovate, abruptly acute; disk glands 5; stamens 3; filaments completely connate into a column; anthers sessile. Female flowers: sepals 5, obovate-oblong to ovate; disk flat to subulate, deeply 5 lobed; ovary globose-triangular; styles free. Capsules triangular globose, smooth. Seed sharply 3 angled.

Flowers & Fruits: Through out the year.

Specimen Cited: Garden, Rajib & AP Das 0431, dated 22.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: pantropical weed possibly originating in the Americas

Phyllanthus urinaria Linnaeus, Sp. Pl. 2: 982. 1753; Hooker *f.*, Fl. Brit. Ind. 5: 293. 1887; Haines, Bot. Bihar & Orissa pt. II: 125. 1921; Long in Grierson *et* Long, Fl. Bhut. 1(3): 772. 1987; Prain, Beng. Pl. 2: 935. 1963. *Diasperus urinaria* (Linnaeus) Kuntze, Revis. Gen. Pl. 2: 601. 1891. *Phyllanthus cantoniensis* Schweigg, Enum. Pl. Hort. Regiom. 54. 1812.

Annual, erect weak herbs; stem branched, terete, smooth. Leaves compound, alternate, leaflets obovate, oblong. Flowers in axillary, unisexual; all male flower succeeding axils with bisexual cymules, calyx lobes 5, sub equal, acute, stamen-3; Female flowers with 5 sepal, sub equal, style 3, free, shallowly bifid. Capsules obovate. Seeds triangular.

Flowers & Fruits: April to December.

Specimen Cited: Garden, Rajib & AP Das 0464, dated 23.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: Tropical India; Bhutan, Chian, Nepal, Sri Lanka, Indonesia, Japan, Laos, Malaysia, Thailand, Vietnam; Pantropical, Native to South America.

Phyllanthus fraternus G.L.Webster in Contr. Gray. Herb. 176: 53. 1955 and in J. Arnold Arbor. 38: 308. 1957. *Phyllanthus niruri* auct. pl. non l. 1753, Hooker *f.*, Fl. Brit. Ind. 5: 298. 1887; Prain, Beng. Pl. 2: 936. 1963. *Phyllanthus fraternus* subsp. *togoensis* Jean F.Brunel & J.P. Roux, Bull. Soc. Bot. France 122: 161. 1975.

Annual, erect herbs. Leaves alternate, compound, subsessile, elliptic to oblong, base rounded. Male flowers greenish yellow, axillary, solitary, filament united to a column. Female flowers greenish yellow, axillary solitary, style 3, recurved. Capsules depressed globose.

Flowers & Fruits: June. to February.

Specimen Cited: Garden, Rajib & AP Das 0508, dated 23.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: Pantropical, Native to South America.

Phyllanthus virgatus G.Froster *f.*, Fl. Ins. Austrl. Prodr. 65. 1786. (*ut virgata*) Airy Shaw, Kew. Bull. 26: 325. 1972; Long in Grierson *et* Long, Fl. Bhut. 1(3): 772. 1987; Guha Bakshi, fl. Mus. Dist. 294.1984. *Phyllanthus simplex* Retzius, Obs. Bot. 5: 29. 1789; (Var. *genurinus*); Hooker *f.*, Fl. Brit. Ind. 5: 295. 1887; Prain, Beng. Pl. 2: 936. 1903. *Phyllanthus simplex* var. *virgatus* (Froster *f.*) M Iler Argoviensis, Linnaea 32: 32. 1863 and in de Candolle, prodr. 15(2): 391. 1866. *Diasperus virgatus* (G.Forster) Kuntze, Revis. Gen. Pl. 2: 597. 1891.

Small annual herbs, up to 80 cm, monoecious; stem slightly woody at base. Stipules membranous; petiole short; lamina thinly leathery, linear-lanceolate to narrowly elliptic, 5–25 × 2–6 mm, obtuse to acute, base slightly obliquely rounded. Inflorescences bisexual, axillary fascicles with 2–4 male and 1 female flower. Male flowers: sepals 6, broadly ovate to rotund; disk glands 6, oblong; stamens 3; filaments free; anthers subglobose. Female flowers: sepals 6, ovate-oblong, reflexed, purple with whitish membranous margins, persistent in fruit; ovary globose, 3 celled; styles 3. Capsules oblate. Seeds trigonous.

Flowers & Fruits: June to February.

Specimen Cited: Garden, Rajib & AP Das 0419, dated 22.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: Tropical India; Bhutan, Nepal, Sri Lanka, Indonesia, Laos, Malaysia, Cambodia, Thailand, Vietnam; Pacific islands.

Phyllanthus emblica Linnaeus, Sp. Pl. 2: 982. 1753; Hooker *f.*, Fl. Brit. Ind. 5: 289. 1887; Long in Grierson *et* Long, Fl. Bhut. 1(3): 772. 1987; Prain, Beng. Pl. 2: 935. 1963. *Embllica officinalis* Gaertner, Fruct. 122-123, Pl. 108, f. 2. 1790. *Embllica officinalis* Gaertner, Fruct. Sem. Pl. 2: 122. 1790. *Embllica arborea* Rafinesque-Schmaltz, Sylva Tellur. 91. 1838.

Vernacular Name: Amlaki.

Small trees, up to 12 m, monoecious, deciduous; leafy shoots angular. Leaves distichous; stipules triangular-ovate, ciliate; lamina oblong to linear-oblong, 8–22 × 1.5–6 mm, papery to leathery, truncate, mucronate to retuse at tip, narrowly revolute, base shallowly cordate, oblique. Fascicles with many male flowers and sometimes 1 or 2 larger female flowers. Male flowers: sepals 6, yellow; stamens 3; anthers erect, oblong. Female flowers: sepals 6, oblong or spatulate; ovary ovoid; styles 3, connate at base, deeply bifid. Fruit a drupe, globose, greenish yellow, exocarp fleshy. Seeds reddish.

Flowers & Fruits: April to September.

Specimen Cited: Rasik Beel village, Rajib & AP Das 0490, dated 23.07.2007.

Local Distribution: Cultivated in village areas.

General Distribution: India: tropical part; Bhutan, Nepal, Sri Lanka, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand; South America.

Phyllanthus reticulatus Poiret in de Lamarck, Encycl. M th. 5: 298. 1804; Hooker *f.*, Fl. Brit. Ind. 5: 288. 1887; Long in Grierson *et* Long, Fl. Bhut. 1(3): 773. 1987; Prain, Beng. Pl. 2: 935. 1963. *Kirganelia reticulata* (Poiret) Baillon, tude G n. Euphorb.: 613. 1858. *Cicca reticulata* (Poiret) Kurz, Forest Fl. Burma 2: 354. 1877. *Anisonema reticulatum* (Poiret) A. Jussieu, Euphorb. Gen. 4. 1824. *Diasperus reticulatus* (Poiret) Kuntze, Revis. Gen. Pl. 2: 600. 1891.

Small trees, up to 4 m. Stipules lanceolate to linear oblong. Lamina elliptic, 3–4 × 0.6–1 cm, obtuse or orbicular, entire, base cuneate. Flowers in bisexual cymes, each with several staminate flowers and 1 to 2 pistillate flowers. Staminate flowers: sepals 5 to 6, oblong to obovate or suborbicular; stamens 5. Pistillate flowers: sepals 5 or 6, oblong to elliptic; ovary glabrous. Fruits depressed globose, blackish or purplish. Seeds plano-convex.

Flowers & Fruits: Through out the year.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0444*, dated 22.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: Tropical India; Bhutan, China, Sri Lanka, Burma, Vietnam, Laos, Peninsular Malaysia.

Salicaceae Mirbel, *Elem. Phys.* V6g. 2: 905. 1815 ('Salicineae'); *nom. cons.*

SALIX Linnaeus, *Sp. Pl.* 2: 1015. 1753.

Salix tetrasperma Roxburgh, *Pl. Coromandel* 1: 66, pl. 97: 66. 1795; Grierson *et Long* in Grierson *et Long*, *Fl. Bhut.* 1(1): 66. 1983; Prain, *Beng. Pl.* 2: 989. 1963. *Pleiarina tetrasperma* (Roxburgh) N. Chao & G.T. Gong, *J. Sichuan For. Sci. Techn.* 17(2): 6. 1996.

Trees up to 10m tall. Buds narrowly ovoid, glabrous, apex acute. Stipules obliquely ovate, glandular, serrate. Leaves simple, alternate; lamina ovate to linear lanceolate, 6 – 14 x 2 – 4 cm, serrate, acuminate, base cuneate or suborbicular, abaxially pale, adaxially green, glabrous, shiny. Male catkin 10cm; peduncle with 2 or 3 pilose leaflets; rachis densely pubescent or woolly; bracts elliptic. Stamens usually 8; anthers yellow, ovoid. Female catkin nearly as long as male catkin. Ovary ovoid; style short; stigma 2 lobed. Capsule ovoid, glabrous.

Flowers & Fruits: November to April.

Specimen Cited: Central Island of Beel complex, *Rajib & AP Das 0270*, dated 10. 02. 2007.

Local Distribution: Planted at Beel complex.

General Distribution: India: tropical parts; Indonesia, Malaysia, Myanmar, Pakistan, Philippines, Thai-land, Vietnam.

Violaceae Lamarck *et De Candolle*, *Fl. Franc.* ed. 3. 5: 801. 1805.

VIOLA Linnaeus, *Sp. Pl.* 2: 933. 1753.

Viola tricolor Linnaeus, *Sp. Pl.* 935. 1753. *Viola tricolor* var. *hortensis* de Candolle, *Prodr.* 1: 303. 1824.

Annual or biennial herbs. Stems erect, angled, branched. Basal leaf blade narrowly ovate to lanceolate, long petiolate; stipules large, leaflike; cauline leaf blade ovate to oblong lanceolate, remotely crenate, rounded or obtuse, base rounded. Flowers solitary in leaf axils, usually 3 colored (purple, white and yellow), with 3 – 10 flowers per stem. Sepals green, oblong-lanceolate, apex acute. Corolla flat; upper petals deep purpleviolet, lateral petals and anterior one 3 colored. Ovary glabrous; styles short; stigmas enlarged, globose. Capsule ellipsoid.

Flowers & Fruits: April to September.

Specimen Cited: Garden, *Rajib & AP Das 0186*, dated 09. 02. 2007.

Local Distribution: Garden.

General Distribution: India: native to Europe.

Order: Fabales Bromhead (1838)

Fabaceae H.G.L. Reichenbach, *Consp. Regni Veg.* 149. 1828 (*nom. cons. prop.*; *nom. alt.* vs. Leguminosae *et* Papilionaceae).

Key to the genera:

1a. Leaves simple or with 2 to many leaflets	3
1b. Leaves pinnate	2
2a. Leaves evenly pinnate or bipinnate; flowers large, zygomorphic	17
2b. Leaves usually bipinnate; flowers small, regular	23
3a. Anthers dimorphic	4
3b. Anthers uniform in size and shape	32
4a. Legumes transversely septate and breaking up into 1-seeded joints	5
4b. Legumes not transversely septate	6
5a. Inflorescences racemose, lax; bracts membranous, usually persistent	<i>Aeschynomene</i>
5b. Inflorescences usually scorpioid-cymose, congested; bracts scarious, caducous	<i>Smithia</i>
6a. Climbing or weak plants or trees or tall shrub	7
6b. Erect subshrubs	<i>Crotalaria</i>
7a. Style flattened	8
7b. Style generally terete	12
8a. Flowers generally resupinate	<i>Clitoria</i>
8b. Flowers not resupinate	9
9a. Flowers mostly adapted to birds or bats for pollination	10
9b. Flowers mostly adapted to bees for pollination	<i>Pueraria</i>
10a. Trees; stems with prickles	<i>Erythrina</i>
10b. Climbers or trees; if trees, then stems without prickles	11
11a. Legume with many seeds, 2-valved	<i>Mucuna</i>
11b. Legume samaroid with 1 apical seed	<i>Butea</i>
12a. Legumes breaking up into 1-seeded segments when ripe	13
12b. Legumes not breaking up into separate segments when mature	14
13a. Joints of legume plicate-retrofracted	<i>Uraria</i>
13b. Joints of legume not plicate-retrofracted	<i>Desmodium</i>
14a. Stamens monadelphous and filaments partly connate	<i>Tephrosia</i>
14b. Stamens diadelphous, mostly vexillary filament free	15
15a. Legumes indehiscent	<i>Dalbergia</i>
15b. Legumes dehiscent	16
16a. Rachis of leaves ending in a tendril	<i>Abrus</i>
16b. Rachis of leaves not ending in a tendril	<i>Sesbania</i>
17a. Leaves simple, entire or 2-lobed or divided and 2-foliolate	<i>Bauhinia</i>
17b. Leaves once pinnate or bipinnate	18
18a. Leaves usually bipinnate	20
18b. Leaves once pinnate	19
19a. Anthers dorsifixed, opening by lateral slits	21
19b. Anthers basifixed, opening by apical pores	22
20a. Plants unarmed; trees	<i>Delonix</i>
20b. Plants usually armed with prickles; climbers	<i>Caesalpinia</i>
21a. Bracteoles sepaloid or petaloid	<i>Tamarindus</i>
21b. Bracteoles not sepaloid or petaloid	<i>Saraca</i>
22a. Petioles and rachis of leaves without glands; stamens sigmoidally curved ...	<i>Cassia</i>
22b. Petioles and rachis of leaves with; filaments straight	<i>Senna</i>

23a. Stamens 10 or fewer	25
23b. Stamens numerous, usually more than 10	24
24a. Filaments free or only connate at base	<i>Acacia</i>
24b. Filaments connate into a tube	27
25a. Tall trees, more than 6m tall	<i>Adenanthera</i>
25b. Small trees or shrubs, less than 6m tall	26
269a. Armed plant; leaflets sensitive	<i>Mimosa</i>
26b. Unarmed plant; leaflets not sensitive	<i>Leucaena</i>
27a. Legume septate between seeds, thick, fleshy	<i>Samanea</i>
27b. Legume not septate between seeds, flat, thin	<i>Albizia</i>

ABRUS Adanson, Fam. Pl. 2: 327, 511. 1763.

Key to the species:

- 1a. Seeds conspicuously glossy black and red, subglobose *A. precatorius*
- 1b. Seeds uniformly dark brown to almost black, compressed *A. pulchellus*

Abrus pulchellus Wallich ex Thwaites, Enum. Pl. Zeyl. 91. 1859; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 655. 1987; Prain, Beng. Pl. 1: 369. 1963.

Vernacular name: Kuch.

Large, slender, climbing, lianas. Leaves paripinnate, alternate; leaflets 6–10 paired, opposite; blades suboblong to obovateoblong, 0.5–3.5 x 0.3–1 cm, base rounded or subcordate, truncate and with mucro. Racemes axillary. Flowers dense. Calyx campanulate, 4 toothed. Corolla white or purple red. Stamens 9. Legumes oblong, dehiscent, with 4–8 seeds. Seeds black-brown, elliptic to ovoid.

Flowers & Fruits: April to August.

Specimen Cited: Near conservation sector, *Rajib & AP Das 0114*, dated 07. 02. 2007.

Local Distribution: Atiamochar forest.

General Distribution: India: through out; Bhutan, China, Bangladesh, Nepal, Sri Lanka, Myanmar, Indonesia, Malaysia, Cambodia, Philippines, Thailand, Vietnam.

Abrus precatorius Linnaeus, Syst. Nat., ed. 12, 2: 472. 1767; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 655. 1987; Prain, Beng. Pl. 1: 369. 1963. *Abrus tunguensis* P. Lima, Broteria, Ser. Bot. 19: 127. 1921. *Glycine abrus* Linnaeus, Sp. Pl. 2: 753. 1753.

Vernacular name: Lalkuch.

Large, slender, much branched, climbing, lianas. Leaves paripinnate; leaflets 8–12 paired, opposite; blades suboblong, Fl. Bhut. 1–2 x 0.3–0.8 cm, base rounded, truncate and with mucro. Racemes axillary. Flowers small, dense. Calyx campanulate, 4 toothed. Corolla purple; wings and keels narrower. Stamens 9. Ovary hairy. Legumes oblong, dehiscent, with 2–5 seeds. Seeds lustrous, black in lower part, red in upper part, subglobose.

Flowers & Fruits: March to August.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0255*, dated 10. 02. 2007.

Local Distribution: Atiamochar forest.

General Distribution: Widespread in the tropical India; tropical Asia.

ACACIA Miller, Gard. Dict. Abr., ed. 4, [25]. 1754, nom. cons.

Key to the species:

- 1a. Flowers in racemes or spikes *A. catechu*
 1b. Flowers in heads, then rearranged in panicles *A. pennata*

Acacia catechu (Linnaeus f.) Willdenow, Sp. Pl. 4: 1079. 1806; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 642. 1987; Prain, Beng. Pl. 1: 458. 1963. *Mimosa catechu* Linnaeus f., Suppl. Pl. 439. 1782.

Vernacular name: Khayer.

Deciduous, small trees, up to 10 m. Branchlets with a pair of flat, hooked spines below stipules. Leaf glands near petiolar base and between several upper leaflets of rachis; pinnae 15 – 30 pairs; leaflets 30 – 50 pairs, linear, 2 – 6 x 1 – 1.5 mm. Spikes 1–4, axillary. Flowers white. Calyx campanulate. Petals lanceolate to oblanceolate. Stamens numerous. Ovary glabrous. Legume brown, dehiscent, apex rostrate. Seeds 3 – 10.

Flowers & Fruits: April to September.

Specimen Cited: Plantation forest, *Rajib & AP Das 0320*, dated 21.07.2007.

Local Distribution: Plantation forest.

General Distribution: India: through out; Bhutan, Bangladesh, Nepal, Pakistan, Sri Lanka, Myanmar, Thailand; introduced elsewhere.

Acacia pennata (Linnaeus) Willdenow, Sp. Pl. 4: 1090. 1806; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 641. 1987; Prain, Beng. Pl. 1: 459. 1963. *Mimosa pennata* Linnaeus, Sp. Pl. 1: 522. 1753.

Large climbers, with copious, scattered prickles. Stipules lanceolate, cuspidate; petiolar glands subpeltate; pinnae 10 – 20 pairs; leaflets 40 – 50 pairs, densely crowded, linear, 5 – 10 x 0.5 – 1 mm, base truncate, ciliate, sharply acute, asymmetric. Heads solitary or 2 to 3 fasciculate, globose, arranged in axillary or terminal panicles. Calyx subcampanulate, 5 toothed. Ovary puberulent. Legume strap shaped, 12 – 18 x 2 – 4 cm. Seeds black, 8 – 12, narrowly elliptic.

Flowers & Fruits: March to October.

Specimen Cited: Forest, *Rajib & AP Das 0289*, dated 10. 02. 2007.

Local Distribution: Atiamochar forest.

General Distribution: India: through out; Bhutan, Nepal, Sri Lanka, Cambodia, Malaysia, Myanmar, Thailand, Vietnam.

ADENANTHERA Linnaeus, Sp. Pl. 1: 384. 1753.

Adenantha pavonina Linnaeus, Sp. Pl. 1: 556. 1753; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 636. 1987; Prain, Beng. Pl. 1: 452. 1963.

Vernacular name: Lalchandan bichi.

Small trees, up to 16 m. Petiole and rachis puberulent; pinnae 3 – 5 pairs; leaflets 4 – 8 pairs, alternate, oblong to ovate, 2.5 – 3 x 1.5 – 2 cm, both ends rounded-obtuse. Racemes simple, axillary or arranged in panicles at apices. Flowers yellow, small, fragrant. Calyx golden yellow puberulent. Petals oblong, slightly connate at base. Stamens 3 – 4 mm. Ovary nearly sessile; stigma small. Legume narrowly oblong, Fl. Bhut. 1 2 – 18 x 1 – 1.5 cm, valves contorted after dehiscence.

Seeds scarlet, suborbicular to ellipsoidal.

Flowers & Fruits: April to October.

Specimen Cited: Park, Rajib & AP Das 0315, dated 10. 02. 2007.

Local Distribution: Cultivated in Park.

General Distribution: Cultivated pantropical.

ALBIZIA Durazzini, Mag. Tosc. 3(4): 13. 1772.

Key to the species:

- | | |
|---|------------------------|
| 1a. Midvein of leaflets medial or eccentrically close to lower margin | <i>A. procera</i> |
| 1b. Midvein of leaflets eccentrically close to upper margin | 2 |
| 2a. Leaflets more than 2 cm large | 3 |
| 2b. Leaflets less than 1 cm large | <i>A. chinensis</i> |
| 3a. Inflorescens 30 – 40 flowered corymbs..... | <i>A. lebbeck</i> |
| 3b. Inflorescens 10 – 15 flowered panicles | <i>A. odoratissima</i> |

Albizia chinensis (Osbeck) Merrill, Amer. J. Bot. 3: 575. 1916; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 646. 1987. *Mimosa chinensis* Osbeck, Dagb. Ostind. Resa, 233. 1757.

Vernacular name: Shirish.

Large deciduous, trees, up to 30 m. Stipules deciduous, cordate, large; glands just below junctions of pinnae; pinnae 6 – 12 pairs; leaflets 25 – 35 pairs, sessile, oblong-linear, base subtruncate, ciliate, apex acuminate. Heads 12 – 20 flowered, arranged in a terminal panicle. Flowers dimorphic, green-white. Calyx funnelshaped, shortly 5 toothed. Corolla just double of calyx; lobes ovate-deltoid. Stamens slightly longer than corolla tube. Ovary yellow-brown. Legume indehiscent. Seeds elliptic, flat.

Flowers & Fruits: March to December.

Specimen Cited: Near conservation sector, Rajib & AP Das 0394, dated 22.07.2007.

Local Distribution: Atiamochar forest.

General Distribution: Throughout India; most areas with a seasonal climate in S and SE Asia.

Albizia lebbeck (Linnaeus) Bentham, London J. Bot. 3: 87. 1844 [“lebbek”]; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 644. 1987; Prain, Beng. Pl. 1: 461. 1963. *Mimosa lebbeck* Linnaeus, Sp. Pl. 1: 516. 1753.

Vernacular name: Sada shirish.

Small, deciduous, trees, up to 12 m. Stipules caducous, small; leaf rachis with disklike glands near base and at base of pinnae; pinnae 2 – 4 pairs; leaflets 4 – 8 pairs, narrowly elliptic to slightly obliquely oblong, Fl. Bhut. 2 – 5 x 1 – 2 cm, base oblique, obtuse to retuse. Corymbs 30 – 40 flowered. Flowers dimorphic, fragrant. Calyx funnel shaped, with short teeth. Corolla green yellow; lobes deltoid-ovate. Stamens white; tube shorter than corolla tube. Ovary glabrous, sessile. Legume straw-colored, strap-shaped, flat. Seeds brown.

Flowers & Fruits: May to September.

Specimen Cited: Atiamochar forest, Rajib & AP Das 0649, dated 12. 02. 2008.

Local Distribution: Atiamochar forest.

General Distribution: Throughout India; native to tropical Africa; introduced or naturalized in Bangladesh, Bhutan, Myanmar, Nepal, Pakistan, Sri Lanka.

Albizia odoratissima (Linnaeus *f.*) Bentham, London J. Bot. 3: 88. 1844; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 644. 1987; Prain, Beng. Pl. 1: 461. 1963. *Mimosa odoratissima* Linnaeus *f.*, Suppl. Pl. 437. 1782.

Vernacular name: Kalo shirish.

Small evergreen, trees, up to 15 m. Stipules filiform; leaf glands 2 cm above base of petiole and rachis between first and second pinnae, elliptic; pinnae 2–4 pairs; leaflets sessile, 6–14 pairs, oblong, base obliquely truncate, obtuse, sometimes mucronate. Heads arranged in panicles. Flowers dimorphic, 10–15, sessile, yellowish. Calyx cupshaped. Corolla funnel-shaped; lobes lanceolate. Staminal tube as long as corolla tube. Ovary ferruginous tomentose. Legume oblong, compressed. Seeds 6–12, ovate in outline.

Flowers & Fruits: June to October.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0545*, dated 23.07.2007.

Local Distribution: Atiamochar forest.

General Distribution: Throughout India; Bangladesh, Bhutan, Nepal, Pakistan, Sri Lanka, Thailand, Laos, Myanmar, Vietnam.

Albizia procera (Roxburgh) Bentham, London J. Bot. 3: 89. 1844; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 645. 1987; Prain, Beng. Pl. 1: 461. 1963. *Mimosa procera* Roxburgh, Pl. Coromandel 2: 12. 1799.

Vernacular name: Kalo shirish.

Small deciduous, trees, up to 15 m. Leaf petiole with an oblong gland 1 cm above base; pinnae 3–5 pairs; leaflets 6–12 pairs, ovate to subrhombic, 3–5 x 1–2 cm, base oblique, obtuse to emarginate. Heads 20 flowered, arranged in axillary or terminal panicles. Flowers uniform, sessile. Calyx 2–3 mm. Corolla yellow-white; lobes lanceolate. Staminal tube longer than corolla tube. Ovary glabrous, subsessile. Legume ligulate. Seeds 8–12, obovoid-elliptic.

Flowers & Fruits: May to August.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0693*, dated 14. 02. 2008.

Local Distribution: Atiamochar forest.

General Distribution: Throughout India; Bangladesh, Bhutan, Nepal, Pakistan, Sri Lanka, Thailand, Laos, Myanmar, Vietnam.

TEPHROSIA Persoon, Syn. Pl. 2: 328. 1807, *nom. cons.*

Tephrosia candida de Candolle, Prodr. 2: 249. 1825; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1 (3): 659. 1987; Prain, Beng. Pl. 1: 405. 1963.

Perennial. Leaflets blades oblong. Pseudoracemes terminal or lateral. Calyx teeth equal. Corolla white. Ovary tomentose, with numerous ovules. Legume linear, straight, brown tomentose.

Flowers & Fruits: October to December

Specimen Cited: Bochamari, *Rajib & AP Das 0208*, dated 09. 02. 2007.

Local Distribution: Cultivated in villages.

General Distribution: Tropical and sub-tropical parts of the world.

TAMARINDUS Linnaeus, Sp. Pl. 1: 34. 1753.

Tamarindus indica Linnaeus, Sp. Pl. 1: 34. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. India 2: 273. 1878; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1 (3): 636. 1987; Prain, Beng. Pl. 1: 444. 1963.

Vernacular Name: Tetul.

Trees. Leaflets oblong, small, glabrous, base obliquely rounded, apex rounded. Flowers few, yellowish tinged with purplish red stripes. Petals obovate, subequal to calyx lobes, margin repand, curled. Ovaries slightly incurved, terete. Pods brownish, straight or arcuate.

Flowers & Fruits: May to December.

Exsicattus: Salmari, *Rajib & AP Das 0244*, dated 09. 02. 2007.

Local Distribution: Cultivated in villages.

General Distribution: Tropical and sub-tropical parts of the world.

BAUHINIA Linnaeus, Sp. Pl. 1: 374. 1753.

Key to the species:

- | | |
|--|---------------------|
| 1a. Lamina ovate-cordate to cordate | <i>B. acuminata</i> |
| 1b. Lamina suborbicular to broadly ovate | 2 |
| 2a. Fertile stamens 5 | <i>B. variegata</i> |
| 2b. Fertile stamens 3 | <i>B. purpurea</i> |

Bauhinia acuminata Linnaeus, Sp. Pl. 1: 376. 1753; Prain, Beng. Pl. 1: 441. 1963.

Large shrubs up to 3 m. Young branches zigzag. Lamina ovate-cordate to cordate, 8 – 12 x 6 – 12 cm, subleathery, primary veins 9 – 11, base cordate, bifid, lobes acuminate or slightly acute. Inflorescence a raceme, with 3 – 9 flowers, axillary; bracts and bracteoles linear. Hypanthium tubular. Calyx spathe open on one side, shortly 5 toothed. Petals white, obovate-elliptic. Fertile stamens 10 in 2 whorls. Ovary prominently stalked. Legume straight to slightly curved. Seeds 6 – 10, compressed.

Flowers & Fruits: April to August.

Specimen Cited: Near Park, *Rajib & AP Das 0677*, dated 14. 02. 2008.

Local Distribution: Planted in Parks and villages.

General Distribution: India: through out; Bhutan, China, Bangladesh, Sri Lanka, Indonesia, Laos, Malaysia, Philippines, Thailand, Vietnam.

Bauhinia purpurea Linnaeus, Sp. Pl. 1: 375. 1753; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 633. 1987; Prain, Beng. Pl. 1: 442. 1963.

Vernacular name: Kanchan.

Small trees, up to 10 m. Petiole 3 – 4 cm; lamina suborbicular, 10 – 16 x 8 – 14 cm, stiffly papery, base shallowly cordate, apex bifid, lobes slightly acute. Inflorescence a raceme with few flowers, axillary and terminal. Calyx open as a spathe into 2 lobes. Petals pink. Fertile stamens 3; filaments as long as petals. Staminodes 5 or 6. Ovary stalked; style curved. Legume linear, flat; valves woody. Seeds compressed, suborbicular.

Flowers & Fruits: September to March.

Specimen Cited: Park, *Rajib & AP Das 0325*, dated 21.07.2007.

Local Distribution: Cultivated in Parks.

General Distribution: India: through out; probably only native from Nepal through continental monsoon Asia, now introduce to Cambodia, Laos, Myanmar, Thailand, Vietnam.

Bauhinia variegata Linnaeus, Sp. Pl. 1: 375. 1753; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 634. 1987; Prain, Beng. Pl. 1: 442. 1963.

Vernacular name: Kanchan.

Small, deciduous, trees, up to 15 m. Lamina suborbicular to broadly ovate, 6 – 10 x 7 – 10 cm, subleathery, base shallowly to deeply cordate, apex bifid, lobes rounded. Inflorescence a raceme, few flowered, axillary and terminal. Calyx open as a spathe into 2 lobes. Petals white, or purplish spots, oblanceolate. Fertile stamens 5; filaments as long as petals, slender. Ovary stalked; style curved; stigma small. Legume linear, flat; valves woody. Seeds 10–15, compressed.

Flowers & Fruits: February to July.

Specimen Cited: Bochamari, *Rajib & AP Das 0311*, dated 10. 02. 2007.

Local Distribution: Cultivate in villages.

General Distribution: India: through out; Bhutan, China, Cambodia, Laos, Myanmar, Thailand, Vietnam; widely cultivated in the tropics and subtropics.

CAESALPINIA Linnaeus, Sp. Pl. 1: 380. 1753.

Caesalpinia cucullata Roxburgh, Fl. Ind., ed. 1832, 2: 358. 1832; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 623. 1987; Prain, Beng. Pl. 1: 447. 1963.

Medium climbers, up to 5 m, with recurved prickles on old stems. Pinnae 2 – 5 pairs, stalked; stipules absent; leaflets 3 – 6 pairs, broadly ovate to oblong, 4 – 10 x 2.5 – 4 cm, leathery, base broadly cuneate to obtuse-rounded, acuminate. Panicles terminal racemes. Receptacle deeply discoid or shallowly campanulate. Sepals 5, unequal. Petals yellow, oblong, glabrous. Stamens 10, exserted. Ovary compressed; style slender; stigma truncate. Legume reddish brown, elliptic-oblong, indehiscent, winged along ventral suture.

Flowers & Fruits: Round the year.

Specimen Cited: Forest, *Rajib & AP Das 0286*, dated 10. 02. 2007.

Local Distribution: Forest margin.

General Distribution: India: through out; Bhutan, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam.

CASSIA Linnaeus, Sp. Pl. 1: 376. 1753, *nom. cons.*

Key to the species:

- 1a. Leaflets 5 – 10 pairs, base slightly asymmetric *C. javanica* subsp. *nodosa*
- 1b. Leaflets 3 - 4 pairs, base broadly cuneate *C. fistula*

Cassia javanica subsp. *nodosa* (Buchanan-Hamilton *ex* Roxburgh) K. Larsen & S. S. Larsen, Nat. Hist. Bull. Siam Soc. 25(3–4): 205. 1975; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 629. 1987. *Cassia nodosa* Buchanan-Hamilton *ex* Roxburgh, Fl. Ind. 2: 336. 1824; Prain, Beng. Pl. 1: 437. 1963.

Small, deciduous, trees. Leaves 20 – 25 cm; leaflets 5 – 10 pairs, 2 – 5 x 1 – 2 cm, subleathery, base slightly asymmetric, acute to obtuse. Racemes lateral on short side branches; inflorescence axis slender. Sepals ovate. Petals deep yellow, ovate. Stamens 10. Ovary linear, whitish pubescent. Legume blackish brown, terete.

Flowers & Fruits: April to September.

Specimen Cited: Rasik Bil village, *Rajib & AP Das 0122*, dated 07. 02. 2007.

Local Distribution: Villages.

General Distribution: India: through out; Bhutan, China, Indonesia, Malaysia, Thailand; cultivated in the neotropics.

Cassia fistula Linnaeus, Sp. Pl. 1: 377. 1753; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 625. 1987; Prain, Beng. Pl. 1: 437. 1963.

Vernacular name: Bandarlathi.

Small deciduous trees, up to 15 m. Leaves 30 – 40 cm, with 3 to 4 pairs of leaflets; leaflets broadly ovate to ovate-oblong, 8 – 12 x 4 – 8 cm, leathery, base broadly cuneate, acute. Racemes axillary,

lax, pendent. Pedicels slender. Sepals narrowly ovate. Petals golden yellow, broadly ovate. Stamens 10, exceeding petals. Ovary stalked; stigma small. Legume pendulous, indehiscent. Seeds numerous, elliptic, flattened.

Flowers & Fruits: April to September.

Specimen Cited: Park, Rajib & AP Das 0142, dated 07. 02. 2007.

Local Distribution: Cultivated in Parks.

General Distribution: Native to India; cultivated throughout the tropics.

SENNA Miller, Gard. Dict. Abr., ed. 4. 1754.

Key to the species:

- | | |
|--|------------------------|
| 1a. Small shrubs, up to 3 m | 2 |
| 2a. Trees | <i>S. siamea</i> |
| 2a. Stipules caducous, lanceolate | 3 |
| 2a. Stipules persistent, triangular | <i>S. alata</i> |
| 3a. Leaflets obovate to obovate-oblong | <i>S. tora</i> |
| 3b. Leaflets ovate to ovate-oblong or lanceolate | 4 |
| 4a. Lamina 3-5 pairs | <i>S. occidentalis</i> |
| 4b. Lamina 6 – 10 pairs | <i>S. sophera</i> |

Senna alata (Linnaeus) Roxburgh, Fl. Ind., ed. 1832, 2: 349. 1832. *Cassia alata* Linnaeus, Sp. Pl. 1: 378. 1753; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 629. 1987; Prain, Beng. Pl. 1: 438. 1963.

Small shrubs, up to 3 m. Leaves 35 – 50 cm; stipules persistent, triangular; petiolar glands absent; lamina 6 – 15 pairs, oblong to obovate-oblong, 6 – 15 x 3 – 7 cm, base obliquely truncate, obtusely rounded. Racemes axillary, dense, many flowered or several racemes forming a terminal panicle. Sepals orange-yellow, oblong. Petals bright yellow, ovate-orbicular. Stamens 10, fertile stamens 7. Ovary puberulent, sessile; ovules many. Legume winged. Seeds 50 – 60, compressed, deltoid.

Flowers & Fruits: August to December.

Specimen Cited: Batikata Beel margin, Rajib & AP Das 0213, dated 09. 02. 2007.

Local Distribution: Throughout Beel Margin.

General Distribution: India: through out; native to tropical America; widely introduced in the tropics elsewhere.

Senna occidentalis (Linnaeus) Link, Handb. 2: 140. 1831. *Cassia occidentalis* Linnaeus, Sp. Pl. 1: 377. 1753; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 631. 1987; Prain, Beng. Pl. 1: 437. 1963.

Vernacular name: Atasi.

Small shrubs, erect, up to 1.5 m. Leaves 15 – 20 cm; stipules caducous, lanceolate; lamina 3 – 5 pairs, ovate to ovate-oblong, 4 – 10 x 2 – 3 cm, base rounded, acuminate. Corymbose racemes, axillary or terminal; bracts caducous. Sepals unequal. Petals yellow, purplish veined. Fertile stamens 7, reduced stamens 3. Ovary tomentose; style glabrous. Legume brown, falcate, flattened. Seeds 30 – 40, flat, orbicular.

Flowers & Fruits: Round the year.

Specimen Cited: Rasik Bil road side, Rajib & AP Das 0162, dated 08. 02. 2007.

Local Distribution: Forest throughout.

General Distribution: India: through out; native to tropical America; widely introduced in the tropics and subtropics elsewhere.

Senna siamea (Lamarck) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 98. 1982. *Cassia siamea* Lamarck, Encycl. 1: 648. 1785; Prain, Beng. Pl. 1: 438. 1963.

Small trees, up to 15 m. Leaves 20 – 30 cm; leaflets 6 – 12 pairs, oblong to ovate-oblong, 3 – 7 x 2 – 3 cm, leathery, base rounded, obtusely rounded, mucronate. Racemes in axils of apical leaves or a large terminal panicle on a robust peduncle; bracts linear. Sepals suborbicular. Petals yellow, broadly obovate. Stamens 10, among them 7 fertile. Ovary sessile. Legume flattened, purplish brown when mature. Seeds 10 – 30, light brown, ovoid.

Flowers & Fruits: May to October.

Specimen Cited: Rajib & AP Das 0127, dated 07. 02. 2007.

Local Distribution: Cultivated to Road side.

General Distribution: Tropical India; native to Myanmar and Thailand, and probably also to Cambodia, Laos, and Vietnam; widely cultivated in the tropics.

Senna sophera (Linnaeus) Roxburgh, Fl. Ind., ed. 1832, 2: 347. 1832. *Cassia sophera* Linnaeus, Sp. Pl. 1: 379. 1753; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 631. 1987; Prain, Beng. Pl. 1: 438. 1963.

Vernacular name: Atasi.

Under shrubs, up to 2 m. Leaves 7 – 18 cm; petiole 3–5 cm, with a narrow clavate gland above petiole joint; lamina 4 – 10 pairs, lanceolate to elliptic-lanceolate, 2 – 4 x 1 – 2 cm, base rounded, acute to shortly acuminate. Corymbs axillary, few flowered; bracts ovate. Sepals ovate-orbicular. Petals yellow, obovate. Stamens 10, 6 or 7 fertile. Ovary finely pubescent. Legume straight. Seeds 30 – 40, ovoid, compressed.

Flowers & Fruits: May to October.

Specimen Cited: Road side, Rajib & AP Das 0193, dated 09. 02. 2007.

Local Distribution: Road side.

General Distribution: native to tropical Asia; widely introduced in the tropics and subtropics elsewhere.

Senna tora (Linnaeus) Roxburgh, Fl. Ind., ed. 1832, 2: 340. 1832. *Cassia tora* Linnaeus, Sp. Pl. 1: 376. 1753; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 632. 1987; Prain, Beng. Pl. 1: 438. 1963.

Vernacular name: Jhunjhuni.

Annual, erect, suffrutescent herbs, up to 2 m. Leaves 5 – 10 cm; stipules linear; rachis with a club-shaped gland between leaflets; leaflets 3 pairs, obovate to obovate-oblong, Fl. Bhut. 2 – 5 x 2 – 3 cm, base cuneate to rounded and oblique, rounded. Racemes axillary, short, 2 to 3 flowered; bracts linear, acute. Sepals ovate to ovate-oblong. Petals yellow, unequal, obovate. Fertile stamens 7, staminodes absent. Ovary sessile; style glabrous. Legume terete, slender. Seeds 20 – 30, rhomboid.

Flowers & Fruits: June to November.

Specimen Cited: Road side, Rajib & AP Das 0178, dated 09. 02. 2007.

Local Distribution: Road side

General Distribution: India: through out; native to tropical America; widely cultivated in the tropics and subtropics.

CROTALARIA Linnaeus, Sp. Pl. 2: 714. 1753, *nom. cons.*

Crotalaria alata Buchanan-Hamilton *ex* D. Don, Prodr. Fl. Nepal. 241. 1825; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 735. 1987; Prain, Beng. Pl. 1: 373. 1963.

Small, erect, up to 100 cm. Stipules decurrent on stem as a broad wing. Leaves simple, nearly sessile; lamina elliptic to obovate-elliptic, 3 – 10 x 1.5 – 5 cm, base attenuate to cuneate, obtuse and mucronate. Racemes terminal or leaf-opposed, 2 to 3 flowered; bracts ovate-lanceolate. Calyx 2 lipped; lobes lanceolate. Corolla yellow; obovate-orbicular; wings oblong; keel ovate. Ovary glabrous. Legume oblong, 3 – 4 cm, 30 – 35 seeded. Seeds obliquely cordate, smooth.

Flowers & Fruits: June to December.

Specimen Cited: Road side, *Rajib & AP Das 0709*, dated 14. 02. 2008.

Local Distribution: Road side.

General Distribution: Throughout India; Bhutan, Bangladesh, Nepal, Sri Lanka, Cambodia, Indonesia, Malaysia, Myanmar, Thailand, Vietnam; cultivated and naturalized in Africa and Madagascar.

DALBERGIA Linnaeus *f.*, Suppl. Pl. 52, 316. 1782, *nom. cons.*

Dalbergia sissoo Roxburgh *ex* Candolle, Prodr. 2: 416. 1825; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 652. 1987; Prain, Beng. Pl. 1: 411. 1963.

Vernacular name: Sisu.

Trees, up to 20 m. Leaves 12 – 15 cm; leaflets 3 – 5; lamina rhombic obovate, rounded, shortly caudate. Panicles axillary. Flowers nearly sessile, fragrant; bracts caducous, lanceolate. Calyx campanulate, broadly ovate, 5 toothed. Corolla yellowish white; broadly obovate, emarginate; wings and keel oblanceolate. Stamens 9, monadelphous. Ovary oblong, 4 – 6 ovuled; style very short; stigma capitate. Legume linear-oblong. Seeds reniform, compressed.

Flowers & Fruits: March to November.

Specimen Cited: Road side, *Rajib & AP Das 0151*, dated 08. 02. 2007.

Local Distribution: planted throughout road side/

General Distribution: native to India; widely cultivated in the tropics.

DELONIX Rafinesque, Fl. Tellur. 2: 92. 1837.

Delonix regia (Bojer) Rafinesque, Fl. Tellur. 2: 92. 1837; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 622. 1987. *Poinciana regia* Bojer, Bot. Mag. 56: t. 2884. 1829; Prain, Beng. Pl. 1: 446. 1963.

Vernacular name: Krishnachurha.

Large, deciduous, trees, up to 20 m. Leaves 20 – 60 cm; petiole 7 – 12 cm; petiolules short; pinnae opposite, 15 – 20 pairs, 5 – 10 cm; leaflets 25 pairs, opposite, oblong, 5 – 9 x 3 – 4 mm, base oblique, entire, obtuse. Corymbose racemes terminal or axillary. Flowers bright red. Receptacle discoid. Sepals reddish inside, margin greenish yellow. Petals reflexed after anthesis, red, tinged with yellow and white spotted, spatulate. Stamens curved upward. Stigma small. Legume dark reddish brown. Seeds 20 – 40.

Flowers & Fruits: June to October.

Specimen Cited: Park, *Rajib & AP Das 0139*, dated 07. 02. 2007.

Local Distribution: planted in Park.

General Distribution: Native to Madagascar; often cultivated in the tropics.

DESMODIUM Desvaux, J. Bot. Agric. 1: 122. 1813, *nom. cons.*

Key to the species:

- | | |
|--|----------------------|
| 1a. Leaves 3 foliolate | 2 |
| 1b. Leaves 1 foliolate | <i>D. gangeticum</i> |
| 2a. Terminal leaflet blade obcordate to obovate | <i>D. triflorum</i> |
| 2b. Terminal leaflet blade ovate to ovate–elliptic | <i>D. laxiflorum</i> |

Desmodium laxiflorum Candolle, Ann. Sci. Nat. (Paris) 4: 100. 1825; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 678. 1987; Prain, Beng. Pl. 1: 425. 1963.

Erect, shrubs, up to 100 cm. Leaves 3 foliolate; terminal leaflet ovate to ovate–elliptic, 10–17 x 3–7 cm, shortly acuminate. Racemes terminal and axillary, 2–7 flowered, fascicled. Calyx densely villous; upper lobes entire. Corolla white to violet; broadly obovate to orbicular; wings auriculate. Legume linear.

Flowers & Fruits: August to December.

Specimen Cited: Forest, Rajib & AP Das 0261, dated 10. 02. 2007.

Local Distribution: Throughout forest.

General Distribution: India: through out; Bhutan, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam.

Desmodium gangeticum (Linnaeus) D. Candolle, Prodr. 2: 327. 1825; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 672. 1987; Prain, Beng. Pl. 1: 425. 1963. *Hedysarum gangeticum* Linnaeus, Sp. Pl. 2: 746. 1753.

Erect, much branched, shrubs, up to 1 m. Leaves 1 foliolate; lamina narrowly elliptic-ovate, 5–12 x 3–7 cm, base rounded, acute. Racemes terminal and axillary, 10–30 cm, 2–6 flowered at each node. Calyx 4 lobed. Corolla green-white; standard obovate; wings oblong; keel narrowly obovate. Ovary hairy. Legume linear, slightly curved.

Flowers & Fruits: April to October.

Specimen Cited: Forest, Rajib & AP Das 0218, dated 09. 02. 2007.

Local Distribution: Throughout forest.

General Distribution: India: through out; Bhutan, Nepal, Sri Lanka, Cambodia, Kashmir, Laos, Malaysia, Myanmar, Thailand, Vietnam; tropical Africa, Australia, Pacific islands; naturalized in the West Indies.

Desmodium triflorum (Linnaeus) D. Candolle, Prodr. 2: 334. 1825; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 673. 1987; Prain, Beng. Pl. 1: 424. 1963. *Hedysarum triflorum* Linnaeus, Sp. Pl. 2: 749. 1753;

Perennial, prostrate, herbs, up to 50 cm. Leaves 3 foliolate; terminal leaflet blade obcordate to obovate, 3–10 x 2.5–9 mm, base cuneate, truncate, round or slightly emarginate. Flowers solitary or 2 in leaf axils. Calyx 5 parted; lobes narrowly lanceolate. Corolla purple-red, nearly as long as calyx; standard obcordate; wings elliptic; keel longer than wings, curved. Stamens diadelphous. Legume narrowly oblong, flat.

Flowers & Fruits: June to November.

Specimen Cited: Forest, Rajib & AP Das 0154, dated 08. 02. 2007.

Local Distribution: Throughout forest.

General Distribution: Throughout India; Nepal, Sri Lanka, Malaysia, Myanmar, Thailand, Vietnam; tropics of Africa, Americas, SW Asia, Australia, Pacific islands.

LEUCAENA Bentham, J. Bot. (Hooker) 4: 416. 1842, nom. cons.

Leucaena leucocephala (Lamarck) de Wit, Taxon 10: 54. 1961; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 640. 1987. *Mimosa leucocephala* Lamarck, Encycl. 1: 12. 1783.

Small trees, up to 8 m. Stipules caducous, deltoid; leaflets 5 – 12 pairs, linear-oblong, 8 – 12 x 1.5 – 3 mm, base cuneate, ciliate, acute. Heads usually 1 or 2, axillary. Flowers white. Calyx 5 toothed. Petals narrowly oblanceolate. Stamens 10. Ovary shortly stipitate; stigma cupular. Legume straight, narrowly ovoid, flat.

Flowers & Fruits: June to September.

Specimen Cited: Forest, Rajib & AP Das 0448, dated 22.07.2007.

Local Distribution: Plantation forest.

General Distribution: Tropical India; native to tropical America, widely distributed in tropical and subtropical regions.

URARIA Desvaux, J. Bot. Agric. 1: 122. 1813.

Uraria picta (Jacquin) Desvaux *ex* Candolle, Prodr. 2: 324. 1825; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 678. 1987. *Hedysarum pictum* Jacquin, Collectanea 2: 262. 1788.

Erect, slender shrubs, up to 2 m. Leaves imparipinnate, 5 or 7 foliolate; leaflet blades linear-oblong to narrowly lanceolate, terminal one 6 – 12 x 1 – 2 cm, base rounded, apex narrowly acute. Racemes terminal, 15 – 30 cm. Calyx 5 parted, ciliate. Corolla pink or pale blue; standard obovate; keel as long as wings. Ovary glabrous, 3 to 5 ovuled. Legume lead-colored.

Flowers & Fruits: April to October.

Specimen Cited: Forest, Rajib & AP Das 0608, dated 26.07.2007

Local Distribution: Takomari forest.

General Distribution: Throughout India; Bhutan, Bangladesh, Nepal, Pakistan, Sri Lanka, Cambodia, Japan, Malaysia, Myanmar, Philippines, Thailand, Vietnam; tropical Africa, Australia

MIMOSA Linnaeus, Sp. Pl. 1: 516. 1753.

Key to the species:

- 1a. Pinnae and leaflets strongly sensitive; digitate *M. pudica*
- 1b. Pinnae and leaflets not sensitive; pinnate *M. invisa*

Mimosa invisa Colla, Flora oder Allgemeine Botanische Zeitung 20. 1837 *Mimosa diplotricha* C. Wright *ex* Sauvalle, Anales Acad. Ci. Med. Habana 5: 405. 1868.

Vernacular name: Sada lajjabati.

Scandent or prostrate subshrubs; stems 4-angulate, hirsute, with or without prickles along angles. Leaves 10 – 15 cm; petiole and rachis with 4 rows of recurved prickles; pinnae 5 to 10 pairs; leaflets 20 – 30 pairs per pinna, linear-oblong, 3 – 4 x 1 – 2 mm. Heads 1 or 2, axillary. Flowers bisexual. Calyx minute. Corolla narrowly funnelshaped, 4 lobed. Stamens 8; filaments pale purple-pink. Legumes in clusters, slightly curved, oblong. Seeds yellow-brown.

Flowers & Fruits: March to October.

Specimen Cited: Forest, Rajib & AP Das 0271, dated 10. 02. 2007.

Local Distribution: Road side forest.

General Distribution: Native to tropical America; introduced throughout the tropics.

Mimosa pudica Linnaeus, Sp. Pl. 1: 518. 1753; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 639. 1987; Prain, Beng. Pl. 1: 456. 1963.

Vernacular name: Lajjabati.

Diffuse, branched, herbs with reflexed bristles and scattered, curved prickles. Stipules lanceolate; pinnae and leaflets sensitive; pinnae usually 2 pairs, digitate; leaflets 10 – 20 pairs, linear-lanceolate, margin ciliate, acute. Heads solitary or 2, axillary, globose; peduncle long; bracts linear. Flowers numerous, pink. Calyx minute. Corolla campanulate. Stamens 4, exserted. Ovary shortly stipitate; ovules 3 to 4; style filiform. Legumes arranged in a star, slightly recurved, flat, oblong. Seeds light brown, ovoid.

Flowers & Fruits: March to November.

Specimen Cited: Rasik Bil, *Rajib & AP Das 0110*, dated 07. 02. 2007.

Local Distribution: Throughout forest.

General Distribution: Throughout India; native to tropical America; naturalized in tropical regions of the world.

ERYTHRINA Linnaeus, Sp. Pl. 2: 706. 1753.

Key to the species:

- 1a. Flowers paired; wings and keels subequal *E. variegata*
- 1b. Flowers clusters of 3 to 4; keels much longer than wings *E. stricta*

Erythrina variegata Linnaeus, Herb. Amboin. 10. 1754; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 684. 1987.

Vernacular name: Mandar.

Trees, up to 20 m. Branches with straight and minute prickles. Leaves pinnately 3 foliolate, usually clustered at branch tip; stipules lanceolate, deciduous; leaflets broadly ovate to rhomboid-ovate, 15 – 28 x 15 – 26 cm, membranous, both surfaces glabrous, basal veins 3, lateral veins 5 pairs, base broadly cuneate, entire, acuminate to obtuse; base of leaflet with a pair of glands similar to stipules. Raceme terminal; peduncle robust; flowers paired. Calyx spathe-like. Corolla red; standard elliptic, obtuse, shortly clawed; wings and keels subequal; keel petals separate. Ovary micro-villous; style glabrous. Legume black.

Flowers & Fruits: March to August.

Specimen Cited: Rasik Bil village, *Rajib & AP Das 0407*, dated 22.07.2007.

Local Distribution: Cultivated in villages.

General Distribution: Throughout India; Bhutan, China, Bangladesh, Sri Lanka, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam; Australia, Pacific islands; introduced to Africa and Central and South America.

Erythrina stricta Roxburgh, Fl. Ind., ed. 1832, 3: 251. 1832; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 683. 1987; Prain, Beng. Pl. 1: 398. 1963. [PLATE: 9, Figure-96]

Vernacular name: Mandar.

Small trees, up to 12 m. Branches with short whitish prickles. Leaves pinnately 3-foliolate; stipules deciduous; terminal leaflet broadly triangular, almost rhomboid, 9 – 20 x 8 – 25 cm, both surfaces glabrous, lateral veins 5– 8 pairs, base nearly cordate to broadly cuneate, entire, acute to caudate with mucro. Raceme with clusters of 3 to 4 flowers. Calyx spathe-like, undivided or apex slightly 2-lobed. Corolla red; standard elliptic-lanceolate to ovate-triangular; wings subobovate, shorter than

calyx; keels much longer than wings. Ovary hairy; style narrow. Legume glabrous. Seeds 1 – 4, dark brown.

Flowers & Fruits: March to September.

Specimen Cited: Rasik Bil village, *Rajib & AP Das 0491*, dated 23.07.2007.

Local Distribution: Cultivated in villages.

General Distribution: Tropical India; Bhutan, Nepal, Thailand, Cambodia, Laos, Myanmar, Vietnam.

MUCUNA Adanson, Fam. Pl. 2: 325, 579. 1763, *nom. cons.*

Mucuna pruriens (Linnaeus) de Candolle, Prodr. 2: 405. 1825; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 671. 1987; Prain, Beng. Pl. 1: 400. 1963.

Semiwoody twining vines. Leaves up to 46 cm; stipels robust; leaflets papery, lateral veins 5 – 8 on each side, running into margin; terminal leaflet elliptic to ovate-rhombic, 8 – 16 x 7 – 10 cm, base broadly cuneate to rounded, acute to shortly acuminate; lateral leaflets 7 – 19 cm. Inflorescence axillary, long and pendulous; bracts and bracteoles linear-lanceolate. Calyx tube lobed; lateral 2 lobes broadly triangular. Corolla deep purple; standard 2/3 of keel length; wings shorter than keel; keel 3 – 4 cm. Legume linear-oblong. Seeds 3 – 6.

Flowers & Fruits: September to April.

Specimen Cited: Forest, *Rajib & AP Das 0714*, dated 14. 02. 2008.

Local Distribution: Throughout forest.

General Distribution: Widely distributed in the tropics.

PUERARIA Candolle, Ann. Sci. Nat. (Paris) 4: 97. 1825.

Pueraria phaseoloides (Roxburgh) Benth, J. Linn. Soc., Bot. 9: 125. 1865; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 693. 1987; Prain, Beng. Pl. 1: 396. 1963. *Dolichos phaseoloides* Roxburgh, Fl. Ind., ed. 1832, 3: 316. 1832.

Herbaceous vines. Stipules basifixed, ovate-lanceolate; stipels linear; leaflets broadly ovate to ovate-rhomboid, terminal one broader, 6 – 10 x 5 – 9 cm, lateral ones smaller, oblique, entire or 3-lobed. Racemes solitary. Bracts and bracteoles linear-lanceolate. Flowers with short pedicels, clustered at slightly distant nodes. Calyx pilose; lower tooth as long as tube, others deltoid, shorter than tube. Corolla bluish; standard suborbicular; wings obovate-oblong, slightly longer than keel. Ovary linear. Legumes subcylindric. Seeds 15–20, oblong-elliptic.

Flowers & Fruits: August to November.

Specimen Cited: Salmari, *Rajib & AP Das 0583*, dated 25.07.2007

Local Distribution: Villages.

General Distribution: India; Bhutan, Nepal, Cambodia, Laos, Malaysia, Myanmar, Thailand, Vietnam; widely cultivated elsewhere in the tropics.

AESCHYNOMENE Linnaeus, Sp. Pl. 2: 713. 1753.

Aeschynomene indica Linnaeus, Sp. Pl. 713. 1753; Baker in Hooker *f.*, Fl. Brit. Ind. 2: 151. 1876; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 710. 1987; Prain, Beng. Pl. 1: 418. 1903; Majumdar, Bull. Bot. Soc. Bengal 20 (2): 64. 1966.

Vernacular name: Shola.

Shrub like, annual herbs; stem nodules present. Leaflets numerous small, sessile, alternate, linear, obtuse, the upper one smallest; stipules linear lanceolate, acuminate, with acute auricled base. Flowers yellow, in axillary racemes; calyx glabrous. Pods 6-10 jointed, dotted with black.

Flowers & Fruits: September to December.

Specimen Cited: Barajan Beel, *Rajib & AP Das 0121*, dated 07. 02. 2007.

Local Distribution: Throughout the wetlands.

General Distribution: India: Bengal, Assam and South India; Bangladesh, Myanmar, Malaya and Tropical Africa.

SAMANEA (Bentham) Merrill, J. Wash. Acad. Sci. 6: 46. 1916.

Samanea saman (Jacquin) Merrill, J. Wash. Acad. Sci. 6: 47. 1916; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 647. 1987. *Mimosa saman* Jacquin, Fragm. Bot. 15. 1800;

Trees, up to 25 m. Pinnae 3–5 pairs, to 15 cm; glands at junctions of pinnae and leaflets; leaflets 3–8 pairs per pinna, asymmetrically oblong, Fl. Bhut. 2–4 x 1–2 cm, base half rounded, rounded to obtuse, often emarginate and mucronulate. Heads 1–5, axillary. Marginal flowers pedicellate; calyx funnel-shaped; corolla red or yellowish red; stamens white at base. Central flowers sessile. Legume black, oblong, compressed.

Flowers & Fruits: August to December.

Specimen Cited: Bochamari, *Rajib & AP Das 0215*, dated 09. 02. 2007.

Local Distribution: Villages.

General Distribution: Throughout India; native to N part of tropical South America; planted throughout the tropics.

Polygalaceae A. L. de Jussieu, Ann. Mus. Hist. Nat. Paris 14: 389. 1809 ('Poly-galeae').

POLYGALA Linnaeus, Sp. Pl. 2: 701. 1753.

Polygala glomerata Loureiro, Fl. Cochinch. 426. 1790; Kit Tan in Grierson *et* Long, Fl. Bhut. 2 (1): 50. 1991. *Polygala chinensis* Linnaeus, Sp. Pl. 2: 704. 1753; Clarke in Hooker *f.*, Fl. Brit. Ind. 1: 204. 1872.

Small, erect annual herbs, upto to 30 cm tall, densely pubescent. Lamina sessile, linear–lanceolate, glabrous; racemes slightly extra-axillary, 2-3 flowered; flowers nodding, outer sepals acuminate, ciliate; wings acuminate, awned.

Flowers & Fruits: July to October.

Specimen Cited: Riverine grassland near park, *Rajib & AP Das 0323*, dated 21.07.2007.

Local Distribution: Riverine Grassland.

General Distribution: Pantropical.

Order: Rosales Bercht. & J.Presl (1820)

Cannabaceae Martinov, Tekhno-Bot. Slovar 99. 1820; *nom. cons.*

CANNABIS Linnaeus, Sp. Pl. 2: 1027. 1753.

Cannabis sativa Linnaeus, Sp. Pl. ed. 1. 1027. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 487. 1888; H. Ohashi in Hara, Fl. E. Himal. 1: 53. 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 134. 1983; Prain, Beng. Pl. 2: 960.1903. *Cannabis erratica* Sievers, Neueste Nord. Beytr. Phys. Geogr. Erd- V lkerbeschreib. 7: 174. 1793.

Vernacular name: Bhang.

Annual herbs, up to 1.5 m. Branchlets densely white pubescent. Stipules linear. Leaves alternate; petiole 2 cm; lamina abaxially whitish green, strigose; segments usually lanceolate to linear, 3–6 x 1–2 cm with longest in middle, margin coarsely serrate, apex acuminate. Male inflorescences 25 cm. Male flowers yellowish green, nodal; pedicel 2 mm, thin; sepals ovate to lanceolate, membranous; petals absent; anthers oblong. Female inflorescences crowded in apical leaf axils among leaflike bracts and bracteoles. Female flowers green, sessile; calyx sparsely pubescent; ovary globose, enclosed by appressed calyx, surrounded closely by bract and bracteoles. Persistent bracts yellow. Achene flattened ovoid; pericarp crustaceous, finely reticulate.

Flowers & Fruits: May to July.

Specimen Cited: Road side forest, *Rajib & AP Das 0374*, dated 21. 07. 2007.

Local Distribution: Road side along the Beel margin.

General Distribution: Native to Central Asia and naturalized in temperate and tropical world.

Moraceae Gaudichaud, Gen. Pl. 13. 1835 ; *nom. cons.*

Key to the Genera:

- 1a. Inflorescences a fig with many minute flowers completely enclosed within a hollow receptacle opening by an apical pore closed by scale-like bracts ***Ficus***
- 1b. Inflorescences a capitulum, spike, or raceme, rarely a cyme, or with flowers inserted on a discoid receptacle 2
- 2a. Stamens straight in flower buds, rarely inflexed ***Artocarpus***
- 2b. Stamens inflexed in flower buds 3
- 3a. Plant sometimes spiny, particularly on juvenile growth ***Streblus***
- 3b. Plant unarmed ***Morus***

ARTOCARPUS J. R. Forster *et* G. Forster, Char. Gen. Pl. 51. 1775, *nom. cons.*

- 1a. Lamina obovate; fruits subglobose, 1.5 – 3 cm in diameter, irregularly lobed, smooth *A. lakoocha*
- 1b. Lamina ovate to elliptic; fruits large, globose to oblong, Fl. Bhut. 1 5 – 30 cm diameter, unlobed *A. heterophyllus*

Artocarpus heterophyllus Lamarck, Encyl. Meth. B. 3: 209. 1789; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 208. 1982; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 100. 1983. *Artocarpus maximus* Blanco, Fl. Filip. 669. 1837. *Artocarpus philippensis* Lamarck, Encycl. 3: 210. 1789.

Vernacular name: Kanthal.

Trees; up to 35 m. Leaves ovate to elliptic, 8 – 14 x 4 – 9 cm, apiculate, base cuneate, glabrous; petiole 1.5 – 2 cm, stipules broadly ovate, 2 – 6 cm; leaves of young plants with 1 – 2 pairs of lateral lobes. Male heads club-shaped, 2 – 6 x 1 – 2 cm, peduncles 2 – 4 cm. Syncarps oblong, Fl. Bhut. 1 5 – 40 x 15 – 30 cm, surface rough with sharp perianth points formed from the tips of elongated sterile female flowers which surround the achenes, latter enclosed by sweet fleshy perianths. Compound fruits large, globose to oblong.

Flowers & Fruits: February to July.

Specimen Cited: Village sector, *Rajib & AP Das 0732*, dated 14. 02. 2008.

Local Distribution: Village area.

General Distribution: India: cultivated in all northern States; Bhutan, Bangladesh, China.

Artocarpus lakoocha Roxburgh, Fl. Ind. 3: 524. 1832; Prain, Beng. Pl. 2: 971. 1903. *Artocarpus lacucha* Buchanan–Hamilton, Mem. Wern. Soc. 5: 333, 1826; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 209. 1979; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 100. 1983. *Artocarpus lacucha* Buchanan–Hamilton *ex* D. Don, Prodr. Fl. Nepal. 333. 1825.

Vernacular name: Daoa.

Tree, up to 40 m, shoots brownish hispid. Leaves obovate, 30–35 x 20–22 cm, glabrous and rather glossy above; petioles 1.5–4 cm; stipules lateral. Leaves of young plants are shallowly pinnatifid. Fruits subglobose, 3–5 cm, brownish yellow with irregular lobed and smooth.

Flowers & Fruits: February to June.

Specimen Cited: Village sector, *Rajib & AP Das 0719*, dated 14. 02. 2008.

Local Distribution: Village area.

General Distribution: Pantropical.

FICUS Linnaeus, Sp. Pl. 2: 1059. 1753.

Key to the species:

- 1a. Male and female flowers on same plants2
- 1b. Male and fertile female flowers on different plants5
- 2a. Plants with long aerial roots which can form new trunks or
strangle host plant 3
- 2b. Trees with well-defined main trunk *F. hispida*
- 3a. Leaf blade with wax gland abaxially at base of midvein *F. elastica*
- 3b. Leaf blade with out wax gland abaxially at base of midvein 4
- 4a. Lamina apex obtuse *F. benghalensis*
- 4b. Lamina apex caudate with cauda *F. religiosa*
- 5a. Root-climbers, usually with 2 types of leaves on creeping
vegetative stems and on fertile stems *F. hederacea*
- 5b. Trees or shrubs without aerial roots and all leaves similar 6
- 6a. Stipules red; lamina base very asymmetric; figs on
pendulous, leafless branchlets *F. semicordata*
- 6b. Stipules yellow and white; lamina base not as above; figs
axillary on normal leafy shoots *F. semicordata*

Ficus benghalensis Linnaeus, Sp. Pl. 1059. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 499. 1888; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 209. 1982; Grierson *et Long* in Grierson *et Long*, Fl. Bhut. 1(1): 97. 1983; Prain, Beng. Pl. 2: 979. 1903. *Ficus banyana* Oken, Allg. Naturgesch. 3(3): 1561. 1841. *Urostigma benghalense* (Linnaeus) Gasparrini, Nov. Gen. Fic. 7. 1844.

Vernacular name: Bot.

Wide branching tree, up to 30m, branches forming additional proproots. Leaves ovate, 8.5–20 x 7–15 cm, obtuse, base rounded, finely puberulous beneath at first, glabrous and shiny above, lateral veins 5 pairs, 5 veined at base, petioles 2–5 cm; stipules ovate–lanceolate, 2 cm. Figs globose, 2 cm, solitary or in axillary pairs, sessile, pubescent, basal bracts 3, rounded.

Flowers & Fruits: October to May.

Specimen Cited: Village sector, *Rajib & AP Das 0596*, dated 25. 07. 2007.

Local Distribution: Bochamari Village.

General Distribution: Pantropical in Asia.

Ficus semicordata Buchanan–Hamilton *ex* Smith in Rees, Cycl. 14: *Ficus* no. 71. 1810; H. Ohashi in Hara, Fl. E. Himal. 1: 54. 1966; Grierson *et Long* in Grierson *et Long*, Fl. Bhut. 1(1): 90. 1983. *Covellia cunia* (Buchanan–Hamilton *ex* Roxburgh) Miquel, London Jour. Bot. 7: 459. 1848.

Ficus cunia Buchanan-Hamilton ex Roxburgh. Fl. Ind. 3: 561. 1832; Prain, Beng. Pl. 2: 982.1903.
Ficus semicordata var. *conglomerata* (Roxburgh) Corner, Gard. Bull. Singapore 17: 449. 1960.

Trees, up to 9 m, crown flat. Bark gray, smooth. Stipules red, lanceolate. Leaves distichous; petiole thick, densely covered with stiff hairs; leaf blade oblong-lanceolate, strongly asymmetric, 16–25 x 9–11 cm, papery, abaxially densely covered with stiff short hairs and small yellowish brown convex spots, margin with small teeth or entire, apex acuminate. Figs on pendulous, eventually prostrate, leafless branchlets, sometimes underground at maturity, solitary, reddish purple when mature, globose. Male flowers: near apical pore. Female flowers calyx lobes 4 to 5; ovary ovoid-ellipsoid; style lateral, long; stigma cylindrical, shallowly 2-lobed. Achenes broadly ovoid.

Flowers & Fruits: May to October.

Specimen Cited: Forest, Rajib & AP Das 0641, dated 12. 02. 2008.

Local Distribution: Forest Sectors.

General Distribution: India: West Bengal, Sikkim, Assam, Arunachal Pradesh, Bihar, Uttar Pradesh, Andhra Pradesh; Nepal, Bhutan, Malaysia, Myanmar, Thailand, Vietnam, China.

Ficus elastica Roxburgh ex Horneman, Hort. Bot. Hafn. Suppl.: 7. 1819; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 94. 1983. *Visiania elastica* (Roxburgh ex Horneman) Gasparrini, Nov. Gen. Fic. 9. 1844. *Ficus elastica* var. *benghalensis* Blume, Bijdr. 446. 1825.

Vernacular name: Rabar.

Tree, up to 20m. Aerial roots few; epiphytic when young. Bark pale gray, smooth. Branchlets strong. Stipules dark red, membranous; scar conspicuous. Petiole robust. Leaves ovate elliptic, 15–35 x 8–15 cm, acute, base rounded, glabrous, glossy, veins numerous, petioles 3–6cm; stipules conspicuous, 14–20 cm. Figs oblong–ellipsoid, 9–12 x 5–7 mm, sessile, basal bracts ellipsoid, deciduous.

Flowers & Fruits: June to November.

Specimen Cited: Park, Rajib & AP Das 0597, dated 25. 07. 2007.

Local Distribution: Park area.

General Distribution: Introduced and widely cultivated.

Ficus heterophylla Linnaeus *f.*, Suppl. Pl. 442.1782; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 518. 1888; Haines, Bot. Bihar & Orissa pt. V: 835. 1924; Panda *et* Das, Fl. Sambalpur, 346. 2004. Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 92. 1983; Prain, Beng. Pl. 2: 981.1903. *Ficus denticulata* Vahl, Symb. Bot. 1: 83. 1790. *Ficus elongata* Miquel, London Jour. Bot. 7: 231. 1848. *Ficus cannabina* Loureiro, Fl. Cochinch. 668. 1790. [PLATE: 5, Figure-43]

Creeping shrub, procumbent; young stem pubescent. Branchlets becoming reddish brown, slender, shortly pubescent. Stipules caducous, short, membranous. Leaves distichous; leaves broadly ovate, 3–9 x 2–6.5 cm, acute, base obliquely cordate, 1–4 lobed, denticulate, pubescent beneath; petioles 0.5–3.5cm. Figs solitary, axillary, obovoid 2.6–1.8 cm, pubescent, peduncles 1–1.5cm.

Flowers & Fruits: Throughout the year.

Specimen Cited: Park, Rajib & AP Das 0731, dated 14. 02. 2008.

Local Distribution: Park at Beel Margin.

General Distribution: India, Sri Lanka, China and Malay Island.

Ficus hispida Linnaeus *f.*, Suppl. 442.1782; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 522.1888; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 210. 1982; H. Ohashi in Hara, Fl. E. Himal. 1: 54. 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 89. 1983; Prain, Beng. Pl. 2: 981.1903. *Covellia hispida* (Linnaeus *f.*) Miquel, London Jour. Bot. 7: 462. 1848. *Covellia assamica* Miquel, London Jour. Bot. 7: 464. 1848.

Vernacular name: Dumur.

Tree up to 10m; coarsely hairy; dioecious. Stipules usually 4 and decussate on leafless fruiting branchlets, ovate-lanceolate. Leaves opposite, coriaceous, elliptic, 9–32 x 5–17cm, acute, base truncate, hirsute beneath, margins serrulate, veins 7 pairs, petioles 2–8cm. Figs many, short racemes in axillary position, globose, subsessile, 1–2cm, hirsute; apical scales rounded, prominent.

Flowers & Fruits: Throughout the year.

Specimen Cited: Forest, Rajib & AP Das 0593, dated 25.07.2007.

Local Distribution: All over the Forest area and village side.

General Distribution: Pantropical in Asia.

Ficus religiosa Linnaeus, Sp. Pl. 1059. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 513. 1888; H. Ohashi in Hara, Fl. E. Himal. 1: 54. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 211. 1982; Grierson *et Long* in Grierson *et Long*, Fl. Bhut. 1(1): 94. 1983; Prain, Beng. Pl. 2: 980.1903. *Urostigma religiosum* (Linnaeus) Gasparri, Ficus 82, pl. 7 82. 1844. *Ficus peepul* Griffith, Not. Pl. Asiat. 4: 393. 1854. *Ficus religiosa* var. *cordata* Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 287. 1867.

Vernacular name: Pakur.

Trees, up to 18 m tall, epiphytic when young, crown wide when mature. Branchlets grayish brown, sparsely pubescent when young. Stipules ovate, small, apex acute. Petiole slender, sometimes longer than leaf blade, articulate; leaf blade triangular-ovate, 8–16 x 8–10 cm, leathery, abaxially green, adaxially dark green and shiny, caudate with cauda, margin entire, base broadly cuneate to cordate. Figs axillary on leafy branchlets, paired or solitary, red when mature, globose to depressed globose. Male, gall, and female flowers within same fig.

Flowers & Fruits: February to July.

Specimen Cited: Village, Rajib & AP Das 0333, dated 21. 07. 2007; 0141, dated 07. 02. 2007.

Local Distribution: Village area.

General Distribution: Throughout India; native to N. India, Nepal, Pakistan; cultivated throughout the tropics.

Ficus hederacea Roxburgh, Fl. Ind., ed. 1832, 3: 538. 1832; H. Ohashi in Hara, Fl. E. Himal. 1: 53. 1966; Grierson *et Long* in Grierson *et Long*, Fl. Bhut. 1(1): 98. 1983; Prain, Beng. Pl. 2: 982.1903. *Ficus cantoniensis* Bodinier *ex H. L. v.*, Mem. Real Acad. Ci. Barcelona 6: 148. 1907. *Ficus anabatos* Voigt, Hort. Suburb. Calcutt. 286. 1845. *Ficus longipes* Griffith, Not. Pl. Asiat. 4: 397. 1854.

Scandent shrubs. Stems and branchlets with aerial roots at nodes; branchlets pubescent when young. Stipules caducous, ovate. Leaves distichous; petiole thick; leaf blade elliptic to ovate-elliptic, 6–10 x 3–5 cm, thickly leathery, with hairs when young, base broadly cuneate to obtuse, margin entire, apex obtuse to occasionally rounded. Figs axillary on leafy or on leafless branchlets, solitary or paired, yellowish green to red when mature, globose, apical pore navel-like, slightly convex.

Flowers & Fruits: April to August.

Specimen Cited: Park, Rajib & AP Das 0301, dated 10. 02. 2007.

Local Distribution: Foresters Quarters.

General Distribution: India, Bhutan, Nepal, Laos, Myanmar, Thailand.

MORUS Linnaeus, Sp. Pl. 2: 986. 1753.

Morus indica Linnaeus, Sp. Pl. 986. 1753. *Morus longistylus* Diels, Notes Roy. Bot. Gard. Edinburgh 5(25): 293. 1912. *Morus australis* Poirat in Lamarck, Ency. 4: 380. 1796; H. Ohashi in Hara, Fl. E. Himal. 1: 55. 1966; Grierson *et Long* in Grierson *et Long*, Fl. Bhut. 1(1): 101. 1983.

M. indica auct. non Linnaeus, Hooker *f.* in Hooker *f.*, Fl. Brit. India 5: 492. 1888; Prain, Beng. Pl. 2: 968. 1903.

Vernacular name: Tunt.

Small trees, up to 10 m, unarmed. Leaves ovate, 3.5–10 x 3–6 cm, caudate–acuminate, base cordate, margin serrate, some leaves deeply 3–lobed minutely strigose above and pubescent beneath, petioles 2 cm, stipules 1 cm. Flowers appearing with young leaves. Male spikes 2 cm, peduncles 1 cm, perianth segments 2 mm, stamens 4. Female spikes 7–10 mm, peduncles 3 mm, perianth segments ovate, style 4 mm, bifid. Fruiting spikes 2 x 1 cm, succulent perianth red at first, becoming blackish–purple.

Flowers & Fruits: February to May.

Specimen Cited: Park, Rajib & AP Das 0128, dated 07. 02. 2007.

Local Distribution: Park and Village areas.

General Distribution: Cultivated throughout India; widely cultivated throughout the World.

STREBLUS Loureiro, Fl. Cochinch. 2: 754. 1790.

Streblus asper Loureiro, Fl. Cochinch. 1: 615. 1790; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 489. 1888; H. Ohashi in Hara, Fl. E. Himal. 1: 55. 1966; 1967; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 212. 1982; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 102. 1983; Prain, Beng. Pl. 2: 969. 1903.

Vernacular name: Sheora.

Small tree, up to 12 m, young shoots pubescent, sometimes spiny. Leaves elliptic obovate, 3–7 x 2–3.5 cm, acute, base cuneate, margin serrate, petioles 2 mm. Male clusters 5 mm, perianth pale yellow, tepal ovate, 2mm, pubescent. Female flowers ovoid, 2mm, style filiform, terminal. Achenes 3 mm.

Flowers & Fruits: March to May.

Specimen Cited: Conservation sector, Rajib & AP Das 0071, dated 06. 02. 2007.

Local Distribution: Near Deer conservation area.

General Distribution: Throughout India; Bhutan, Nepal, Bangladesh, Cambodia, Indonesia, Laos, Malaysia, Philippines, Sri Lanka, Thailand, Vietnam.

Rhamnaceae A.L. de Jussieu, Gen. Pl. 376. 1789 ('Rhamni'); *nom. cons.*

Key to the genera:

- | | |
|--|-------------------------|
| 1a. Fruit with longitudinal wings | <i>Gouania</i> |
| 1b. Fruit without longitudinal wings | 2 |
| 2a. Leaves distinctly triplinerved, stipules often spinose | <i>Zizyphus</i> |
| 2b. Leaves pinnately veined, stipules never spinose | <i>Berchemia</i> |

ZIZIPHUS Miller, Gard. Dict. Abr., ed. 4. 1754.

Key to the species:

- | | |
|------------------------------------|----------------------|
| 1a. Scandent or erect shrubs | <i>Z. oenopolia</i> |
| 1b. Trees | <i>Z. mauritiana</i> |

Zizyphus mauritiana Lamarck, Encycl. 3: 319. 1789; Fl. Ind. 5: 233. 2000; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 138. 1991. *Zizyphus jujuba* (Linnaeus) Gaertner, Fruct. 1: 203. 1788 (*non* Miller, 1768); Hooker *f.*, Fl. Brit. Ind. 1: 632. 1875. *Rhamnus jujuba* Linnaeus, Sp. Pl. 194. 1753.

Vernacular Name: Kul.

Evergreen trees, up to 15 m. Stipular spines 2, one oblique and hooklike recurved; lamina ovate to oblong-elliptic, 3 – 6 1.5 – 5 cm, papery to thickly papery, 3-veined from base, rounded or acute, serrulate, base subrounded, slightly oblique. Flowers green-yellow, axillary dichotomous cymes. Sepals ovate-triangular. Petals oblong-spatulate. Stamens subequalling petals. Disk thick, fleshy, 10-lobed. Ovary globose, glabrous. Drupe turning black at maturity; mesocarp corky; endocarp thick.

Flowers & Fruits: August to March.

Specimen Cited: Bochamari Village, *Rajib & AP Das 0705*, dated 14. 02. 2008.

Local Distribution: Cultivated in village areas.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Afghanistan, Indonesia, Malaysia, Myanmar, Thailand, Vietnam; Africa, Australia.

Ziziphus oenopolia (Linnaeus) Miller, Gard. Dict. (ed. 8) no. 3. 1768[“oenoplia”]. *Rhamnus oenopolia* Linnaeus, Sp. Pl. 1: 194. 1753.

Vernacular name: Bonkul.

Erect or scandent shrubs, spinose. Stipular spines 1, sometimes 2, one recurved and one erect; lamina ovate-oblong to ovate-lanceolate, 3 – 9 x 2 – 4 cm, papery, 3 veined at base, acute to acuminate, inconspicuously crenate, base ± asymmetric, subrounded. Flowers greenish yellow, few to 10 in axillary cymes. Sepals ovate-triangular, acute. Petals spatulate, clawed, enfolding stamens. Stamens slightly shorter than petals. Disk pentagonous, thick, fleshy, often 5 lobed. Ovary globose; style 2 branched. Drupe black, globose; stone 1 to 2 seeded. Seeds globose.

Flowers & Fruits: August to February.

Specimen Cited: Batikata Beel, *Rajib & AP Das 0687*, dated 14. 02. 2008.

Local Distribution: Riverine Forest.

General Distribution: India, Bhutan, China, Sri Lanka, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Australia.

BERCHEMIA Necker ex Candolle, Prodr. 2: 22. 1825, *nom. cons.*

Berchemia floribunda (Wallich) Brongniart, Ann. Sci. Nat. (Paris) 10: 357. 1827 & M m. Fam. Rhamn es, 50. 1826; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 142. 1991. *Berchemia floribunda* var. *oblongifolia* Y.L. Chen & P.K.Chou, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 5: 19. 1979. *Berchemia laxa* Wallich, Numer. List 4257. 1831.

Scandent Shrubs. Stipules narrowly lanceolate, persistent; lamina abaxially dark brown when dry, adaxially green, ovate or ovate-elliptic to elliptic, 4 – 10 x 2 – 5 cm, papery, acute to acuminate, entire, base rounded to cordate. Inflorescences in terminal cymose panicles or axillary cymose racemes. Flowers numerous, glabrous, few in fascicles. Calyx tube shallowly patelliform; lobes narrowly triangular. Petals spatulate. Disk thick, fleshy. Ovary nearly completely immersed in disk; style cylindrical, undivided; stigma 2 to 3 lobed. Drupe red, cylindrical-elliptic to ovoid-oblong; stone 2-loculed.

Flowers & Fruits: May to October.

Specimen Cited: Atiamochar, *Rajib & AP Das 0476*, dated 23.07.2007.

Local Distribution: Forests.

General Distribution: India, Bhutan, Japan, Nepal, Thailand, Vietnam.

GOUANIA Jacquin, Select. Stirp. Amer. Hist. 263. 1763.

Gouania tiliifolia de Lamarck, Encycl. 3: 4. 1789. *Gouania scandens* (Gaertner) R.B. Drum, in Fl. Zambes. 2: 435. 1966. *Gouania sieberiana* Schldtle *ex* C. Presl, Abh. K nigl. B hm. Ges.

Wiss. V, 3: 469. 1845. *Gouania leptostachya* Candolle, Prodr. 2: 40. 1825; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 146. 1991.

Climbing shrubs. Leaves alternate; stipules lanceolate and caducous; lamina abaxially pale green, adaxially dark green, ovate to ovate-oblong, 5 – 12 x 2.5 – 5 cm, papery, acuminate, crenate-serrate, base cordate. Flowers polygamous, 5 merous, solitary to few in fascicles, axillary cymose racemes, and terminal cymose panicles to 30 cm. Sepals ovate-triangular. Petals white, obovate. Disk distinctly pentagonous. Ovary completely immersed in but not fused with disk; styles short, 3 fid. Capsule 3 winged. Seeds brownish, obovoid.

Flowers & Fruits: August to December.

Specimen Cited: Atiamochar, Rajib & AP Das 0420, dated 22.07.2007.

Local Distribution: Forests.

General Distribution: India, Bhutan, Nepal, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam.

Rosaceae A.L. de Jussieu, Gen. Pl. 334. 1789; *nom. cons.*

Key to the genera:

- 1a. Erect shrub, with abundant prickles *Rosa*
 1b. Small diffuse herb *Duchesnea*

DUCHESNEA Smith, Trans. Linn. Soc. London 10: 372. 1811.

Duchesnea indica (W. Jackson) Focke, Nat. Pflanzenfam. 24[III,3]: 33. 1888; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1 (3): 579. 1987. *Fragaria indica* W. Jackson, The botanist's repository; 1797 t.479 1807; *sensu* Hooker *f.* in Hooker *f.*, Fl. Brit. India 2: 343. 1878. *Potentilla indica* var. *major* Makino, Bot. Mag. (Tokyo) 28: 184. 1914. [PLATE: 6, Figure-48]

Herbs perennial. Stipules narrowly ovate; leaflets petiolulate, obovate to rhombic-oblong, margin obtusely serrate, apex rounded. Flowers 1 – 2.5 cm in diam. Carpels numerous, free. Aggregate fruit ripening red. Achenes shining when fresh, ovoid.

Flowers & Fruits: June to October.

Specimen Cited: Park side grass land, Rajib & AP Das 0137, dated 07. 02. 2007.

Local Distribution: Throughout forest ground cover.

General Distribution: Tropical and sub-tropical parts of the world.

ROSA Linnaeus, Sp. Pl. 1: 491. 1753.

Rosa chinensis Jacquin, Observ. Bot. 3: 7. 1768.

Vernacular name: Golap.

Shrubs erect, up to 1 m. Branchlets purple-brown; prickles abundant, curved, flat. Leaves including petiole 5 cm; stipules adnate to petiole, free parts auriculate, acuminate, entire; rachis and petiole sparsely prickly; lamina broadly ovate or ovate-oblong, 3 – 8 x 2 – 5 cm, long acuminate or acuminate, finely serrate, base subrounded or broadly cuneate. Flowers 4 to 5, rarely solitary; bracts linear, acute. Hypanthium ovoid-globose to pyriform. Sepals 5, deciduous, ovate, entire to lobed. Petals 5, double, red, obovate, emarginated, base cuneate. Styles free, exserted.

Flowers & Fruits: April to October.

Specimen Cited: Park, Rajib & AP Das 1223, dated 21. 07. 2012.

Local Distribution: Cultivated in Parks and Garden.

General Distribution: Widely cultivated elsewhere.

Ulmaceae Mirbel, El m. Physiol. V g. Bot. 2: 905. 1815; *nom. cons.*

TREMA Loureiro, Fl. Cochinch. 2: 539, 562. 1790.

Trema orientalis (Linnaeus) Blume, Mus. Bot. Lugd. Bot. 2: 62. 1856; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 484. 1888; H. Hara in Hara, Fl. E. Himal. 1: 52. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 207. 1982; Grierson *et Long* in Grierson *et Long*, Fl. Bhut. 1(1): 86. 1983; Prain, Beng. Pl. 2: 960. 1903. *Celtis orientalis* Linnaeus, Sp. Pl. 2: 1044. 1753. *Trema africana* Blume, Mus. Bot. 58. 1856.

Vernacular name: Khorigachh.

Small trees or shrubs, up to 20 m. Stipules linear-lanceolate. Petiole pubescent; lamina 11 – 17 x 5 – 10 cm, leathery and fragile, abaxially grayish white to grayish green when dry, acuminate to acute, denticulate, base cordate and oblique; basally 3 veined. Male inflorescences pubescent. Tepals 5. Ovary rudimentary, compressed. Female flowers pedicellate; tepals 4, triangular-ovate. Drupes globose to ovoid-globose; perianth persistent. Seed broadly ovoid.

Flowers & Fruits: March to October.

Specimen Cited: Village sector, Rajib & AP Das 0417, dated 22. 07. 2007.

Local Distribution: Forests around villages.

General Distribution: India: tropical; Sri Lanka, Tropical Africa, W. and S. China and Australia.

Urticaceae Jussieu, Gen. Pl. 400. 1789 ; *nom. cons.*

Key to the Genera:

- 1a. Plants with stinging hairs; female flowers without staminodes 2
- 1b. Plants without stinging hairs; female flowers with or without staminodes ...3
- 2a. Stipules simple; shrubs; fruit globose *Dendrocnide*
- 2b. Stipules 2-fid at apex; herbs or subshrubs; fruit winged *Laportea*
- 3a. Perianth lobes of female flowers free or connate at base, staminodes present 4
- 3b. Perianth lobes of female flowers usually connate into a tube, staminodes absent 5
- 4a. Leaves opposite, rarely spirally alternate; leaf blade usually symmetric ... *Pilea*
- 4b. Leaves alternate, usually distichous; leaf blade usually asymmetric *Elatostema*
- 5a. Lamina 3-veined from base *Gonostegia*
- 5b. Lamina with at least 2 major lateral veins arising clearly above base *Pouzolzia*

BOEHMERIA Jacquin, Enum. Syst. Pl. 9: 31. 1760.

Key to the species:

- 1a. Leaves alternate; stipules lanceolate; leaf blade ovate to sub-elliptic, margin denticulate *B. glomerulifera*
- 1b. Leaves opposite; stipules subulate-lanceolate; leaf blade obliquely ovate to oblong, margin crenulate *B. hamiltoniana*

Boehmeria glomerulifera Miquel in Zollinger, Syst. Verz. 2: 101, 104. 1854; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 124. 1983. *Boehmeria depauperata* Weddell, Ann. Sci. Nat., Bot. IV, 1: 202. 1854. *Boehmeria travancarica* Beddome, Fl. Sylv. S. India 225. 1872.

Shrubs, up to 70 cm. Leaves alternate; stipules lanceolate; petiole pubescent to glabrous; leaf blade ovate to sub-elliptic, 7 – 20 x 3 – 7 cm, papery, slightly rough, base broadly cuneate, margin denticulate, apex acuminate to caudate-acuminate. Glomerules usually unisexual; male ones on proximal part of flower-bearing branches; female ones on distal part. Male flowers 4-merous, very shortly pedicellate, pubescent; rudimentary ovule ellipsoid. Female flowers broadly obovoid, pubescent, with short neck. Fruiting perianth brown, obovoid, sessile.

Flowers & Fruits: November to April.

Specimen Cited: Rasik Beel, Rajib & AP Das 0094, dated 07. 02. 2007.

Local Distribution: Forest sectors.

General Distribution: India: West Bengal, Assam, Sikkim; Bhutan, Indonesia, Laos, Myanmar, Sri Lanka, Thailand, Vietnam

Boehmeria hamiltoniana Weddell, Ann. Sci. nat. ser. 4, 1: 199. 1854; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 579. 1885; T. Tuyama in Hara, Fl. E. Himal. 1: 56. 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 127. 1983. *Boehmeria platyphylla* var. *hamiltoniana* (Weddell) Weddell, Prodr. 16(1): 213. 1869.

Shrubs, up to 1m; branches glabrous. Leaves opposite; stipules subulate-lanceolate; strigose, glabrous; leaf blade obliquely ovate to oblong, 5 – 15 x 3 – 7 cm, herbaceous, base broadly cuneate, margin crenulate, apex acuminate. Glomerules unisexual, on long inflorescences, usually with a few long basal branches, widely separated; female spikes very slender. Male subsessile; perianth lobes elliptic, connate at base; rudimentary ovule ellipsoid. Fruiting perianth ellipsoid, compressed.

Flowers & Fruits: May to December.

Specimen Cited: Forest, Rajib & AP Das 0198, dated 09. 02. 2007.

Local Distribution: Forested areas.

General Distribution: Tropical parts of India, Nepal, Bhutan, Bangladesh, China.

DENDROCNIDE Miquel, Pl. Jungh. 1: 29. 1851.

Dendrocnide sinuata (Blume) Chew, Gard. Bull. Sing. 121; 206. 1965; H. Hara in Hara, Fl. E. Himal. 3: 19. 1975; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 111. 1983. *Urtica sinuata* Blume, Bijdr. Fl. Ned. Ind. 505. 1825. *Urtica crenulata* Roxburgh, Fl. Ind., ed. 1832 3: 591. 1832. *Laportea sinuata* (Blume) Miquel, Ann. Mus. Bot. Lugduno-Batavum 4: 301. 1869. *Laportea crenulata* Gaudichaud, Voy. Bonite, Bot. 498. 1826. [PLATE: 6, Figure-47]

Vernacular name: Daman.

Large shrubs, up to 3 m; branchlets spreading; bark gray-green; upper stem and branchlets sparsely armed with stinging hairs. Stipules brownish, ovate-lanceolate, subleathery, puberulent abaxially; petiole sparsely pubescent; leaf blade elliptic-oblong to obovate-lanceolate, 10 – 38 x 5 – 16 cm, leathery, sparsely armed with stinging hairs on veins, base cuneate, rounded to deeply cordate, margin entire, apex shortly acuminate. Inflorescences in distal axils of branchlets, long paniculate; armed with stinging hairs. Male flowers subsessile, perianth lobes 4, ovate, pubescent and stinging hairy; stamens 4. Female flowers pedicels fleshy; perianth lobes 4, unequal. Stigma ligulate. Achene asymmetrically.

Flowers & Fruits: September to November.

Specimen Cited: Forest, Rajib & AP Das 0228, dated 09. 02. 2007.

Local Distribution: Behind the Foresters Quarter.

General Distribution: India: West Bengal, Assam, Bihar; Nepal, Bhutan, Myanmar, Sri Lanka, Thailand, Malaysia.

LAPORTEA Gaudichaud-Beaupr , Voy. Uranie, Bot. 498. 1830, *nom. cons.*

Laportea interrupta (Linnaeus) Chew, Gard. Bull. Singapore 21(2): 200–201. 1965; T. Tuyama in Hara, Fl. E. Himal. 1: 60. 1966. *Urtica interrupta* Linnaeus, *Sp. Pl.* 2: 985. 1753. *Fleurya interrupta* (Linnaeus) Wight, Icon. Pl. Ind. Or. 6: 10, t. 1975, 10. 1853; Prain, Beng. Pl. 2: 961.1903. *Schychowskia interrupta* (Linnaeus) Wight, Contri. U.S. Nation. Herb. 9: 371. 1905.

Annual herbs, monoecious. Stems straight, branched, up to 80 cm; upper stems and petioles sparsely armed with short stinging and pubescent hairs. Stipules ovate-oblong; petiole 3–10 cm; leaf blade ovate to cordate, 5–8 × 4–5 cm, herbaceous, 3-veined, lateral basal pair reaching middle margin, lateral veins 5 or 6 each side of midvein, reaching teeth, base abruptly cuneate to shallowly cordate, margin serrate, apex acuminate. Inflorescences axillary, 25 cm, sparsely armed with minutely stinging hairs. Male flowers pedicellate; perianth lobes 3 to 4, obovate; stamens 3 to 4. Female flowers: pedicel not winged; perianth lobes 4, free, unequal, dorsal lobe ovate, concave, enclosing the ovary, broadly ovate. Ovary asymmetrically triangular; stigma reflexed. Achene obliquely triangular, compressed.

Flowers & Fruits: June to September.

Specimen Cited: Forest, Rajib & AP Das 0276, dated 10. 02. 2007.

Local Distribution: Behind the Foresters Quarter.

General Distribution: Tropical parts of India; Bhutan, Indonesia, Japan, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Africa.

GONOSTEGIA Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 19(2): 509. 1846.

Gonostegia hirta (Blume ex Hasskarl) Miquel, Ann. Mus. Bot. Lugduno – Batavi 4: 303. 1869; T. Tuyama in Hara, Fl. E. Himal. 1: 59. 1966. *Pouzolzia hirta* Blume ex Hasskal, Cat. Hort. Borger. 80. 1844; Hooher f. in Hooker f., Fl. Brit. Ind. 5: 586. 1888; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 129. 1983; Prain, Beng. Pl. 2: 965.1903. *Urtica hirta* Blume, Brijdr. 495. 1825. *Gonostegia hirta* Miquel, Ann. Mus. Bot. Lud. Bat. 4: 303. 1869. *Memorialis hirta* (Blume ex Hasskarl) Weddell, Prodr. 16(2): 2356. 1869.

Herbs, often prostrate, up to 90 cm, monoecious or dioecious. Stems 4 angled distally, pubescent. Leaves opposite, stipules broadly ovate; leaf blade narrowly lanceolate to ovate-elliptic, 3–8 × 1–3 cm, herbaceous or thinly papery, 3 veined, subglabrous, base subcordate to rounded, apex acuminate to acute. Glomerules bisexual or unisexual. Male flowers perianth lobes 5, oblanceolate, apex acute. Female flowers sessile; perianth tube ovoid, apex 2 toothed. Achene white to black, ovoid.

Flowers & Fruits: January to September.

Specimen Cited: Park, Rajib & AP Das 0348, dated 21. 07. 2007.

Local Distribution: Beel Margin near Conservatory sector and Park side.

General Distribution: India: Tropical Himalayas; Malaysia, China and Australia.

POUZOLZIA Gaudichaud-Beaupr , Voy. Uranie, Bot. 503. 1830.

Pouzolzia zeylanica (Linnaeus) Bennett *et* R. Brown, Pl. Jav. Rar. 66–67. 1838; T. Tuyama in Hara, Fl. E. Himal. 1: 62. 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 130. 1983. *Parietaria indica* Linnaeus, Mant. Pl. 128. 1767. *Pouzolzia indica* (Linnaeus) G. Bennett, Pl. Jav. Rar. 67. 1838; Prain, Beng. Pl. 2: 965.1903. *Urtica glomerata* Klein ex Willdenow, Sp. Pl. 4(1):

361. 1805. *Parietaria zeylanica* Linnaeus, Sp. Pl. 2: 1052. 1753. *Pouzolzia indica* (Linnaeus) Gaudichaud, Freyc., Voy. Bot. 503. 1826; Hooker f. in Hooker f., Fl. Brit. Ind. 5: 581. 1888. [PLATE: 5, Figure-39]

Perennial herbs, erect, rarely prostrate, simple to few branched at base, up to 15 cm; rootstock often tuberous; strigillose. Leaves often opposite, sometimes alternate on lower stems; stipules triangular; leaf blade ovate to narrowly lanceolate, 2 – 5 1 - 3 cm, smallest ones on short branchlets, herbaceous, abaxial surface sparsely to densely strigillose, adaxial surface glabrous; base cuneate to rounded, rarely subcordate, margin entire, apex subobtuse, acuminate. Glomerules often bisexual, bisexual ones in nodes of proximal leaves, female in distal axils; bracts triangular, ciliate. Male perianth lobes 4, narrowly oblong to oblong-ob lanceolate, puberulent, apex acute. Female perianth tube ellipsoid to rhombic, puberulent. Achenes white, light to dark yellow, ovoid.

Flowers & Fruits: September to April.

Specimen Cited: Conservation sector, *Rajib & AP Das 0159*, dated 08. 02. 2007.

Local Distribution: Beel Margin near Conservatory and Park sectors.

General Distribution: Tropical sub tropical india, Bhutan, Sri lanka, Bangladesh, Myanmar and China.

PILEA Lindley, Collect. Bot. t. 4. 1821, *nom. cons.*

Key to the species:

- 1a. Leaves 3-veined from base of blade *P. cordifolia*
- 1b. Leaves pinnately veined *P. microphylla*

Pilea cordifolia Hooker f., Fl. Brit. Ind. 5: 558. 1888; T. Tuyama in Hara, Fl. E. Himal. 1: 61. 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 114. 1983.

Perennial herbs, monoecious. Stems simple to branched, up to 40 cm, succulent, with galls on mid portion of internodes. Stipules persistent, ovate-oblong; lamina abaxially pale green, obliquely ovate to elliptic, unequal, 7 – 12 x 4 – 6 cm, membranous, 3-veined, lateral veins many, acuminate, acumen serrulate, coarsely crenate-serrate, base cordate to rounded. Inflorescences solitary, male distal, a paniculate cyme; female inflorescence proximal, shorter. Male flowers reddish, pedicellate, stamens 4. Female flowers sessile, perianth lobes connate at base, unequal, abaxial lobe cymbiform, longer; staminodes 3, scale-like, oblong. Achene brownish, obliquely ovoid, compressed, smooth.

Flowers & Fruits: June to September.

Specimen Cited: Park, *Rajib & AP Das 0181*, dated 09. 02. 2007.

Local Distribution: Beel Margin near Conservatory sector and Park side.

General Distribution: Tropical India; Nepal, Bhutan, Bangladesh, China.

Pilea microphylla (Linnaeus) Liebm., Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd., ser. 5, 5(2): 302. 1851. *Parietaria microphylla* Linnaeus, Syst. Nat., ed. 10, 2: 1308. 1759.

Annual, monoecious herbs. Stems ascending, succulent. Stipules persistent, triangular; lamina abaxially pale green, adaxially green, unequal in size, 2 – 4 1 – 3 mm, obtuse, entire, somewhat recurved, base cuneate or attenuate. Inflorescences often androgynous, compactly cymosecapitate; glomerules few flowered. Male flowers pedicellate; rudimentary ovary minute. Female perianth lobes subequal, oblong. Achene ovoid.

Flowers & Fruits: January to October.

Specimen Cited: Park, Rajib & AP Das 0138, dated 07. 02. 2007.

Local Distribution: Through out construction areas.

General Distribution: Tropical India; S.E. Asia; native to tropical South America.

ELATOSTEMA J. R. Forster *et* G. Forster, Char. Gen. Pl. 53. 1775, *nom. cons.*

Elatostema monandrum (Buchanon-Hamilton *ex* D. Don) H. Hara in Hara, Fl. E. Himal. 3: 21. 1975; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 203. 1982; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 122. 1983. *Procris monandra* Buchanan-Hamilton *ex* D. Don, Prodr. 61. 1825. *Elastotema surculosum* Wight, Icon. t. 2091, f. 4. 1853; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 5: 572. 1888. *Elatostema diversifolium* Weddell, Prodr. 16(2): 189. 1868. *Elatostema laetum* Weddell, Ann. Sci. Nat., Bot. IV, 1: 190. 1854.

Herbs very small, erect 5 - 15 cm. Stems either glabrous or puberulous. Leaves sessile, alternate, a small rudimentary leaf placed oppositely; lamina ovate - lanceolate, 2 - 4 x 0.3 - 1.2 cm, lower leaves smaller, sub-entire, margin deeply serrate from middle or often below middle, acute or acuminate, base obliquely cuneate-rounded ; rudimentary leaves to 0.8 cm long, oblong, entire. Flowers heads of male flowers usually sessile, rarely pedunculate, subtended by free broad bracts. Female receptacles sessile and enclosed by connate bracts. Achenes fusiform.

Flowers & Fruits: June to September.

Specimen Cited: Park, Rajib & AP Das 0070, dated 06. 02. 2007.

Local Distribution: Throughout the Conservatory sectors and Park side.

General Distribution: India: West Bengal, Assam, Meghalaya, Arunachal Pradesh, Sikkim, Bihar; Bhutan, Nepal, Sri Lanka, Myanmar, China.

Order: Cucurbitales Jusseu *ex* Berchtold & J. Presl (1820)

Cucurbitaceae A.L. de Jussieu, Gen. Pl. 393. 1789; *nom. cons.*

Key to the genera:

- | | |
|---|----------------------|
| 1a. Marginal segments of corolla fimbriate | <i>Trichosanthes</i> |
| 1b. Marginal segments of corolla not fimbriate | 2 |
| 2a. Stamens 5 | <i>Zanonia</i> |
| 2b. Stamens 3 or 1 | 3 |
| 3a. Stamens united; leaf blade pedatipartite | <i>Cyclanthera</i> |
| 3b. Stamens free; leaves not pedately compound | 4 |
| 4a. Flowers small less than 1cm in diam | 5 |
| 4b. Flowers comparatively large, more than 2 cm in diam | 6 |
| 5a. Male flowers without pistillode | <i>Diplocyclos</i> |
| 5b. Male flowers with pistillode | <i>Mukia</i> |
| 6a. Corolla campanulate | <i>Coccinia</i> |
| 6b. Corolla rotate | 7 |
| 7a. Flowers with leaflike bract on pedicel | <i>Momordica</i> |
| 7b. Flowers without bract on pedicel | 8 |
| 8a. Male flowers in racem to subumbell | <i>Luffa</i> |
| 8b. Flowers solitary | <i>Citrullus</i> |

COCCINIA Wight & Arnott, Prodr. Fl. Ind. Orient. 1: 347. 1834.

Coccinia grandis (Linnaeus) Voigt, Hort. Suburb. Calcutt. 59. 1845; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 177. 1979. *Bryonia grandis* Linnaeus, Mant. Pl. 126. 1767. *Coccinia cordifolia* Cogn., Monogr. Phan. 3: 529. 1881. *Cephalandra grandis* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 46(2): 103. 1877.

Vernacular Name: Telakucha.

Climbing herbs. Stem slender, slightly woody, branched. Tendrils simple, filiform, glabrous. Petioles slender; lamina broadly cordate, 5 – 12 x 4 – 10cm, usually 5 lobed, obtuse, base with several glands. Flowers dioecious, solitary. Male pedicel slender; calyx-tube broadly campanulate, segments linear-lanceolate; corolla white or slightly yellow, segments ovate, glabrous outside, pubescent inside; stamens 3, filaments and anthers connate, anthers subglobose. Female pedicel slender; staminodes 3, nearly subulate, villous at base; ovary fusiform, stigmas 3. Fruits fusiform. Seeds yellow, oblong.

Flowers & Fruits: January to December.

Specimen Cited: Takomari forest, Rajib & AP Das 0157, dated 08. 02. 2007.

Local Distribution: Forest floor.

General Distribution: Tropical and sub-tropical parts of the world.

DIPLOCYCLOS (Endlicher) T. Post & Kuntze, Lex. Gen. Phan. 178. 1903 [“*Diplocyclus*”].

Diplocyclos palmatus (Linnaeus) C. Jeffrey in Kew Bull. 15: 352. 1962 ; Grierson in Grierson *et Long*, Fl. Bhutan 2(1): 255. 1991. *Bryonia palmata* Linnaeus, Sp. Pl. 1012. 1753, excl. syn. *Bryonia laciniosa* Linnaeus, Sp. Pl. 1013. 1753. *Ilocania pedata* Merril, Philipp. J. Sci. 13(1): 65-66. 1918.

Tuberous monoecious climbing herbs; stems slender, tendrils 2 – fid. Lamina deeply palmately 5 – lobed, denticulate or undulate, upper surface scabrous, lower smooth. In male flowers corolla campanulate, greenish-yellow, shortly papillose. Female flowers fasciculate, ovary globose. Fruits spherical, green; seeds grey.

Flowers & Fruits: April to December.

Specimen Cited: Atiamochar forest, Rajib & AP Das 0200, dated 09. 02. 2007.

Local Distribution: Forest floor.

General Distribution: Tropical and sub-tropical parts of India, Sri Lanka, Myanmar, Bangladesh, Pakistan, Malaysia, China, Africa, Australia.

LUFFA Miller, Gard. Dict. Abr., ed. 4, [806]. 1754.

Key to the species:

- 1a. Stamens 5; fruit smooth *L. cylindrica*
 1b. Stamens 3; fruit with 8–10 acute ribs *L. acutangula*

Luffa acutangula (Linnaeus) Roxburgh, Fl. Ind. ed. 1832 3: 713. 1832; Grierson in Grierson *et Long*, Fl. Bhut. 2 (1): 256. 1991. *Cucumis longus* var. *indicus* Grew, Mus. Reg. Soc. 229. 1681. *Luffa foetida* Cavanilles, Icon. 1: 7. 1791. *Momordica tubiflora* Wallich, List 6749. 1832. *Luffa acutangula* (Linnaeus) Roxburgh, Hort. Beng. 70. 1814. *Cucumis acutangulus* Linnaeus, Sp. Pl. ed. 1: 1001. 1753.

Vernacular name: Jhinga.

Annual scandent herbs; stem sulcate-angular, pubescent. Tendrils robust, 3 fid. Lamina suborbicular, membranous, 15 – 20 x 15 – 20cm, 5 to 7 lobed, median lobe broadly triangular, lateral lobes

smaller, dentate, acute. Male flowers in raceme at apex of peduncle. Calyx tube campanulate, segments lanceolate, acuminate, slightly reflexed. Corolla yellow, rotate, segments obcordate, both surfaces subglabrous; stamens 3, free, anthers puberulent. Female flowers: solitary; ovary terete, style short, stigmas 3, expanded. Fruits cylindrical, with 8–10 acute ribs. Seeds ovate, black.

Flowers & Fruits: June to December.

Specimen Cited: Park side forest, *Rajib & AP Das 0284*, dated 10. 02. 2007.

Local Distribution: Forests.

General Distribution: India, S and SW Asia; also cultivated in tropical regions.

Luffa cylindrica (Linnaeus) M. Roemer, *Fam. Nat. Syn. Monogr.* 2: 63. 1846. *Momordica cylindrica* Linnaeus, *Sp. Pl.* 1009. 1753. *Momordica luffa* Linnaeus, *Sp. Pl.* 1009. 1753. *Luffa pentandra* Roxburgh, *Fl. Ind. ed.* 1832 3: 712. 1832. *Luffa aegyptiaca* Miller, *Gard. Dict. ed.* 8, 4: 500. 1785; Dyer in *Fl. Brit. Ind.* 2: 614. 1879; Grierson in Grierson *et Long*, *Fl. Bhutan* 2(1): 256. 1991.

Vernacular Name: Dhundol.

Annual scandent herbs; stem and branches scabrous, sulcate-angular, puberulent. Tendrils rather robust, usually 2 to 4 fid. Lamina triangular or suborbicular, 10 – 18 x 10 – 16cm, often palmately 5 to 7 lobed, lobes triangular, dentate, acute or acuminate, base deeply cordate. Male flowers usually in a raceme, calyx broadly campanulate, segments ovate lanceolate, acuminate, 3 nerved; corolla yellow, rotate, segments oblong. Stamens usually 5, connate at first, later free. Female flowers solitary; ovary long cylindrical, stigmas 3. Fruit cylindrical. Seeds ovate, smooth, black.

Flowers & Fruits: June to December.

Specimen Cited: Park side forest, *Rajib & AP Das 0227*, dated 09. 02. 2007.

Local Distribution: Forest.

General Distribution: Tropics of the Old World; cultivated in warm countries.

MOMORDICA Linnaeus, *Sp. Pl.* 2: 1009. 1753.

Momordica charantia Linnaeus, *Sp. Pl. ed.* 1: 1009. 1753; Dyer in *Fl. Brit. Ind.* 2: 616. 1879; Grierson in Grierson *et Long*, *Fl. Bhutan* 2(1): 252. 1991. *Momordica indica* Linnaeus, *Herb. Amb.* 24. 1754. [PLATE: 10, Figure-121]

Vernacular Name: Uchhe.

Annual scandent herbs, branched. Tendrils up to 20 cm, simple. Petiole slender. Lamina ovate-reniform or suborbicular, membranous, 4 – 10 x 4 – 9cm, lobes ovate-oblong, margin crenate or irregularly lobed, acute, sinus semicircular, nerves palmate. Male flowers solitary in axils of leaves, pedicel slender. Calyx segments ovate-lanceolate, acute. Corolla yellow, segments obovate; stamens 3, free. Female flowers solitary; ovary fusiform, stigmas expanded, 2 lobed. Fruits fusiform to cylindrical, orange when mature. Seeds numerous, oblong.

Flowers & Fruits: May to October.

Specimen Cited: Near conservation sector, *Rajib & AP Das 0226*, dated 09.02. 2007.

Local Distribution: Forests.

General Distribution: Tropical and sub-tropical parts of the world.

MUKIA Arnott, *Madras J. Lit. Sci.* 12: 50. 1840.

Mukia maderaspatana (Linnaeus) M.J. Roemer, *Fam. Nat. Syn. Monogr.* 2: 47. 1846; Grierson in Grierson *et Long*, *Fl. Bhutan* 2(1): 258. 1991. *Cucumis maderaspatana* Linnaeus, *Sp. Pl.*

1012. 1753. *Bryonia scabrella* Linnaeus f., Suppl. Pl. 424. 1781. *Mukia scabrella* (Linnaeus f.) Arnot, J. Bot. (Hooker) 3: 276. 1841.

Annual scandent herbs, all parts densely yellow-brown hispid. Stems branched. Tendrils simple. Lamina rigid, ovate to ovate cordate, usually 3 – 5 lobed, 5 – 10 x 5 – 8cm, irregularly denticulate, slightly obtuse, base cordate. Male flowers fascicled, pedicels short; calyx-tube campanulate, segments subulate, reflexed; corolla yellow, segments ovate-oblong, apex obtuse; stamens 3, filaments short, slightly pilose, anthers oblong, ciliate, connective distinct; rudimentary ovary globose. Female flowers solitary. Fruiting pedicels extremely short; fruit dark red, globose. Seeds ovate.

Flowers & Fruits: April to December.

Specimen Cited: Park side forest, *Rajib & AP Das 0712*, dated 14. 02. 2008.

Local Distribution: Forest floor.

General Distribution: Tropical and sub-tropical parts of the world.

TRICHOSANTHES Linnaeus, Sp. Pl. 2: 1008. 1753.

Key to the species:

1a. Lamina broadly ovate cordate; bracts entire *T. cordata*

1b. Lamina suborbicular; bract dentate *T. lepiniana*

Trichosanthes cordata Roxburgh, Fl. Ind. 3: 703. 1832; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 265. 1991. *Involucraria cordata* (Roxburgh) M. Roemer, Fam. Nat. Syn. Monogr. 2: 97. 1846. *Trichosanthes microsiphon* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 308. 1872.

Stem robust, angular. Lamina broadly ovate cordate, 8 – 20 x 7 – 18cm, minutely denticulate, acute to shortly acuminate, base cordate, papery. Male raceme 4 to 7 flowered; peduncle stout, striate, sparsely puberulent; pedicels thick; bracts oblong, entire, shortly hirsute; calyx tube attenuate from apex towards base; sepals linear-lanceolate. Female flower solitary; ovary oblong, slightly puberulent. Fruit globose, smooth, red.

Flowers & Fruits: July to August.

Specimen Cited: Near conservation sector, *Rajib & AP Das 0278*, dated 10. 02. 2007.

Local Distribution: Forest.

General Distribution: India, Laos, Malaysia, Myanmar, Singapore

Trichosanthes lepiniana (Naudin) Cogniaux in DC., Monogr. Phan. 3:377. 1881; H. Ohashi in Hara, Fl. E. Himal. 1:325. 1966; Grierson in Grierson *et* Long, Fl. Bhutan 2(1): 266. 1991. *Involucraria lepiniana* Naudin, Cat. 2. 1868. *Trichosanthes tricuspida* Loureiro, Fl. Cochinch. 589. 1790; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 180. 1979. *Trichosanthes palmata* Roxburgh, Fl. Ind. 3: 704. 1832; Dyer in Fl. Brit. Ind. 1: 606. 1879.

Vernacular name: Makal.

Stem robust, branched, glabrous. Lamina suborbicular, 9 – 17 cm, shortly 3 to 5 lobed up to middle, adaxially deep green, rough, denticulate, acute to shortly acuminate, base cordate. Male raceme 15 cm; peduncle robust, striate; bracts suborbicular, margin lacerate; calyx tube puberulent; sepals narrowly ovate, margin lacinate. Female flowers solitary; pedicel glabrous; bracts ovate, entire; ovary ovate, glabrous. Fruit ovoid, smooth, red. Seeds broadly ovate.

Flowers & Fruits: May to Nov.

Specimen Cited: Near conservation sector, *Rajib & AP Das 0230*, dated 09. 02. 2007.

Local Distribution: Rosd side forests.

General Distribution: India, Bhutan. Endemic to Eastern Himalaya

ZANONIA Linnaeus, Sp. Pl. 2: 1028. 1753.

Zanonia indica Linnaeus, Sp. Pl., ed. 2, 2: 1457. 1763; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 268. 1991.

Stem robust, branched. Leaves glabrous, lamina ovate oblong, 8 – 15 x 5 – 10cm, entire, acute, base rounded, leathery, adaxially smooth, abaxially with distinctly reticulate nerves, lateral nerves 3 - 4 pairs. Male peduncle slender, rachis much-branched. Calyx-segments ovate-triangular, acute. Corolla pale yellow-brown, segments oblong, obtuse. Female peduncle 5 - 10-flowered; pedicels thick; calyx-segments obtuse; ovary cylindrical. Fruit brownish, finely granulate, apex truncate, base obtuse. Seeds oblong.

Flowers & Fruits: May to October.

Specimen Cited: Near conservation sector, *Rajib & AP Das 0305*, dated 10. 02. 2007.

Local Distribution: Atiamochar forest.

General Distribution: Tropical India; Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam.

CYCLANTHERA Schrader, Index Sem. Hort. Acad. Goett. 1831: 2. 1831.

Cyclanthera pedata (Linnaeus) Schrader, Index Sem. Hort. Goett. (GOET) 1831: 2. 1831; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 262. 1991. *Momordica pedata* Linnaeus, Sp. Pl. 1009. 1753. *Momordica pedisecta* Linnaeus ex Ser., Prodr. 3: 319. 1828. *Anguria pedisecta* Ser., Prodr. 3: 319. 1828. *Momordica pedata* L., Sp. Pl. 2: 1009. 1753.

Annual scandent herbs. Stem robust. Tendrils 2 fid. Petiole 5 – 12 cm; leaflets elliptic to elliptic lanceolate, median 7 – 15 x 2 – 5 cm, dentate, acuminate, base cuneate. Male flowers in a panicle; pedicels filiform. Calyx tube cupular, segments linear. Corolla yellow, segments ovate-triangular, puberulent; filaments connate, anther circular. Female calyx and corolla as in male, ovary ovate. Fruit narrowly oblong to long elliptic, apex acuminate. Seeds black.

Flowers & Fruits: May to October.

Specimen Cited: Near conservation sector, *Rajib & AP Das 0264*, dated 10. 02. 2007.

Local Distribution: Atiamochar forest.

General Distribution: India: tropical parts; Bhutan, China, Bangladesh.

CITRULLUS Schrader ex Ecklon & Zeyher, Enum. Pl. Afric. Austral. 2: 279. 1836, *nom. cons.*

Citrullus lanatus (Thunb.) Matsum. & Nakai, Index Seminum (TI) 1916: 30. 1916. *Momordica lanata* Thunburg, Prodr. Pl. Cap. 13. 1794. *Cucumis citrullus* (Linnaeus) Ser., Prodr. 3: 301. 1828. *Citrullus vulgaris* Schr. ex Eckl & Zeyh., Enum. Pl. Afr. Austr. 279. 1836; Hooker *f.* in Hooker *f.*, Fl. Brit. India 2: 621. 1879.

Annual herbs. Stem and branches robust, villous. Tendrils puberulent, 2 fid. Petiole densely pubescent; lamina triangulate-ovate, 8 – 15 x 5 – 10cm, both surfaces hispid, 3 partite, segments lobulate, acute to acuminate, base cordate. Flowers monoecious, solitary. Male pedicel villous; calyx-tube densely villous, segments narrowly lanceolate. Corolla pale yellow segments ovate-oblong; stamens 3, nearly free. Female calyx and corolla as in male, ovary densely villous, stigmas 3, reniform. Fruits globose, smooth. Seeds numerous, ovate.

Flowers & Fruits: April to October.

Specimen Cited: Near conservation sector, *Rajib & AP Das 0214*, dated 09. 02. 2007.

Local Distribution: Atiamochar forest.

General Distribution: India: native to S Africa; cultivated in all warmer areas of the world.

Core-Eudicots: Rosids: Eurosids (II)

Order: Myrtales Jussieu *ex* Berchtold & J. Presl (1820)

Combretaceae R. Brown, Prodr. 1: 351. 1810; *nom. cons.*

Key to the genera:

- 1a. Trees *Terminalia*
 1b. Woody lianas *Combretum*

COMBRETUM Loefling, Iter Hispan. 308. 1758, *nom. cons.*

Key to the species:

- 1a. Stamens not exerted from calyx tube; style partly adnate to calyx tube *C. indicum*
 1b. Stamens usually exerted from calyx tube; style not adnate to calyx tube *C. decandrum*

Combretum decandrum Jacquin, Enum. Syst. Pl. 19. 1760; Clement in Grierson *et* Long, Fl. Bhutan 2(1): 306. 1991; Prain, Beng. Pl. 1: 482. 1903. *Poivreia alternifolia* (C.H. Persoon) de Candolle, Prodr. 3: 17. 1828. *Gonocarpus jacquini* William Hamilton, Prodr. Pl. Ind. Occid. 39. 1825. *Combretum palmeri* Rose, Contr. U. S. Natl. Herb. 5: 136. 1898. *Combretum roxburghii* Sprengel, Syst. Veg. 2: 331. 1825.

Combretum decandrum Roxburgh, Pl. Coromandel 1: 43. 1796, not Jacquin (1760); Pentaptera Woody lianas. Branchlets reddish villosulous when young. Leaves opposite; lamina oblong-elliptic to obovate-oblong, 5 – 15 x 3 – 6 cm, lateral veins in 6 or 7 pair, obtuse, base obtuse to obtuse-rounded. Inflorescences terminal and axillary, laxly compound spikes 5–15 cm, leafy panicle; bracts persistent at anthesis, tomentose. Calyx tube distally; lobes 5, broadly triangular. Petals 5, obovate-oblong. Stamens 10, only slightly exerted, not exceeding petals. Fruit glossy, cylindrical, 5-winged.

Flowers & Fruits: August to November.

Specimen Cited: Atiamochar forest near Batikata Beel, *Rajib & AP Das 0492*, dated 23.07.2007.

Local Distribution: Atiamochar Forest.

General Distribution: India: tropical; Bhutan, China, Bangladesh, Nepal, Laos, Myanmar, Sri Lanka, Thailand, Vietnam.

Combretum indicum (Linnaeus) De Philipps, *Useful Pl. Dominica* 277. 1998. *Quisqualis indica* Linnaeus, Sp. Pl. ed. 2: 556. 1762; Clement in Grierson *et* Long, Fl. Bhutan 2(1): 309. 1991. *Quisqualis glabra* Burmanf., Fl. Indica 104. 1768. *Quisqualis grandiflora* Miquel, J. Bot. N. erl. 1: 119. 1861. *Quisqualis indica* Linnaeus, Sp. Pl., ed. 2, 1: 556. 1762.

Vernacular name: Madhabilata.

Lianas up to to 8 m. Lamina mostly oblong-elliptic to elliptic, 5 – 16 x 2 – 7 cm, lateral veins in 7 to 8 pairs, acuminate to shortly caudate base obtuse. Inflorescences lax; bracts deciduous, filiform-linear to ovate. Flowers fragrant. Calyx tube yellow pilose; lobes deltoid, acute to shortly acuminate. Petals opening white, later turning yellowish abaxially and reddish adaxially, obovate to oblanceolate. Fruit red when young, greenish black or brown when ripe, sharply 5 ridged, apex mucronate.

Flowers & Fruits: March to November.

Specimen Cited: Bochamari Village, *Rajib & AP Das 0569*, dated 24.07.2007.

Local Distribution: Cultivate in villages.

General Distribution: India (through out), Bhutan, China, Bangladesh, Nepal, Sri Lanka, Pakistan, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam; coastal E Africa, Indian Ocean islands, Pacific islands; introduced to other parts of tropical Africa and Central and South America.

TERMINALIA Linnaeus, Mant. Pl. 1: 21, 128. 1767, *nom. cons.*

Key to the species:

- 1a. Fruit 3 to 5 winged 2
- 1b. Fruit 2 to 5 ridged 3
- 2a. Fruit 2 winged with a rudimentary wing between two *T. myriocarpa*
- 2b. Fruit 4 to 5 winged without rudimentary wing *T. arjuna*
- 3a. Lamina elliptic *T. chebula*
- 3b. Lamina obovate *T. bellirica*

Terminalia arjuna (Roxburgh *ex de Candolle*) Wight & Arnott, Prodr. Fl. Ind. Orient. 314. 1834. Prain, Beng. Pl.?? *Pentaptera arjuna* Roxburgh (Hort. Beng. 34.1814, *nom. nud.*) *ex de Candolle*, Prodr. 3: 15. 1828.

Vernacular Name: Arjun.

Trees, trunk buttressed. Bark greenish-white. Leaves sub-opposite or alternate; lamina elliptic – oblong, Fl. Bhut. 15 – 30 x 6 – 15 cm, obtuse or mucronate, base obtuse-rounded to attenuate. Flowers in pendulous axillary or terminal panicles of spikes. Calyx lobes 5, pale-yellow. Stamens 10, exserted. Drupes ovoid or obovoid – oblong, woody, strongly 5 ridged.

Flowers & Fruits: May to April.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0541*, dated 23.07.2007.

Local Distribution: Through out Forest.

General Distribution: India, Bhutan, China, Bangladesh, Sri Lanka.

Terminalia bellirica (Joseph Gaertner) Roxburgh, Pl. Coromandel 2: 54. 1805; Clarke in Hooker *f*, Fl. Brit. Ind. 2: 445. 1879; Clement in Grierson *et Long*, Fl. Bhutan 2(1): 304. 1991. *Myrobalanus bellirica* Gaertner, Fruct. Sem. Pl. 2: 90. 1791. *Myrobalanus bellirica* Joseph Gaertner, Fruct. Sem. Pl. 2: 90. 1791. *Terminalia punctata* Roth, Nov. Pl. Sp. 381. 1821.

Vernacular Name: Baherha.

Large, deciduous trees, up to 35 m. Leaves spiraled, crowded into pseudowhorls at apices of branchlets; petiole 3–9 cm, glabrous but ferruginous tomentose when young, especially at base, with 2 glands above middle; lamina glossy, obovate, 15 – 30 x 6 – 15 cm, obtuse or mucronate, base obtuse-rounded to attenuate. Inflorescences axillary, simple spikes. Calyx lobes 5. Stamens 10, exserted. Fruit shortly stipitate, subglobose to broadly ellipsoid, weakly to strongly 5 ridged.

Flowers & Fruits: March to August.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0602*, dated 26.07.2007.

Local Distribution: Through out Forest.

General Distribution: India, Bhutan, Bangladesh, Nepal, Sri Lanka, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam; N. Australia; introduced in E. Africa.

Terminalia chebula Retzius, *Observ. Bot.* 5: 31. 1789; Clarke in Hooker *f.*, *Fl. Brit. Ind.* 2: 446. 1879; H. Ohashi in Hara, *Fl. E. Himal.* 1: 220. 1966; Clement in Grierson *et Long*, *Fl. Bhutan* 2(1): 304. 1991.

Vernacular Name: Haritaki.

Large trees, up to 30 m. Leaves alternate to subopposite; petiole moderately stout; lamina elliptic, 7 – 16 x 4 – 10 cm, both surfaces glabrous, mucronate, base obtuse-rounded to cuneate, oblique. Inflorescences axillary or terminal, simple spikes, 5–10 cm, numerous flowered. Flowers bisexual. Calyx tube distally cupular; lobes 5. Stamens 10, exserted. Fruit not stipitate, blackish brown when ripe, ovoid, obtusely 5-ridged.

Flowers & Fruits: May to December.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0639*, dated 12. 02. 2008.

Local Distribution: Takomari Forest.

General Distribution: India, Bhutan, China, Bangladesh, Nepal, Sri Lanka, Cambodia, Laos, Malaysia (introduced), Myanmar, Thailand, Vietnam.

Terminalia myriocarpa Van Heurck & Mueller Argoviensis, *Observ. Bot.* 215. 1871; Clement in Grierson *et Long*, *Fl. Bhutan* 2(1): 305. 1991.

Vernacular name: Pukkasaj.

Large evergreen trees, up to 35 m. Leaves opposite; petiole stout, with 2 stalked glands at apex; lamina oblong-elliptic to oblong-lanceolate, 10 – 28 x 4 – 12 cm, thickly papery, short, oblique tip, entire to slightly undulate, rarely conspicuously toothed, base obtuse. Inflorescences terminal or axillary, simple or compound, long. Calyx tube distally cupular; lobes 5. Stamens 10, exserted. Fruit not stipitate, 2 winged with a rudimentary wing, yellowish when dry.

Flowers & Fruits: August to February.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0586*, dated 25.07.2007.

Local Distribution: Atiamochar Forest.

General Distribution: India, Bhutan, Bangladesh, Nepal, China, Indonesia, Laos, Malaysia, N Myanmar, Thailand, N Vietnam.

Lythraceae Jaume St. Hilaire, *Expos. Fam.* 2: 175. 1805 ('Lythraeae'; *nom. cons. prop.* vs. Salicariaceae).

Key to the genera:

- | | |
|--|-----------------------------|
| 1a. Tree or shrubs | 2 |
| 1b. Herbs | 4 |
| 2a. Fruits capsules | 3 |
| 2b. Fruits berries | <i>Punica</i> |
| 3a. Leaves leathery; stamens 10 – 12 | <i>Woodfordia</i> |
| 3b. Leaves papery; stamens 30 to 120 | <i>Lagerstroemia</i> |
| 4a. Aquatic floating herbs | <i>Trapa</i> |
| 4b. Marshy land or wet terrestrial herbs | 5 |
| 5a. Flowers usually 3 or more per axil | <i>Ammannia</i> |
| 5b. Flowers usually solitary..... | <i>Rotala</i> |

AMMANNIA Linnaeus, *Sp. Pl.* 1: 119. 1753.

Key to the species:

- 1a. Petals absent *A. baccifera*
 1b. Petals present *A. multiflora*

Ammannia baccifera Linnaeus, Sp. Pl. 120. 1753; Clarke in Hooker *f.*, Fl. Brit. Ind. 2: 569. 1879; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 271. 1991; Prain, Beng. Pl. 2: 500. 1903; Cook, Aqua. Wetl. Pl. Ind. 249. 1996; Guha Bakshi, Fl. Mur. Dist. 131. 1984. *Ammannia indica* de Lamarck, Tabl. Encycl. 1: 311. 1792. *Ammannia glauca* Wallich *ex* Wight & Arnott, Prodr. Fl. Ind. Orient. 1: 305. 1834. *Ammannia baccifera f. glauca* (Wallich *ex* Wight & Arnott) Koehne, Bot. Jahrb. Syst. 1: 261. 1880.

Annual, herbs. Stem with numerous ascending branches. Leaves opposite on basal, opposite or alternate toward apices, narrowly elliptic or oblanceolate, 8–40 × 3–9 mm, base attenuate to subcordate. Flowers 3 to many in dense axillary cymes; pedicels subsessile; bracteoles minute. Floral tube campanulate, tapering at base; sepals 4; epicalyx absent. Petals absent. Stamens 4. Style absent or much shorter than ovary. Capsules exserted.

Flowers & Fruits: July to Dec.

Specimen Cited: Batikata Beel, Rajib & AP Das 0146, dated 08. 02. 2007.

Local Distribution: Margins of water bodies through out the Beel.

General Distribution: India, Bhutan, Nepal, Bangladesh, China, Malaysia, Philippines, Thailand, Vietnam, Afghanistan, Cambodia, Laos; tropical Africa, Australia, Caribbean islands.

Ammannia multiflora Roxburgh, Fl. Ind. 1: 447. 1820; Clarke in Hooker *f.*, Fl. Brit. Ind. 570. 1879; Prain, Beng. Pl. 1: 500. 1903; Bot. Bihar & Orissa pt. II: 380. 1922; Panda *et* Das, Fl. Sambalp. 340. 2004; Cook, Aqua. Wetl. Pl. Ind. 250. 1996. *Cryptotheca dichotoma* Blume, Bijdr. 1129. 1827. *Ammannia parviflora* de Candolle, Prodr. 2: 77. 1825.

Annual, herbs. Stems with numerous short branches. Leaves opposite, narrowly elliptic or broadly linear to lanceolate-oblong, Fl. Bhut. 2–3 cm x 3–10 mm, base attenuate to cordate. Flowers 3–7 in dense axillary cymes; pedicels 1–2 mm; bracteoles linear. Floral tube campanulate, 4 ribbed; sepals 4. Petals 4, pink to whitish, obovate, minute. Stamens 4. Style 1/3–1/2 as long as ovary. Capsules redbrown, exserted.

Flowers & Fruits: November to September.

Specimen Cited: Bochamari Beel, Rajib & AP Das 0161, dated 08. 02. 2007.

Local Distribution: Bochamari Beel.

General Distribution: India, Bhutan, China, Japan, Malaysia and Australia. tropics and subtropics of Africa and Australia.

LAGERSTROEMIA Linnaeus, Syst. Nat., ed. 10, 2: 1068, 1076, 1372. 1759.

Key to the species:

- 1a. Shrubs; stamens dimorphic *L. indica*
 1b. Trees; stamens monomorphic 2
 2a. Stamens 40 to 60 *L. parviflora*
 2b. Stamens 75 to 120 *L. speciosa*

Lagerstroemia indica Linnaeus, Syst. Nat. ed. 10(2): 1076. 1759. Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 276. 1991; Prain, Beng. Pl.?? *Lagerstroemia indica* var. *alba* Ram. Goyena, Fl. Nicarag. 410. 1909. *Lagerstroemia minor* Retzius, Observ. Bot. 1: 20. 1779.

Shrubs up to 7 m. Branchlets slender, 4 angled. Leaves semi sessile; lamina elliptic to oblong-obovate, mucronate, 3–7 x 1.5–3.5 cm, papery, lateral veins 3–7 pairs, acute with small mucro,

base broadly cuneate to rounded. Panicles subpyramidal, densely flowered. Floral tube 6-merous; annulus present; epicalyx absent. Petals purple or white. Stamens 36–40, dimorphic. Ovary glabrous. Capsules ellipsoidal, 4–6-valved.

Flowers & Fruits: November to July.

Specimen Cited: Park, Rajib & AP Das 0505, dated 23.07.2007.

Local Distribution: Often planted in parks and villages.

General Distribution: India, Bangladesh, Bhutan, Nepal, china, Japan, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Pakistan, Sri Lanka, Thailand, Vietnam.

Lagerstroemia parviflora Roxburgh, Pl. Coromandel 1: 48. 1796. Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 276. 1991; Prain, Beng. Pl. 1:503. 1903. *Murtughas parviflora* Kuntze, Revis. Gen. Pl. 1: 249. 1891. *Fatioa napaulensis* de Candolle, Prodr. 3: 89. 1828.

Vernacular name: Sidha.

Trees, up to 15 m. Petiole 1.2–1.5 cm; lamina ovate to oblong-elliptic, 5–12 x 3–6 cm, papery, round to mucronate, base acute to attenuate. Panicles 5–7 cm. Floral tube 6-merous; sepals narrowly deltate, ½ as long as floral tube; annulus absent; epicalyx segments absent or minute. Petals purple to bluish purple when dry, ovate. Stamens 40 to 60, monomorphic. Ovary glabrous. Capsules oblong, 6 valved.

Flowers & Fruits: March to December.

Specimen Cited: Tacomari forest, Rajib & AP Das 0511, dated 23.07.2007.

Local Distribution: Tacomari Forest.

General Distribution: Pantropical.

Lagerstroemia speciosa (Linnaeus) Persoon, Syn. Pl. 2: 72. 1806. *Lagerstroemia hirsuta* (Lamarck) Willdenow, Sp. Pl. 2: 1178. 1799; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 276. 1991. *Adambe hirsuta* Lamarck, Encycl. 1: 39. 1783. *Lagerstroemia flos-reginae* Retzius, Observ. Bot. 5: 25 1788.

Vernacular Name: Jarul.

Trees, up to 15 m. Petiole 1.2–1.5 cm; lamina elliptic to oblong-elliptic, 8–22 x 5–10 cm, papery, lateral veins 10 to 11 pairs, shortly acuminate, base acute to attenuate. Panicles 10–15 cm. Floral tube 6-merous; sepals narrowly deltate, ½ as long as floral tube; annulus absent; epicalyx segments absent or minute. Petals purple to bluish purple when dry, ovate. Stamens 75 to 120, monomorphic. Ovary glabrous. Capsules oblong, 6 valved.

Flowers & Fruits: March to December.

Flowers & Fruits: May to September.

Specimen Cited: Tacomari forest, Rajib & AP Das 0512, dated 23.07.2007.

Local Distribution: Plantation forests.

General Distribution: India, Nepal, Bhutan, Myanmar, Thailand.

PUNICA Linnaeus, Sp. Pl. 1: 472. 1753.

Punica granatum Linnaeus, Sp. Pl. 1: 472. 1753. Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 288. 1991; Prain, Beng. Pl.?? . *Punica grandiflora* Hortulanorum *ex* Ernst G. Steudel, Nom. ed. I. 669. 669 . *Punica nana* Linnaeus, Sp. Pl. ed. II. 676. 1753.

Vernacular name: Dalim.

Shrubs, up to 2m. Branches and branchlets 4-angled. Petiole 3–8 mm; lamina adaxially shiny, lanceolate to elliptic-oblong, 2–7 x 1–1.5 cm, obtuse or mucronate, base attenuate. Floral tube red-orange, campanulate; sepals 5–9, erect. Petals 5–9, bright red-orange, obovate. Stamens numerous, included to exserted. Ovary 8–12 loculed. Fruit globose, leathery berries. Seeds obpyramidal within juicy sarcotestal layer, ruby-red.

Flowers & Fruits: March to July.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0221*, dated 09. 02. 2007.

Local Distribution: In the villages.

General Distribution: widespread in cultivation.

ROTALALinnaeus, Mant. Pl. 2: 143, 175. 1771.

Key to the species

- | | |
|--|------------------------|
| 1a. Flowers in terminal spikes | <i>R. rotundifolia</i> |
| 1b. Flowers in axillary spikes | 2 |
| 2a. Leaf margin translucent to opaque white; capsules 2 valved | <i>R. indica</i> |
| 2b. Leaf margin green; capsules 3 to 4 valved | <i>R. densiflora</i> |

Rotala densiflora (Roth) Koehne, Bot. Jahrd. Syst. 1(2): 164. 1880; Datta & Majumdar, Bull.Bot. Soc. Beng. 20(2): 89. 1966; Cook, Aqua. Wetl. Pl. Ind. 255. 1996. *Ammannia densiflora* Roth, R. & S. Syst. Veg. 3: 394. 1818. *Ammannia pentandra* Roxburgh, Fl.Ind. 1: 488. 1820; Clark in Hooker f., Fl. Brit. Ind. 2: 568. 1879; Prain, Beng. Pl. 1: 500. 1903. *Rotala densiflora* subsp. *uliginosa* (Roth) Koehne, Bot. Jahrb. Syst. 1(2): 165. 1880.

Annual, amphibious, herbs, up to 25 cm. Stem usually creeping, sparsely to densely branched, 4 winged, wings not running into leaves. Leaves decussate, often alternate toward stem apex, narrowly elliptic to oblong – ovate, 10 – 25 x 2 – 5 mm, acute, base cordate to obtuse. Bracts of stem and lower branches like foliage leaves. Flowers solitary; bracteoles pink, lanceolate. Floral tube 5 merous, campanulate; epicalyx segments present between sepals. Petals 5, bright pink. Stamens 5. Ovary globose; style shorter than ovary. Capsules subglobose, 3-valved.

Flowers & Fruits: August to February.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0087*, dated 06. 02. 2007.

Local Distribution: Margins of water bodies through out the Beel.

General Distribution: India (Throughout), Nepal, Pakistan, Indonesia, Sri Lanka, China, Malaya, Australia and tropical Africa.

Rotala indica (Willdenow) Koehne, Bot. Jahrb. Syst. 1(2): 172. 1880. Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 272. 1991; Cook, Aqua. Wetl. Pl. Ind. 257. 1996. *Peplis indica* Willdenow, Sp. Pl. 2(1): 244. 1799.

Annual, amphibious, herbs, up to 40 cm. Stem creeping and branched at base. Leaves decussate, obovate-elliptic to obovate – oblong, 5 – 20 x 3 – 8 mm, obtuse, translucent, base cuneate. Bracts foliage. Flowers in axillary spikes or sessile in bracts on main stem; bracteoles linear. Floral tube 4 merous, pink-red at anthesis, narrowly to broadly campanulate; sepals 4, lanceolate-deltate; epicalyx absent. Petals 4, pink, minute to 1/2 as long as sepals. Stamens 4. Ovary ellipsoidal. Capsule ellipsoidal, 2-valved.

Flowers & Fruits: August to April.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0191*, dated 09. 02. 2007.

Local Distribution: Margins of water bodies of Conservatory sectors and open fishing areas.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Thailand, Vietnam, Laos, Cambodia, Indonesia, Japan, Korea, Malaysia, Myanmar, Philippines; introduced in rice fields in Africa, Europe and North America.

Rotala rotundifolia (Buchanan - Hamilton *ex* Roxburgh) Koehne, Bot. Jahrb. Syst. 1(2): 175. 1881; Bora & Kumar, Flor. Div. Ass. 158. 2003; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 272. 1991; Cook, Aqua. Wetl. Pl. Ind. 260. 1996. *Ammannia rotundifolia* Buchanan-Hamilton in Don Prodr. 220. 1825; Clarke in Hooker *f.*, Fl. Brit. Ind. 2: 566. 1828; Prain, Beng. Pl. 1: 500. 1903. [PLATE: 6, Figure-54]

Annual, amphibious, herbs, up to 25 cm. Stem extensively creeping and rooting herbs with red stem. Lamina sessile, orbicular or broadly elliptic – rounded. Flowers pinkish sessile, closely packed in terminal simple or panicle spikes; calyx tube campanulate, petals 4, pink coloured. Capsules 4-valved ellipsoid; seeds elliptic peltate.

Flowers & Fruits: November to April.

Specimen Cited: Batikata Beel, *Rajib & AP Das 0158*, dated 08. 02. 2007.

Local Distribution: Margins of water bodies of Conservatory sectors and open fishing areas.

General Distribution: India, Bhutan, Nepal, Bangladesh, Japan, Thailand, Laos, Myanmar, Vietnam.

WOODFORDIA Salisbury, Parad. Lond. 1(2): t. 42. 1806.

Woodfordia fruticosa (Linnaeus) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 40: 56. 1871. Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 275. 1991. *Lythrum fruticosum* Linnaeus, Syst. Nat., ed. 10, 2: 1045. 1759. [PLATE: 7, Figure-66]

Tall shrubs, up to 5 m. Leaves lanceolate to ovate-lanceolate, 3 – 12 × 1 – 4 cm, leathery, Acuminate, base rounded to subcordate. Inflorescences axillary, 3 – 15 flowers. Floral tube light red to red-orange, greenish basally; sepals oblong-ovate to deltate; epicalyx segments scarcely present. Petals 6, thin, linear-lanceolate. Stamens 12, inserted above ovary base, long-exserted. Ovary 2-loculed. Capsules elongate, elliptic. Seeds reddish brown.

Flowers & Fruits: January to May.

Specimen Cited: Deer conservation sector, *Rajib & AP Das 0198*, dated 09. 02. 2007.

Local Distribution: Shrubland near fodder plantstion.

General Distribution: India, Bhutan, Nepal, Pakistan, Indonesia, Laos, Myanmar, Thailand.

TRAPA Linnaeus, Sp. Pl. 1: 120. 1753.

Key to the species:

- 1a. Fruit shortly rhombic, 2 – 4 stony horned, crest bulge to a thin rib *T. natans*
- 1b. Fruit narrowly rhombic, 4 leathery horned, crest absent *T. natans* var. *bispinosa*

Trapa natans Linnaeus, Sp. Pl. 120. 1753; Cook, Aqua. Wetl. Pl. Ind. 363. 1996. *Trapa bicornis* Osbeck, Dagb. Ostind. Resa 191. 1757 *Trapa chinensis* Loureiro, Fl. Cochinch. 1: 86. 1790. *Trapa natans* var. *incisa* Makino, Bot. Mag. (Tokyo) 1: 105. 1887-1892. *Trapa bispinosa* Roxburgh var. *incisa* (Siebold & Zuccarini) Franchet & Savatier, Nakai, Fl. Kor. 2: 490. 1911. Clarke in Fl. Brit. Ind. 2: 590. 1879; Prain, Beng. Pl. 1: 508. 1903. *Trapa incise* Siebold & Zuccarini, Fl. Jap. 134. 1843. [PLATE: 7, Figure-65]

Vernacular name: Jalsingara.

Aquatic floating herbs. Petiole swollen distally. Floating lamina in rosettes, rhomboid, lamina glossy and dark green, rhombic – triangular, adaxially glabrous, coarsely and sharply incised-dentate distally.

Petals white, 7–10 mm. Fruit shortly rhombic, 2 – 4 stony horned, surface variously ribbed to smooth, crest a prominent bulge to a thin rib, crown tetragonal to rounded, or dome-shaped. Horns horizontal, ascending, or recurved, flat-triangular or broadly conic.

Flowers & Fruits: May to November.

Specimen Cited: Raichangmari Beel, *Rajib & AP Das 0197*, dated 09. 02. 2007.

Local Distribution: Throughout, wild in water bodies.

General Distribution: India, Bangladesh, China, Pakistan, Indonesia, Japan, Korea, Laos, Malaysia, Thailand, Philippines, Russia and Vietnam. Africa, Europe; naturalized in Australia and North America.

Trapa natans var. *bispinosa* (Roxburgh) Makino, Bot. Mag. (Tokyo) 11: 283. 1897 & Inuma, Sumoku-Dzusetu” ed. 3”, 1: 137. 1907; Prain, Beng. Pl. 1: 508. 1903; Cook, Aqua. Wetl. Pl. Ind. 363. 1996. *Trapa bicornis* var. *bispinosa* (Roxburgh) Z.T. Xiong, J. Wuhan Bot. Res. 3(2): 160. 1985. *Trapa bispinosa* Roxburgh, Pl. Cor. 3: t. 234. 1815; Clarke in Hooker f., Fl. Brit. Ind. 2: 590. 1879. [PLATE: 5, Figure-46]

Vernacular name: Jalsingara.

Aquatic floating herbs. Floating lamina in rosettes, rhomboid, lamina glossy and dark green, rhombic – triangular, glabrous or sparsely pubescent on veins, adaxially glabrous, margin coarsely and sharply incised-dentate distally. Petals pink to pale purplish or white, Fruit narrowly rhombic, 4 soft, leathery horned, surface variously ribbed to smooth, crest absent; horns conic, lower horns descending, upper horns horizontal to ascending.

Flowers & Fruits: May to November.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0194*, dated 09. 02. 2007.

Local Distribution: Bochamari Beel; often cultivated.

General Distribution: Throughout India: Nepal, China, Indonesia, Japan, Korea, Laos, Malaysia, Thailand and Vietnam.

Melastomataceae A.L. de Jussieu, Gen. Pl. 328. 1789 (‘Melastomae’); *nom. cons.*

Key to the genera:

- 1a. Stamens equal in length and shape; fruit a dry capsule *Osbeckia*
- 1b. Stamens unequal in length and shape; fruit a fleshy capsule *Melastoma*

MELASTOMA Linnaeus, Sp. Pl. 1: 389. 1753.

Melastoma malabathricum Linnaeus, Sp. Pl. 1: 390. 1753 (‘malabathrica’); Clarke in Hooker f., Fl. Brit. Ind. 2: 523. 1879; H. Ohashi in Hara, Fl. E. Himal. 1: 221. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 170. 1979; Clement in Grierson *et Long*, Fl. Bhutan 2(1): 296. 1991. *Melastoma affine* D. Don, Mem. Wern. Nat. Hist. Soc. 4: 288. 1823 *Melastoma malabathricum* var. *normale* (D. Don) R.C. Srivastava, Novon 8(2): 203. 1998 *Melastoma normale* D. Don, Prodr. Fl. Nepal. 220. 1825. *Melastoma polyanthum* Blume, Flora 2: 481. 1831. [PLATE: 5, Figure-33]

Bushy shrubs. Stems densely appressed hairy. Leaves elliptic to lanceolate-elliptic, acute or shortly acuminate, base rounded, cuneate, veins 5; upper surface with rows of white cells at base of very short hairs. Calyx tube densely covered with appressed, fimbriate-margined, scale like hairs; lobes triangular – oblong. Petals mauve to rose – purple.

Flowers & Fruits: January to December.

Specimen Cited: Near Conservation section, *Rajib & AP Das 0224*, dated 09. 02. 2007.

Local Distribution: Throughout the open places in Forest area.

General Distribution: Tropical Himalayas, India, China, Sri Lanka, Myanmar, Malaysia and Australia.

OSBECKIA Linnaeus, Sp. Pl. 1: 345. 1753.

Osbeckia nepalensis Hooker f., Exot. Fl. 1: , pl. 31. 1823; Clement in Grierson *et* Long, Fl. Bhutan 2(1): 295. 1991; Prain, Beng. Pl.1: 495. 1903. [PLATE: 8, Figure-88]

Erect shrubs, up to 1m. Stems 4 sided, densely strigose. Lamina oblong-lanceolate to ovate-lanceolate, 5 – 13 2 – 4 cm, stiffly papery, both surfaces densely strigose, secondary veins 2 on each side of midvein, acuminate, entire and ciliate, base cordate to obtuse. Inflorescences terminal, a panicle of cymes; bracts leaflike. Bracteoles 2, broadly ovate. Calyx lobes 5, long ovate, ciliate, acuminate. Petals 5, white. Stamens 10, inclined to one side; filaments as long as anthers; anthers beaked. Ovary ovoid-globose, 5-celled. Capsule ovoid-globose, densely strigose.

Flowers & Fruits: June to February.

Specimen Cited: Near Conservation section, *Rajib & AP Das 0517*, dated 23.07.2007.

Local Distribution: Through out Forest.

General Distribution: India, Bhutan, Nepal, Myanmar, Thailand, Laos, Vietnam.

Myrtaceae A.L. de Jussieu, Gen. Pl. 322. 1789 ('Myrti'); *nom. cons.*

Key to the genera:

- | | |
|---|-------------------|
| 1a. Fruit a capsule | <i>Eucalyptus</i> |
| 1b. Fruit not capsule | 2 |
| 2a. Flowers solitary; Fruit a berry | <i>Psidium</i> |
| 2b. Flowers in axillary or terminal cymes; fruits a drupe | <i>Syzygium</i> |

EUCALYPTUS L'H ritier, Sert. Angl. 18. 1789.

Eucalyptus tereticornis James E. Smith, Spec. Bot. New Holland 4: 41 1795. Long *et* Rae in Grierson *et* Long, Fl. Bhutan 2 (1): 286. 1991. *Eucalyptus insignis* Naudin, Descr. Emploi Eucalypt. 30. 1891. *Eucalyptus populifolia* Desfontaines, Tabl. cole Bot. ed. 3: 408. 1829. *Leptospermum umbellatum* Joseph Gaertner, Fruct. Sem. Pl. 1: 174. 1788.

Large trees, up to 25 m. Bark grayish white, smooth. Branchlets terete, slender, pendulous. Lamina of young leaves ovate to broadly lanceolate, mature leaves narrowly lanceolate, 12 – 20 x 1.2 – 2 cm, slightly twisted. Inflorescences axillary, simple, umbels 5–8 flowered. Flowers buds long ovate, apex acuminate. Stamens with long obovate anthers, dehiscing longitudinally. Capsule subglobose to ovoid; disk broad; valves 4 to 5.

Flowers & Fruits: January to August.

Specimen Cited: Park, *Rajib & AP Das 0263*, dated 10. 02. 2007.

Local Distribution: Often planted in parks and villages.

General Distribution: India, Bhutan, China; native to E and SE Australia.

PSIDIUM Linnaeus, Sp. Pl. 1: 470. 1753.

Psidium guajava Linnaeus, Sp. Pl. 470. 1753; Clarke in Hook.f, Fl. Brit. Ind. 2: 468. 1879; Long *et* Rae in Grierson *et* Long, Fl. Bhutan 2(1): 287. 1991. Prain, Beng. Pl.?? *Guajava pumila* (Vahl) Kuntze, Revis. Gen. Pl. 1: 240. 1891. *Psidium pumilum* Vahl, Symb. Bot. 2: 56. 1791. *Myrtus guajava* (Linnaeus) Kuntze, Revis. Gen. Pl. 3(2): 91. 1898. *Psidium cujavus* Linnaeus, Herb. Amb. 7. 1754.

Vernacular Name: Peyara.

Small tree, up to 5 m; branchlets finely pubescent. Leaves oblong-elliptic, 8 – 12 x 3 – 5 cm, acute, base rounded, pubescent beneath, lateral veins parallel, prominent beneath; stipules minute, often caducous. Flowers mostly solitary on pubescent peduncle; bracteoles subulate, caducous. Calyx tube obovoid, constricted at apex, pubescent; lobes leathery, ovate, unequal. Petals white, obovate. Berry pear-shaped.

Flowers & Fruits: Throughout the year.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0258*, dated 10. 02. 2007.

Local Distribution: In the villages.

General Distribution: Native of tropical America, naturalized and cultivated in India.

SYZYGIUM P. Browne *ex* Gaertner, *Fruct. Sem. Pl.* 1: 166. 1788, *nom. cons.*

Key to the species:

- 1a. Cymes borne in axils of older *S. cumini*
- 1b. Cymes borne in terminal position of branches *S. jambos*

Syzygium cumini (Linnaeus) Skeels, *Bull. Bur. Pl. Industr. U.S.D.A.* 248: 25 1912 & U.S. Dept. Agric. *Bur. Pl. Ind. Bull.* 248. 25. 1912; Long *et* Rae in Grierson *et* Long, *Fl. Bhutan* 2(1): 284. 1991. *Myrtus cumini* Linnaeus, *Sp. Pl.* 471. 1753. Prain, *Beng. Pl.?? Eugenia jambolana* de Lamarck, *Encycl.* 3: 198. 1789. *Eugenia obovata* Poirlet, *Encycl. Suppl.* 3: 124. 1813.

Vernacular Name: Jam.

Tree, up to 20 m. Leaves coriaceous, elliptic to obovate, 5 – 10 x 3 – 5 cm, base cuneate, veins numerous, intra-marginal vein conspicuous. Cymes borne in axils of older and fallen leaves, many-flowered. Flowers sessile. Calyx funnel-shaped, tube tapering into stalk-like base, lobes shallow, persistent. Petals creamy. Stamens 2 – 5 mm. Fruit obovoid, crimson, becoming black when ripe.

Flowers & Fruits: June to December.

Specimen Cited: Forest, *Rajib & AP Das 0174*, dated 08. 02. 2007.

Local Distribution: Natural Forest patch.

General Distribution: India (tropical and subtropical regions), Sri Lanka, Malaya and Australia.

Syzygium jambos (Linnaeus) Alston, *Handb. Fl. Ceylon* 6(Suppl.): 115 1931. Long *et* Rae in Grierson *et* Long, *Fl. Bhutan* 2 (1): 280. 1991. Prain, *Beng. Pl.?? Eugenia jambos* Linnaeus, *Sp. Pl.* 470. 1753. *Eugenia vulgaris* Baillon, *Hist. Pl.* 6: 345. 1876. *Eugenia jambosa* Crantz, *Inst. Rei Herb.* 2: 201. 1766.

Vernacular name: Golabjam.

Trees, up to 10 m. Stems broadly branched. Branchlets terete. Lamina lanceolate to ovate-lanceolate, 8 – 25 x 2 – 5 cm, leathery, acuminate to long acuminate, entire, base narrow to broadly cuneate. Inflorescences usually terminal cymes with several flowers. Flowers white. Hypanthium obconic. Calyx lobes 4. Petals broadly ovate. Stamens 1.5 – 3 cm. Style 2–3.5 cm. Drupe pale yellow when ripe, globose to ellipsoid, 1 to 2 seeded, pericarp fleshy. Embryos numerous.

Flowers & Fruits: February to November.

Specimen Cited: Bochamari, *Rajib & AP Das 0252*, dated 10. 02. 2007.

Local Distribution: In the villages.

General Distribution: India, Philippines; Malesia and SE Asia.

Onagraceae A.L. de Jussieu, *Gen. Pl.* 317. 1789 ('Onagrae'); *nom. cons.*

LUDWIGIA Linnaeus, *Sp. Pl.* 1: 118 ["Ludvigia"]; 2: [1204]. 1753.

Key to the species:

- 1a. Floating; pneumatophores in at nodes of floating stems *L. adscendens*
 1b. Not floating; pneumatophores absent 2
 2a. Stamens 8; stigma subglobose, 4 lobed *L. octovalvis*
 2b. Stamens many; stigma globose, not 4 lobed 3
 3a. Capsule subcylindric, slightly 4 angled, seeds visible through walls *L. prostrata*
 3b. Capsule oblanceoloid, often nodding, seeds not visible through wall *L. perennis*

Ludwigia adscendens (Linnaeus) Hara in J. Jap. Bot. 28(10): 291. 1953; Cook, Aqua. Wetl. Pl. Ind. 276. 1996; Guha Bakshi, Fl. Mur. Dist. 135. 1984; Bora *et* Kumar, Flor. Div. Ass. 159. 2003. *Jussiaea adscendens* Linnaeus, Syst. Nat. (ed. 12) 2: 297. 1754. *Jussiaea repans* Linnaeus, Sp. Pl. 1: 388. 1753; Clarke in Hooker *f.*, Fl. Brit. Ind. 2: 587. 1879; Prain, Beng. Pl. 1: 368. 1903. [PLATE: 6, Figure-53]

Perennial herbs, with creeping and floating stems, rooting at nodes, with white, erect, spindle shaped pneumatophores in clusters at nodes of floating stems. Lamina oblong to spatulate – oblong, 0.5 – 6 × 0.5 – 3 cm, glabrous, lateral veins 6–12 per side, obtuse to subacute, margin entire. Sepals 5, deltoid-acuminate. Petals creamy-white with yellow base, obovate. Stamens 10. Style white; stigma discoid. Capsule with brown ribs, cylindric.

Flowers & Fruits: June to November .

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0304*, dated 10. 02. 2007.

Local Distribution: Throughout, in water bodies.

General Distribution: India: throughout; Nepal, Bhutan, Pakistan, China, Indonesia, Japan, Malaysia, Philippines, Sri Lanka, Thailand; widespread in Africa, S and SE Asia, Australia.

Ludwigia octovalvis (Jacquin) P.H. Raven, Kew Bull. 15: 476. (1961, publ.) 1962; Hoch in Grierson *et* Long, Fl. Bhutan 2(1): 312. 1991; Cook, Aqua. Wetl. Pl. Ind. 277. 1996. *Ludwigia octovalvis* subsp. *sessiliflora* (Micheli) P.H. Raven, Kew Bull. 15: 476. 1962. *Jussiaea pubescens* Linnaeus, Sp. Pl. (ed. 2) 1: 555. 1762. *Ludwigia octovalvis* (Jacquin) Raven ssp. *sessiliflora* (Roti Michelozzi) Raven in Reinw. 6: 362. 1963; Chowdhery *et al.* in Hajra *et al.*, Materials for the Fl. Arunachal Prad. 1: 504. 1996. *Oenothera octovalvis* Jacquin, Enum. 19. 1760. *Jussiaea suffruticosa* Linnaeus, Sp. Pl. 388. 1753; Clarke in Hooker *f.*, Fl. Brit. Ind. 2: 587. 1879. Prain, Beng. Pl. 1: 368. 1903. [PLATE: 9, Figure-98]

Perennial, erect herbs. Stems up to 90 cm, well branched. Lamina linear to subovate, 4 – 13 × 1 – 4 cm, submarginal vein prominent, attenuate, base narrowly cuneate. Sepals 4, ovate to lanceolate. Petals yellow, broadly obovate. Stamens 8. Stigma subglobose, shallowly 4 lobed. Capsule pale brown, cylindric, terete. Seeds in 2 to more rows per locule, free.

Flowers & Fruits: June to February.

Specimen Cited: Batikata Beel, *Rajib & AP Das 0307*, dated 10. 02. 2007.

Local Distribution: Margins of water bodies of Conservatory sectors and open fishing areas.

General Distribution: India: throughout; Bhutan, China, S.E. Asia, tropical Africa.

Ludwigia perennis Linnaeus, Sp. Pl. 1: 119. 1753; Raven in Reinw. 6: 367. 1964; Hoch in Grierson *et* Long, Fl. Bhutan 2(1): 312. 1991; Cook, Aqua. Wetl. Pl. Ind. 278. 1996; Guha Bakshi, Fl. Mur. Dist. 136. 1984. *Ludwigia oppositifolia* Linnaeus, Syst. Nat. ed. 12: 125. 1767. *Ludwigia parviflora* Roxburgh, Hort. Beng. 11. 1814, *nom. nud.* & Fl. Ind. 1: 440. 1820; Clarke in Hooker *f.*, Fl. Brit. Ind. 2: 588. 1879. Prain, Beng. Pl. 1: 368. 1903. *Jussiaea perennis* (Linnaeus) Brenan, Kew Bull. 1953: 163. 1953. *Jussiaea caryophyllea* de Lamarck, Encycl. 3(1): 331-332. 1789.

Annual erect herbs, with taproot. Stems up to 80 cm, branched, subglabrous. Petiole winged; leaf Annual erect herbs. Stems up to 80 cm, branched. Petiole winged; lamina narrowly elliptic to lanceolate, 3–10 x 1–3 cm, subacute, base narrowly cuneate. Sepals 4, rarely 5, deltate. Petals yellow, elliptic. Stamens many. Stigma globose. Capsule often nodding, pale brown, oblanceoloid, terete. Seeds in 2 to more rows per locule, free.

Flowers & Fruits: Juli to April.

Specimen Cited: Batikata Beel, *Rajib & AP Das 0346*, dated 21.07.2007.

Local Distribution: Batikata Beel margin.

General Distribution: India: throughout; Bhutan, China, Sri Lanka, Madagascar, S. E. Asia, Malaysia to tropical Africa, Australia and New Caledonia.

Ludwigia prostrata Roxburgh, Fl. Ind., ed. 1820 1: 441. 1820; Hoch in Grierson *et* Long, Fl. Bhutan 2(1): 312. 1991; Cook, Aqua. Wetl. Pl. Ind. 279. 1996. *Jussiaea prostrata* (Roxburgh) L v., Feddes Repert. Spec. Nov. Regni Veg. 8: 138. 1910. *Nematopyxis prostrata* Miquel, Fl. Ned. Ind. 37. 1855.

Annual or short-lived perennial herbs, erect. Stems often red tinged, up to 50 cm. Lamina elliptic to narrowly elliptic, 2–12 0.3–2.5 cm, lateral veins 8–12 per side, acute, base narrowly cuneate. Sepals 4, deltate. Petals yellow, narrowly spatulate. Stamens as many as sepals. Stigma globose. Capsule pale brown, subcylindric, slightly 4 angled, seeds clearly visible in outline through walls. Seeds in one row per locule, free.

Flowers & Fruits: June to December.

Specimen Cited: Batikata Beel, *Rajib & AP Das 0287*, dated 10. 02. 2007.

Local Distribution: Marshy low land areas.

General Distribution: India: tropicals; Bhutan, Nepal, China, Indonesia, Philippines, Sri Lanka.

Order: Brassicales Bromhead (1838)

Brassicaceae Lindley, Nat. Syst. ed. 2. 58. 1836 (*nom. alt.* vs. Cruciferae); *nom. cons.*

Key to the genera:

- 1a. Basal leaves rosulate; fruit indehiscent *Cardaria*
- 1b. Basal leaves cauline; fruit dehiscent 2
- 2a. Cauline leaves entire *Brassica*
- 2b. Some cauline leaves coarsely dentate to pinnately divided *Rorippa*

BRASSICA Linnaeus, Sp. Pl. 2: 666. 1753.

Brassica rapa Linnaeus, Sp. Pl. 666. 1753; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 420. 1984. *Brassica chinensis* Linnaeus, Cent. Pl. I: 19. 1755. *Brassica pekinensis* (Loureiro) Rupr., Fl. Ingr. 96. 1860. *Brassica arvensis* Hablitz, Descr. Phys. Taur. 146. 1788.

Vernacular name: Sorshe.

Annual or biennial herbs. Stems erect, simple or branched above. Basal and lowermost cauline leaves petiolate; petiole slender or thickened and fleshy, sometimes strongly winged; lamina ovate to oblong lanceolate, 10–30 3–10cm, entire, repand or dentate, sometimes pinnatifid or pinnatisect and with a large terminal lobe and smaller, 1–6, oblong or ovate lateral lobes on each side of midvein. Upper cauline leaves sessile, ovate, oblong, or lanceolate, base amplexicaul, deeply cordate, or auriculate, margin entire or repand. Flowers in racemes. Sepals oblong. Petals bright yellow, obovate, apex rounded. Fruit linear terete, sessile. Seeds dark brown, globose.

Flowers & Fruits: March to June.

Specimen Cited: Bochamari village, *Rajib & AP Das 0173*, dated 08. 02. 2007.

Local Distribution: Villages and crop fields.

General Distribution: India: widely cultivated.

CARDAMINE Linnaeus, Sp. Pl. 2: 654. 1753.

Cardamine hirsuta Linnaeus, Sp. Pl. 655. 1753; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 431. 1984. *Cardamine multicaulis* Hoppe ex Schur, Enum. Pl. Transsilv. 47. 1866. *Cardamine tenella* E.D. Clarke, Trav. Var. Eur. 2: 117. 1812.

Annual herbs. Stems erect, ascending or decumbent. Basal leaves rosulate; petiole ciliate; lamina 2.5 – 8 cm, lyrate pinnatisect; terminal lobe reniform or orbicular, entire, repand or 3 – 5 lobed. Fruiting pedicels erect or ascending, slender. Sepals oblong. Petals white, spatulate. Stamens 4. Ovules 14 – 40 per ovary. Fruit linear; valves glabrous. Seeds light brown.

Flowers & Fruits: March to August.

Specimen Cited: Park, *Rajib & AP Das 0119*, dated 07. 02. 2007.

Local Distribution: Park and Garden areas.

General Distribution: India: pantropical areas; Bhutan, China, Sri Lanka, Pakistan, Indonesia, Malaysia, Japan, Laos, New Guinea, Philippines, Thailand, Turkmenistan, Vietnam; S.W. Asia, Europe; naturalized in S. Africa, Australia, North and South America.

RORIPPA Scopoli, Fl. Carniol. 520. 1760.

Rorippa benghalensis (DC.) Hara, J. Jap. Bot. 49: 132. 1974; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 437. 1984. *Nasturtium benghalense* de Candolle, Syst. Nat. 2: 198. 1821. *Sinapis benghalensis* Roxburgh *ex* de Candolle, Syst. Nat. 2: 198. 1821 (prosyn.). *Nasturtium indicum* Linnaeus var. *benghalensis* (de Candolle) Hooker *f.* & T. Anderson in Hooker *f.*, Fl. Brit. Ind. 1: 134. 1872.

Annual herbs. Stems simple at base, few to many branched above. Basal leaves soon withered. Lowermost cauline leaves auriculate; lamina oblong to oblong obovate, lyrate-pinnatifid; terminal lobe broadly ovate or oblong; lateral lobes 1 – 4, oblong or ovate, margin serrate or dentate. Racemes bracteate throughout; bracts lanceolate linear to oblong-linear, subentire or denticulate. Sepals elliptic or oblong. Petals pale yellow, spatulate or oblanceolate. Ovules 100 – 170 per ovary. Fruit linear, straight or curved. Seeds reddish brown.

Flowers & Fruits: March to May.

Specimen Cited: Garden, *Rajib & AP Das 0107*, dated 07. 02. 2007.

Local Distribution: Park and Garden areas.

General Distribution: India: tropical parts; Nepal, Bhutan, Bangladesh, Indo-china and Java, Thailand, Vietnam.

Capparidaceae A.L. de Jussieu, Gen. Pl. 242. 1789 ('Capparides'); *nom. cons.*

Key to the genera:

- | | |
|--|-----------------|
| 1a. Leaves compound, with 3 leaflets | <i>Crateva</i> |
| 1b. Leaves simple | <i>Capparis</i> |

Capparis zeylanica Linnaeus, Sp. Pl. ed. 2: 720. 1762. *Capparis acuminata* Roxburgh, Fl. Ind. 2: 566. 1824. *Capparis aeylanica* Roxburgh, Fl. Ind. 2: 567. 1824. *Capparis polymorpha* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42(2): 227. 1873.

Scandent shrubs or trailing. Stipular spines strong, sharp, recurved. Leaves simple; lamina elliptic-lanceolate to obovate-lanceolate, 3 – 8 x 2 – 4cm, acute, base cuneate to rounded, subleathery. Inflorescences superaxillary racemes, 2 or 3 flowered, near apex of young branches. Sepals slightly unequal; sepals of outer whorl nearly orbicular acute to obtuse; sepals of inner whorl elliptic. Petals white to yellowish white, oblong. Stamens 30–45. Gynophore base gray tomentose; ovary ellipsoid; ovules many. Fruit red to purplish red when mature, globose to ellipsoid.

Flowers & Fruits: February to July.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0241*, dated 09. 02. 2007.

Local Distribution: Takomari forest.

General Distribution: Tropical India; Bhutan, China, Nepal, Indonesia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam.

CRATEVA Linnaeus, Sp. Pl. 1: 444. 1753.

Crateva religiosa G. Forster, Diss. Pl. Esc. 45. 1786; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 412. 1984. [PLATE: 7, Figure-75]

Vernacular name: Barna.

Large trees; up to 25m. Petiole with minute triangular glands near rachis; lamina 5 – 9 x 3 – 4 cm, thin and leathery, abaxially gray, acuminate to abruptly acuminate. 10 – 25-flowered in corymbs; bracts leaflike, caducous. Flowers open as leaves emerge. Sepals ovate, acuminate. Petal white to yellow. Stamens 16–22. Fruit ovoid to obovoid. Seeds 22 – 28 per fruit, dark brown.

Flowers & Fruits: April to August.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0207*, dated 09. 02. 2007.

Local Distribution: Atiamochar Forests area.

General Distribution: India: tropical; Bhutan, Nepal, Sri Lanka, Cambodia, Indonesia, Myanmar, Thailand, Vietnam.

Caricaceae Dumortier, Anal. Fam. Pl. 36. 1829 (*nom. cons. prop.* vs. Papayaceae).

CARICA Linnaeus, Sp. Pl. 2: 1036. 1753.

Carica papaya Linnaeus, Sp. Pl. 1036. 1753; Clarke in Hooker *f.*, Fl. Brit. Ind. 2: 599. 1879; Grierson in Grierson *et* Long, Fl. Bhut. 2(1): 236. 1991. *Carica citrifolia* Jacquin, Ecl. Pl. Rar. 1: 101, t. 68-69, 1816. *Papaya carica* Gaertner, Fruct. Sem. Pl. 2: 191, pl. 122, f. 2. 191. 1790. *Papaya edulis* Bojer, Hortus Maurit. 277. 1837. *Vasconcellea peltata* (Hooker *et* Arnot) A. de Candolle, Prodr. 15(1): 416. 1864. *Papaya peltata* (Hooker *et* Arnot) Kuntze, Revis. Gen. Pl. 1: 253. 1891. *Carica peltata* Hooker *et* Arnot, Bot. Beechey Voy. 425. 1840.

Vernacular Name: Pepe.

Shrubs. Leaves ovate or orbicular in outline, deeply palmately divided into 7 – 9 sharp tooth, pinnatifid lobes. Flowers fragrant; panicles 30 – 40 cm, lobes spreading. Female flowers on peduncles; petals lanceolate. Fruit yellow when ripe, ellipsoid or narrowly obovoid, flesh thick, orange. Seeds ellipsoid, black, wrinkled.

Flowers & Fruits: January to December.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0096*, dated 07. 02. 2007.

Local Distribution: Panted in Villages.

General Distribution: A native of West Indies; widely cultivated in warmer areas.

Moringaceae R. Brown in Denham *et* Clapperton, Trav. N. and Central Afr. 238. 1826 ('Moringeae'); *nom. cons.*

MORINGA Adanson, Fam. Pl. 2: 318. 1763.

Moringa oleifera Lamarck, Encycl. 1: 398. 1785; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 445. 1984. *Guilandina moringa* Linnaeus, Sp. Pl. 1: 381. 1753. *Moringa zeylanica* Burmann, Thes. Zeylan. 162, t. 75: 162. 1736. *Moringa moringa* (Linnaeus) Millspaugh, Field Mus. Nat. Hist., Bot. Ser. 1(7): 490. 1902. *Moringa pterygosperma* Gaertner, Fruct. Sem. Pl. 2: 314-315, pl. 147, f. 2: 314. 1791.

Vernacular Name: Sajna.

Trees. Leaves petiolate, 3 – pinnate; lamina 4–6 pairs, ovate to elliptic oblong, rounded to emarginate, base rounded to cuneate. Inflorescence a widely spreading panicle, bracteate. Flowers white to cream, fragrant. Sepals lanceolate to linear-lanceolate. Petals spatulate. Ovary hairy. Capsule 3 – valved, dehiscent. Seeds subglobose, 3 – angled.

Flowers & Fruits: June to December.

Specimen Cited: Bochamari, Rajib & AP Das 0171, dated 08. 02. 2007.

Local Distribution: Cultivated at villages.

General Distribution: native to India; Tropical and sub-tropical parts of the world.

Order: Malvales Jussieu *ex* Berchtert *et* J. Presl (1820)

Bixaceae Kunth, Diss. Malv. etc. 17. 1822 ('Bixineae').

BIXA Linnaeus, Sp. Pl. 1: 512. 1753.

Bixa orellana Linnaeus, Sp. Pl. 512. 1753; Long *et* Rae in Grierson *et* Long, Fl. Bhutan 2 (1): 231. 1991. *Bixa purpurea* Sweet, Hort. Brit. 33. 1826. *Orellana americana* (Poir.) Kuntze, Revis. Gen. Pl. 1: 44. 1891. *Orellana orellana* (Linnaeus) Kuntze, Revis. Gen. Pl. 3(2): 9. 1898.

Shrubs or small trees, evergreen. Leaves simple, alternate; lamina abaxially pale green, adaxially deep green, cordate ovate to triangular ovate, 10 – 25 4 – 12 cm, palmately 5-veined, glabrous, entire, acuminate, base rounded or subtruncate, sometimes slightly cordate. Panicles robust, often flat-topped. Sepals obovate. Petals bright pink, obovate. Stamens many; anthers yellow, apically dehiscent. Capsule subglobose or ovoid, slightly laterally compressed. Seeds numerous, red-brown.

Flowers & Fruits: Throughout the year.

Specimen Cited: Bochamari, Rajib & AP Das 0106, dated 07. 02. 2007.

Local Distribution: Cultivate in Village.

General Distribution: India: native to tropical America; cultivated pantropically.

Dipterocarpaceae Blume, Bijdr. 1: 222. 1825 ('Dipterocarpeae').

SHOREA Roxburgh *ex* C. F. Gaertner, Suppl. Carp. 47. 1805.

Shorea robusta Roxburgh *ex* Gaertner f., Suppl. Carp. 3: 48.t. 186. 1805; Clarke in Hooker f., Fl. Brit. Ind. 1: 306. 1874; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 361. 1984.

Vernacular Name: Sal.

Trees, up to 40 m, deciduous; crown spreading. Stipules lanceolate, small. Leaves simple, alternate; lamina 8 – 20 3 – 12 cm, ovate to oblong, entire, acuminate, base obtuse to cordate, thinly leathery, midvein prominent abaxially and conspicuous adaxially, glabrous. Flowers sessile;

branches racemose, secund; bracts caducous, minute. Petals strongly contorted, linear. Sepals ovate, subequal. Stamens many. Ovary ovoid. Fruit sepals unequal, spatulate, sparsely pubescent; nut ovoid.

Flowers & Fruits: February to July.

Specimen Cited: Rasik Beel forest, *Rajib & AP Das 0648*, dated 12. 02. 2008.

Local Distribution: Atiamochar, Takomari, Solmari forests.

General Distribution: Tropical and sub-tropical parts of the world.

Malvaceae A.L. de Jussieu, Gen. P11. 271. 1789.

Key to the genera:

- | | |
|--|---------------------|
| 1a. Leaves simple | 2 |
| 1b. Leaves digitately compound | 10 |
| 2a. Stamens in 2 or more bundle..... | 3 |
| 2b. Stamens in single bundle..... | 4 |
| 3a. Androgynophore absent; fruit a smooth capsule | <i>Corchorus</i> |
| 3b. Androgynophore present; fruit a spiny or bristly capsule | <i>Triumfetta</i> |
| 4a. Fruit a loculicidal capsule; ovary with 3–5 fused carpels | 5 |
| 4b. Fruits schizocarp, sometimes berrylike, carpels separating into mericarps | 6 |
| 5a. Calyx caducous; capsule long and sharp-angled | <i>Abelmoschus</i> |
| 5b. Calyx persistent; capsule usually cylindrical to globose | <i>Hibiscus</i> |
| 6a. Filament tube with anthers inserted along sides | 7 |
| 6b. Filament tube with anthers inserted at apex | 8 |
| 7a. Epicalyx 5-lobed | <i>Urena</i> |
| 7b. Epicalyx 7–12-lobed | <i>Malvaviscus</i> |
| 8a. Epicalyx absent | <i>Sida</i> |
| 8b. Epicalyx present | 9 |
| 9a. Epicalyx lobes 6 | <i>Alcea</i> |
| 9b. Epicalyx lobes 3 | <i>Malva</i> |
| 10a. Seeds with cotton | <i>Bombax</i> |
| 10b. Seeds without cotton | 11 |
| 11a. Flowers without petals; fruit apocarpous with separate follicles | <i>Sterculia</i> |
| 11b. Flowers with petals; fruit syncarpous | 12 |
| 12a. Flowers without staminodes | <i>Melochia</i> |
| 12b. Flowers with staminodes | 13 |
| 13a. Seeds with long membranous wing | <i>Pterospermum</i> |
| 13b. Seeds wingless | <i>Ambroma</i> |

ABELMOSCHUS Medikus, Malvenfam. 45. 1787.

Abelmoschus moschatus Medikus, Malv. 1: 46. 1787; Blumea 14: 90. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 66. 1979; Fl. Ind. 3: 308. 1993. *Hibiscus abelmoschus* Linnaeus, Sp. Pl. 696. 1753; Roxburgh, Fl. Ind. ed. 2, 3: 202. 1832; Dyer in Fl. Brit. Ind. 1: 347. 1874; J. B. Nat. Hist. S. 51: 781. 1953; *Bamia abelmoschus* (Linnaeus) Robert Brown *ex* Wallich, Cat. 52. 1829. *Abelmoschus betulifolia* Wallich, Numer. List 87. 1829. *Abelmoschus ciliaris* Walper, Repert.

Bot. Syst. 2: 308. 1843. *Hibiscus moschatus* (Medikus) Salisbery, Prodr. Stirp. Chap. Allerton 387. 1796. *Hibiscus chinensis* Roxburgh, Hort. Bengal. 51. 1814.

Vernacular name: Muskdana.

Annual or perennial shrub. Stems glandular hairy. Lamina broadly ovate or orbicular, 4–17 x 3–18 cm; lamina angular, 3–7 lobed, upper leaves narrower, lobes linear, lanceolate, ovate to obovate–oblong, serrate or dentate, acute or acuminate, base broadly cordate. Flowers solitary, axillary. Epicalyx segments linear, persistent. Calyx stellate–tomentose outside, sericeous inside. Corolla yellow with dark purple centre, petals obovate, rounded at apex, fleshy and ciliate at base. Capsules ovoid to globose, acuminate. Seeds musk scented.

Flowers & Fruits: October to December.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0379*, dated 21.07.2007.

Local Distribution: Plantation Sector.

General Distribution: India: tropical region; Bangladesh, China, Indo–China, Thailand, Malaysia and Fiji Islands.

HIBISCUS Linnaeus, Sp. Pl. 2: 693. 1753, *nom. cons.*

Key to the species:

- 1a. Plants herbaceous *H. sabdariffa*
- 1b. Plants large shrubs or trees 2
- 2a. Staminal column longer than corolla; lamina not lobed *H. rosa-sinensis*
- 2b. Staminal column shorter than corolla; lamina lobed *H. mutabilis*

Hibiscus mutabilis Linnaeus, Sp. Pl. 694. 1753; Roxburgh, Fl. Indica ed. 2, 3: 201. 1832; Dyer in Hooker f., Fl. Brit. Ind. 1: 344. 1874; H. Ohashi in Hara, Fl. E. Himal. 1: 204. 1966; Blumea 14: 66. 1966; Bull. B. Surv. Ind. 12: 167. 1972; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 67. 1979; Fasc. Fl. Ind. 19: 147. 1988; Fl. Ind. 3: 390. 1993; Hajra *et al.*, Fl. W. Beng. 1: 298, 1997.

Vernacular name: Sthal Padma.

Perennial, shrubs, 6 m tall. Lamina suborbicular, 12–25 cm across, palmately 3–7 lobed. Flowers solitary, axillary or sub corymbose at the top. Epicalyx segments 8–12, linear–lanceolate. Calyx lobes 3–4 x 1 cm, ovate–lanceolate. Petals obovate, 6–8 cm, white to pink, changing colour to more or less red in late evening. Staminal column shorter than corolla. Capsules subglobose. Seeds reniform.

Flowers & Fruits: September to December.

Specimen Cited: Rasik Beel Village, *Rajib & AP Das 0487*, dated 23.07.2007.

Local Distribution: Village area.

General Distribution: India: tropical regions; South China, Taiwan, South Japan. Widely cultivated and occasionally naturalised in the tropics.

Hibiscus rosa-sinensis Linnaeus, Sp. Pl. 694. 1753; Roxburgh, Fl. Ind. ed. 2, 3: 194. 1832; Dyer in Fl. Brit. Ind. 1: 334. 1874; H. Ohashi in Hara, Fl. E. Himal. 1: 204. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 67. 1979; Fl. Ind. 3: 391. 1993; Hajra *et al.*, Fl. W. Beng. 1: 299, 1997; Miller *et Long* in Grierson *et Long*, Fl. Bhut. 2 (1): 182. 1991.

Vernacular name: Jaba.

Perennial, erect, glabrous shrubs, 2–3 m tall. Lamina ovate to ovate–lanceolate, 4–10 x 3–5 cm; regularly serrate, acute, base rounded. Flowers solitary, axillary. Epicalyx segments 5–10,

lanceolate, free half as long as calyx. Calyx campanulate, lanceolate. Petals obovate, red. Staminal column 5 – 9 cm long, exserted, pollen bearing in upper half only. Fruit not found.

Flowers & Fruits: Throughout the year.

Specimen Cited: Rasik Beel Village, *Rajib & AP Das 0326*, dated 21.07.2007.

Local Distribution: Village area.

General Distribution: Tropical India; possibly Eastern African origin. Widely cultivated throughout the tropics and subtropics.

Hibiscus sabdariffa Linnaeus, Sp. Pl. 695. 1753; Dyer in Fl. Brit. Ind. 1: 340. 1874; H. Ohashi in Hara, Fl. E. Himal. 1: 204. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 67. 1979; Fl. Ind. 3: 391. 1993; Prain, Beng. Pl. 1: 182. 1963; Hajra *et al.*, Fl. W. Beng. 1: 299, 1997; Miller *et Long* in Grierson *et Long*, Fl. Bhut. 2 (1): 182. 1991.

Vernacular name: Chukar, Tok Dhenros.

Annual herbs, 1 – 2m tall. Lamina polymorphic, 5 – 10 x 1 – 2 cm, palmately 3 – 5 lobed, lobes lanceolate, ovate or oblong. Flowers solitary, axillary or in raceme by reduction of the upper leaves. Epicalyx segments 8 – 11, lanceolate to oblong elliptic. Calyx cup – shaped, fleshy after flowering. Petals obovate, 4 – 5 cm long, yellow with purple base. Staminal column shorter than petals. Capsules ovoid. Seeds reniform.

Flowers & Fruits: October to January.

Specimen Cited: Bochamari Village, *Rajib & AP Das 0317*, dated 21.07.2007.

Local Distribution: Village area.

General Distribution: India: tropical India; unknown origin, cultivated in the tropics.

MALVAVISCUS Fabricius, Enum. 155. 1759.

Malvaviscus penduliflorus de Candolle, Prodr. 1: 445. 1824. *Malvaviscus arboreus* subsp. *penduliflorus* (de Candolle) Hada, Folia Geobot. Phytotax. 5: 432. 1970. *Malvaviscus arboreus* var. *penduliflorus* (de Candolle) Schery in Ann. Miss. Bot. Gard. 29: 223. 1942; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 68. 1979; Miller *et Long* in Grierson *et Long*, Fl. Bhut. 2 (1): 194. 1991. *Malvaviscus penduliflorus* Mocino & Sesse *ex de Candolle*, Prodr. 1: 445. 1824; Fl. Ind. 3: 393. 1993; Hajra *et al.*, Fl. W. Beng. 1: 306, 1997; *Malvaviscus arboreus* Cavanilles, Diss. 3: 13, t. 48. f. 1. 1787; H. Ohashi in Hara, Fl. E. Himal. 1: 205. 1966; Blumea 14: 132. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 68. 1979; Fl. Ind. 3: 393. 1993; *Hibiscus malvaviscus* Linnaeus, Sp. Pl. 694. 1753.

Vernacular name: Lankajaba.

Erect, perennial shrubs; shoots stellate – pubescent and with simple hairs. Lamina ovate to broadly ovate, entire or 3 – 5 lobed, 3 – 10 x 1.5 – 8 cm, acute, base rounded or cordate, margin serrate, thinly pubescent; petiole 1 – 4 cm; stipules filiform 2 – 5 mm. Pedicels 1 cm. Epicalyx segments 5 – 10, linear – oblong, Fl. Bhut. 1 cm. Calyx 1 – 2 cm. Petals scarlet.

Flowers & Fruits: Throughout the year.

Specimen Cited: Rasik Beel Village, *Rajib & AP Das 0329*, dated 21.07.2007.

Local Distribution: Village area.

General Distribution: India: Cultivated throughout in India; Native in tropical America; South America, Widely cultivated in the tropics.

URENA Linnaeus, Sp. Pl. 2: 692. 1753.

Urena lobata Linnaeus, Sp. Pl. 692. 1753, s.l.; Masters in Fl. Brit. India 1: 329. 1872; Roxburgh, Fl. Ind. ed. 2, 3: 182. 1832; H. Ohashi in Hara, Fl. E. Himal. 1: 206. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 69. 1979; Fl. Ind. 3: 380. 1993; Hajra *et al.*, Fl. W. Beng. 1: 312, 1997; Miller *et Long* in Grierson *et Long*, Fl. Bhutan 2(1): 194. 1991. *Urena trilobata* Velloso, Fl. Flumin. 7: t. 44t. 44. 1825. *Urena grandiflora* de Candolle, Prodr. 1: 442. 1824.

Perennial undershrubs. Stems pubescent. Leaves extremely variable in size and shape, lamina 2–9 x 1–7 cm, ovate to orbicular, shallowly lobed, lobes 3–5, serrate to crenate, obtuse to acute, base shallowly cordate to rounded, hairy on both surfaces; stipules linear to lanceolate, acute. Flowers axillary, solitary or 2–3 in clusters. Epicalyx segments linear to lanceolate, acute, simple and stellate hairs towards apex inside. Calyx tubular to campanulate, lobes ovate to deltoid, shortly acuminate, hairs similar to epicalyx. Corolla pink with a purple centre; obovate, rounded at apex. Schizocarps globose, spines with 4–5 retrores, short, sharp hooks at the top. Seeds reniform.

Flowers & Fruits: August to December.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0277*, dated 10. 02. 2007.

Local Distribution: Plantation sector & conservation area.

General Distribution: Throughout in India; pantropical weed.

SIDA Linnaeus, Sp. Pl. 2: 683. 1753.

Key to the species:

- 1a. Calyx adaxially with long simple hairs along veins; mericarps smooth *S. cordata*
- 1b. Calyx adaxially stellate pubescent or glabrous; mericarps smooth 2
- 2a. Mericarp awns conspicuous *S. cordifolia*
- 2b. Mericarp awns absent 3
- 3a. Leaves distichous; stipules unequal *S. acuta*
- 3b. Leaves spiral; stipules equal *S. rhombifolia*

Sida acuta Burman *f.*, Fl. Ind. 147. 1768; J. B. Nat. Hist. S. 51: 780. 1953; H. Ohashi in Hara, Fl. E. Himal. 1: 205. 1966; Blumea 14: 186. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 68. 1979; Roxbrgh, Fl. Indica 3: 171. 1832; Fl. Ind. 3: 281. 1993; Hajra *et al.*, Fl. W. Beng. 1: 308, 1997; Miller *et Long* in Grierson *et Long*, Fl. Bhutan 2(1): 192. 1991. *Sida lanceolata* Retzius, Obs. Bot. 4: 119. 1786. *Sida carpinifolia* auct. *non* Linnaeus *f.* 1785; Dyer in Fl. Brit. Ind. 1: 323. 1874. *Malvinda carpinifolia* (Linnaeus *f.*) Medik., Malvenfam. 24. 1787. *Sida carpinifolia* Linnaeus *f.*, Suppl. Pl. 307. 1782.

Vernacular name: Set Berala.

Erect under shrubs, branched throughout, shoots thinly stellate-pubescent becoming glabrous. Lamina narrowly lanceolate to lanceolate, serrate, acute, base cuneate, rarely rounded, glabrescent, stipules of each pair unequal, filiform to linear-lanceolate. Flowers axillary, solitary or 2–5 flowered. Petals yellow, obovate.

Flowers & Fruits: September to May.

Specimen Cited: Road near Gate, *Rajib & AP Das 0079*, dated 06. 02. 2007.

Local Distribution: All Terrestrial Sectors.

General Distribution: India: Along roadsides up to 1200m, open places throughout; Pantropical.

Sida cordifolia Linnaeus, Sp. Pl. 684. 1753; Dyer in Fl. Brit. Ind. 1: 324. 1874; H. Ohashi in Hara, Fl. E. Himal. 1: 205. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 68. 1979; Fl. Ind. 3: 285. 1993; Hajra *et al.*, Fl. W. Beng. 1: 309, 1997; Miller *et Long* in Grierson *et Long*, Fl. Bhutan 2 (1): 192. 1991. *Sida pellita* Kunth, Nov. Gen. Sp. 5: 263 1822. *Sida holosericea* Willdenow *ex Sprengel*, Syst. Veg. 3: 112. 1826. *Sida rotundifolia* de Lamarck *ex Cavanilles*, Diss. 1: 19, pl. 3, f. 6: 19. 1785.

Vernacular name: Berala.

Erect, under shrubs. Lamina ovate to oblong or orbicular; crenate serrate; obtuse or acute; shallowly cordate at base. Flowers axillary, solitary or 2 – 5 in clusters. Corolla yellow or cream yellow, petals obliquely obovate, truncate at apex; ciliate at base. Staminal column simple hairy or glabrous.

Flowers & Fruits: Throughout the year.

Specimen Cited: Road near Gate, Rajib & AP Das 0100, dated 07. 02. 2007.

Local Distribution: All terrestrial sector.

General Distribution: India: Throughout the dry waste places; Pantropical.

Sida rhombifolia Linnaeus, Sp. Pl. 684. 1753; Miller *et Long* in Grierson *et Long*, Fl. Bhutan 2 (1): 193. 1991. *Malva rhombifolia* (Linnaeus) E.H.L. Krause, Deutschl. Fl. (ed. 2) 6: 238. 1901. *Napaea rhombifolia* (Linnaeus) Moench, Methodus 621. 1794.

Sida alba Cavanilles, Diss. 1: 22. 1785.

Erect or prostrate subshrubs, much branched. Stipules linear; leaf simple, lamina rhombic to oblong lanceolate or obovate, 1–5 1 – 2 cm, dentate, obtuse to acute, base broadly cuneate. Flowers solitary, axillary. Pedicel 1 – 2 cm. Calyx cup-shaped, lobes triangular, apices acute. Petals yellow, obovate, base attenuate, apex rounded. Filament tube 4 – 5 mm, glabrous. Style branches 8 – 10. Fruit semiglobose to broadly turbinate, shallowly grooved to near base. Seeds reniform, blackish.

Flowers & Fruits: September to March.

Specimen Cited: Road near Gate, Rajib & AP Das 0132, dated 07. 02. 2007.

Local Distribution: Road side.

General Distribution: India: Bhutan, Cambodia, Laos, Nepal, Thailand, Vietnam; pantropical.

Sida cordata (Burman *f.*) Borss. Waalk., Blumea 14: 182. 1966; Miller *et Long* in Grierson *et Long*, Fl. Bhutan 2 (1): 192. 1991. *Melochia cordata* Burman *f.*, Fl. Indica 143. 1768. *Sida multicaulis* Cavanilles, Diss. 1: 10, pl. 1, f. 6: 10. 1785.

Procumbent shrubs. Stems slender. Stipule filiform; leaf simple, alternate, lamina broadly ovate, 2 – 5 1.8 – 5 cm, crenate or dentate, acuminate, base cordate. Flowers usually solitary, axillary. Pedicel slender. Calyx cup shaped, lobes acute. Corolla yellow. Filament tube glabrous or sparsely pilose. Schizocarp nearly globose.

Flowers & Fruits: July to February.

Specimen Cited: Road near Gate, Rajib & AP Das 0126, dated 07. 02. 2007.

Local Distribution: Road side.

General Distribution: India: Philippines, Sri Lanka, Thailand; pantropical species of unknown origin.

ALCEA Linnaeus, Sp. Pl. 2: 687. 1753.

Alcea rosea Linnaeus, Sp. Pl. 687. 1753; Fl. Ind. 3: 386. 1993; Hajra *et al.*, Fl. W. Beng. 1: 293, 1997; Miller *et Long* in Grierson *et Long*, Fl. Bhutan 2 (1): 190. 1991. *Althaea rosea* (Linnaeus) Cavanilles, Diss. 2. 91. t. 28. f. 1. 1786; Dyer in Fl. Brit. Ind. 1: 319. 1874; Blumea 14: 151. 1966. *Althaea rosea* var. *sinensis* (Cavanilles) S.Y. Hu, Fl. China Family 153: 10. 1955. *Althaea sinensis* Blanco, Fl. Filip. 552. 1837.

Erect herbs, up to 2 m tall. Leaves simple; lamina 3 – 10 x 3 – 8 cm, ovate to suborbicular, deeply 3 – 7 lobed, crenate, acute, base cordate or rounded; glabrous or sparsely stellate above. Flowers solitary, axillary or in terminal raceme by replacing the upper leaves. Epicalyx segments 6–7, ovate to lanceolate. Petals red. Staminal column 5 angled. Schizocarps depressed globose, longitudinally sulcate.

Flowers & Fruits: March to September.

Specimen Cited: Park, *Rajib & AP Das 0165*, dated 08. 02. 2007.

Local Distribution: Park.

General Distribution: Extensively cultivated.

MALVA Linnaeus, Sp. Pl. 2: 687. 1753.

Malva verticillata Linnaeus, Sp. Pl. 689. 1753; Masters in Fl. Brit. Ind. 1: 320. 1874; Miller *et* Long in Grierson *et* Long, Fl. Bhutan 2 (1): 189. 1991; Prain, Beng. Pl. 1: 256. 1903. *Malva neilgherrensis* Wight, Icon. Ind. Orient., t. 950. 1845. Sharma *et al.*, Fl. Ind. 3: 363. 1993.

Vernacular name: Laffa sak.

Biennial herbs; stem sparsely stellate velutinous. Stipules ovate-lanceolate. Leaves simple; lamina reniform to round, 5 – 11 5 – 10 cm, 5 – 7 lobed, lobes rounded or acute, margin crenateserrate. Flowers 3 to many-fascicled, axillary. Epicalyx lobes filiform-lanceolate. Calyx cup-shaped. Corolla whitish to reddish, slightly longer than sepals. Filament tube 3 – 4 mm, glabrous. Style branches 10. Schizocarp flat globose. Seeds purple-brown, reniform.

Flowers & Fruits: December to March.

Specimen Cited: Rasik Beel Village, *Rajib & AP Das 0205*, dated 09. 02. 2007.

Local Distribution: Cultivate at villages.

General Distribution: India: cultivated throughout; Bhutan, Korea, Mongolia, Myanmar, Pakistan; Asia, Europe, Egypt and South Africa.

CORCHORUS Linnaeus, Sp. Pl. 1: 529. 1753.

Corchorus aestuens Linnaeus, syst. Nat. ed. 10. 2: 1079. 1759; Sharma *et al.*, Fl. Ind. 3: 485. 1993; Long *et* Rae in Grierson *et* Long, Fl. Bhutan 2 (1): 172. 1991. *Corchorus acutangulus* de Lamarck, Encycl. 2: 104. 1786; Mast. in Hooker *f.*, Fl. Brit. Ind. 1: 398. 1874.; Haines, Bot. Bihar & Orissa 2: 87. 1921. *Corchorus fuscus* Roxburgh, Fl. Ind. 2: 582. 1824.

Vernacular name: Jangli pat.

Annual herbs, up to 1 m tall. Stem brownish; branches slender. Leaves simple, alternate. Lamina ovate or broadly ovate, 4 – 6 3 – 4 cm, serrate, shortly acuminate or acute, base rounded, basal pair of teeth usually elongating into filiform or caudate appendages. Flowers solitary or several together in cymes, axillary or leaf-opposed. Sepals 5, narrowly oblong. Petals 5, yellow, nearly as long as sepals, obovate. Stamens many, yellow. Ovary 3 – 5 loculed, long cylindrical. Capsule cylindrical, angled, 3 – 5 valved. Seeds separated by transverse septum.

Flowers & Fruits: August to December.

Specimen Cited: Rasik Bil, *Rajib & AP Das 0164*, dated 08. 02. 2007.

Local Distribution: Bochamari Beel.

General Distribution: India, Bangladesh, Bhutan, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa, Australia, Central America, West Indies.

TRIUMFETTA Linnaeus, Sp. Pl. 1: 444. 1753.

Triumfetta rhomboidea Jacquin, Enum. Syst. Pl. 22. 1760; Long *et* Rae in Grierson *et* Long, Fl. Bhutan 2 (1): 173. 1991. *Bartramia indica* Linnaeus, Sp. Pl. 389. 1753. *Triumfetta angulata* Lam., Encycl. 3(2): 421. 1791. *Triumfetta bartramii* Linnaeus, Syst. Nat. (ed. 10) 2: 1044. 1759. *Triumfetta indica* Lam., Encycl. 3: 420. 1791. *Bartramia rhombifolia* Stokes, Bot. Mat. Med. 3: 15. 1812.

Subshrubs. Branchlets gray-brown tomentose. Leaves simple, alternate; lamina of lower leaf broadly ovate orbicular to rhomboid, 3 lobed, 3 – 8 2 – 7 cm, irregularly bluntly serrate, acute, base broadly cuneate or rounded; upper leaf blades oblong-lanceolate, not lobed. Cymes 3 – 5 per axil. Sepals narrowly oblong, villous. Petals yellow, slightly shorter than sepals, hairy along margins. Stamens 10. Ovary spiny. Capsule globose, spiny, indehiscent, tip hooked.

Flowers & Fruits: August to May.

Specimen Cited: Road near Gate, Rajib & AP Das 0078, dated 06. 02. 2007.

Local Distribution: Road side.

General Distribution: India; throughout tropics; type from West Indies.

BOMBAX Linnaeus, Sp. Pl. 1: 511. 1753, *nom. cons.*

Bombax ceiba Linnaeus, Sp. Pl. 1: 511. 1753; Hajra *et al*, Fl. Ind. 3: 398. 1993; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 195. 1991. *Bombax ceiba* Burman *f.*, Fl. Indica 145. 1768. *Bombax malabaricum* de Candolle, Prodr. 1: 479. 1824. *Gossampinus malabarica* Merrill, Lingnan Sci. J. 5: 126. 1927 publ. 1928. *Gossampinus rubra* Buchanan-Hamilton, Trans. Linn. Soc. London 15: 128. 1826. *Melaleuca grandiflora* Blanco, Fl. Filip. 615. 1837.

Vernacular Name: Simul.

Large tree, up to 25m; branches whorled, spreading horizontally; trunk buttressed at base. Leaves clustered towards branch ends, with 5 – 7 leaflets; leaflets elliptic, 9 – 16 x 4 – 5 cm, entire, caudate. Flowers appearing before leaves, solitary, axillary, borne towards branch ends. Calyx green. Petals crimson, thick, narrowly oblong – obovate. Stamens shortly united at base. Style 4 – 6 mm. Capsule ellipsoid, thickly white woolly within; seeds numerous.

Flowers & Fruits: March to April.

Specimen Cited: Atiamochar forest, Rajib & AP Das 0435, dated 22.07.2007.

Local Distribution: Forest and Road side near Leopard cage.

General Distribution: Tropical and sub-tropical parts of the world.

ABROMA Linnaeus *f.*, Suppl. Pl. 54. 1782.

Abroma augusta Linnaeus *f.*, Suppl. Pl. 341. 1782; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 206. 1991.

Vernacular Name: Ulat Khambal

Shrubs, upto 4 m. Branchlets densely stellate velutinous. Stipules linear, caducous; Leaves simple; lamina cordate or ovate-cordate, 3 – 5 lobed, 10 – 20 8 – 17cm, basal veins 3 – 7, prominently raised on both surfaces, acute or acuminate, base cordate. Inflorescence cymose, 1 – 5 flowered. Flowers pendulous. Sepals lanceolate, both surfaces densely puberulent. Petals dark bluish purple, basal part as broad as long and hairy, upper part elliptic spatulate, apex acute or obtuse. Staminodes nearly spatulate, both surfaces hairy. Ovary oblong, slightly hairy; style triangular-tongue-shaped. Capsule erect, stellate hairy, 5 winged. Seeds oblong, black.

Flowers & Fruits: June to January.

Specimen Cited: Bochamari Village, *Rajib & AP Das 0073*, dated 06. 02. 2007.

Local Distribution: Panted in Villages.

General Distribution: India, Nepal, Bhutan, China, Malaysia.

MELOCHIA Linnaeus, Sp. Pl. 2: 674 [“774”]. 1753, *nom. cons.*

Melochia corchorifolia Linnaeus, Sp. Pl. 675. 1753; Mast. in Hooker *f.*, Fl. Brit. Ind. 1: 374. 1874; Sharma *et al.*, Fl. Ind. 3: 441. 1993; Guha Bakshi, Fl. Mur. Dist. 71. 1984. *Riedleia corchorifolia* (Linnaeus) de Candolle, Prodr. 1: 491. 1824. *Geruma subtriloba* Blanco, Fl. Filip. 182. 1837. *Melochia supina* Linnaeus, Sp. Pl. 675. 1753. *Melochia erecta* Burman *f.*, Fl. Indica 143. 1768. *Riedleia corchorifolia* (Linnaeus) de Candolle, Prodr. 1: 491. 1824.

Subshrubs, less than 1 m, erect or decumbent. Branches yellow-brown, sparsely stellate puberulent. Stipules linear. Leaves simple; lamina ovate to ovate lanceolate, 2 – 6 x 1 – 2 cm, dentate, acute, base rounded or cordate, thinly papery, basal veins 5. Inflorescence a dense terminal or axillary cyme. Epicalyx lobes 4, linear, hairy. Calyx campanulate, 5 lobed, lobes triangular. Petals 5, white, drying reddish, oblong, narrowed at base. Stamens 5, connate at base, opposite petals. Ovary sessile; styles 5, filiform. Capsule globose, 5 angular. Seeds brown-black, ovoid, slightly triangular.

Flowers & Fruits: June to December.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0383*, dated 21.07.2007.

Local Distribution: Throughout the Beel Margin.

General Distribution: India: Paleotropical.

PTEROSPERMUM Schreber, Gen. Pl. 2: 461. 1791, *nom. cons.*

Pterospermum acerifolium Willdenow, Sp. Pl. 3: 729. 1800; Long *et* Rae in Grierson *et* Long, Fl. Bhutan 2 (1): 204. 1991. *Pentapetes acerifolia* Linnaeus, Sp. Pl. 698. 1753. *Pterospermadendron acerifolium* (Linnaeus) Kuntze, Revis. Gen. Pl. 1: 80. 1891. *Dombeya acerifolia* (Linnaeus) Gaertner, Fruct. Sem. Pl. 2: 260. 1791.

Big trees. Branchlets densely velutinous. Stipules linear; petiole robust, striate; lamina nearly orbicular to oblong, Fl. Bhut. 2 0 – 35 x 12 – 27 cm, entire or crenate, truncate, nearly pointed, base cordate, leathery; juvenile leaves palmately lobed, peltate. Flowers solitary, fragrant; epicalyx lobes fimbriate or palmately divided. Sepals linear oblong. Petals white, linearoblong, slightly cuneate, glabrous. Staminodes hairy. Ovary oblong, 5 angular; ovules many per locule. Capsule woody, cylindrical, 5 grooved, apex rounded. Seeds many per locule, obliquely ovate, flat, brown, smooth.

Flowers & Fruits: August to December.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0473*, dated 23.07.2007.

Local Distribution: Pantation forests.

General Distribution: India, Bhutan, Bangladesh, Nepal, Laos, Malaysia, Myanmar, Thailand.

STERCULIA Linnaeus, Sp. Pl. 2: 1007. 1753.

Sterculia villosa Roxburgh, Fl. Ind., ed. 1832, 3: 153. 1832; Dyer in Fl. Brit. Ind. 1: 355. 1874; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 199. 1991. *Sterculia armata* Masters, Fl. Brit. India 1: 357. 1874. *Sterculia lantsangensis* Hu, Bull. Fan Mem. Inst. Biol., Bot. 8(1): 42. 1937.

Vernacular name: Odal.

Trees. Branchlets robust, with leaf scars, brown stellate pubescent when young. Leaves simple; stipules lanceolate; lamina palmately 3 – 7 lobed, 17 – 22 cm, caudate, base broadly cordate, central lobe broadly ovate. Inflorescence subterminal on branchlets, paniculate. Calyx campanulate,

apex acuminate. Male flowers: androgynophore curved, glabrous. Stamens 10. Female flowers: ovary globose. Style curved downward, hairy. Follicles narrowly ellipsoid, apex shortly beaked. Seeds black, oblong.

Flowers & Fruits: February to October.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0468*, dated 23.07.2007.

Local Distribution: Forests.

General Distribution: India, Bhutan, Cambodia, Myanmar, Nepal, Thailand. Tropical and subtropical parts of the world.

Order: Sapindales Jussieu *ex* Berchtold & J. Presl (1820)

Anacardiaceae R. Brown in Tuckey, Narr. Exped. Congo 431. 1818 ('Anacardieae'); *nom. cons.*

Key to the genera:

- 1a. Leaves pinnately compound *Lannea*
- 1b. Leaves simple *Mangifera*

LANNEAA. Richard in Guillemin et al., Fl. Seneg. Tent. 153. 1831, *nom. cons.*

Lannea coromandelica (Houttuyn) Merrill in J. Arnold Arb. 19: 353. 1939; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 61. 1991. *Dialium coromandelicum* Houttuyn, Nat. Hist. Ser. 2(2): 39. t.5. f.2. 1774. *Odina wodier* Roxburgh, Fl. Ind. 2: 293. 1832; Hooker *f.* in Hooker *f.*, Fl. Brit. India 2: 29. 1876.

Vernacular Name: Jika.

Deciduous trees, up to 10 m. Leaves imparipinnately compound; lamilets usually 7 pairs, ovate to oblong-ovate, 5 – 9 2.5 – 4 cm, entire, acuminate, base cuneate; membranous or papery. Inflorescences paniculate or racemose, appearing before leaves. Flowers unisexual, tetramerous. Calyx lobes ovate to broadly ovate. Petals yellow, ovate-oblong. Ovary glabrous, ovoid, 4-locular, usually only 1 ovule fertile. Drupes ovaoid – obovoid, red in maturity.

Flowers & Fruits: January to May.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0364*, dated 21.07.2007.

Local Distribution: Village areas.

General Distribution: India, Bhutan, India, Myanmar, Nepal, Sri Lanka; cultivated elsewhere in continental SE Asia, such as in Cambodia, Laos, Malaysia, Thailand, Vietnam, where it is probably naturalized.

MANGIFERA Linnaeus, Sp. Pl. 1: 200. 1753.

Mangifera indica Linnaeus, Sp. Pl. 1: 200. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. India 2: 13. 1876; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 59. 1991; Fl. Ind. 5: 466. 2000.

Vernacular Name: Aam.

Trees, up to 20 m. Petiole grooved apically, inflated basally; lamina oblong to oblong-lanceolate, 12 – 20 x 3 – 5 cm, leathery, acute to long acuminate, entire, undulate, base cuneate to obtuse. Inflorescence paniculate, terminal, glabrous to tomentose-pilose; bracts lanceolate, pubescent. Pedicels articulate. Sepals ovate-lanceolate, glabrous to pubescent, acuminate. Petals light yellow, oblong to oblong-lanceolate, glabrous. Fertile stamen 1, with ovate anther; staminodes

4. Disk inflated, fleshy, 5 lobed. Ovary oblique, ovate. Drupe oblong to subreniform, greenish yellow to red.

Flowers & Fruits: March to July.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0334*, dated 21.07.2007.

Local Distribution: Village areas.

General Distribution: India, Nepal, Bangladesh, Myanmar and Malaysia.

Meliaceae A.L. de Jussieu, Gen. Pl. 263. 1789 ('Meliae'); *nom. cons.*

Key to the genera:

- | | |
|--|--------------------|
| 1a. Fruit a capsule; seeds winged | 2 |
| 1b. Fruit a drupe or berry; seeds not winged | 4 |
| 2a. Filaments free | <i>Toona</i> |
| 2b. Filaments connate into a staminal tube | 3 |
| 3a. Anthers inserted on apical margin of staminal tube | <i>Chukrasia</i> |
| 3b. Anthers inserted inside staminal tube | <i>Swietenia</i> |
| 4a. Fruits a capsule | <i>Aphanamixis</i> |
| 4b. Fruits a drupe | 5 |
| 5a. Leaves bipinnate | <i>Melia</i> |
| 5b. Leaves pinnate..... | <i>Azadirachta</i> |

AZADIRACHTA Jussieu, Bull. Sci. Nat. Geol. 23: 236. 1830.

Azadirachta indica A. Jussieu in Mem. Mus. Hist. Nat. 19: 221.t.13.f. 5. 1830; Fl. Ind. 4: 478. 1997; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 32. 1991. *Melia azadirachta* Linnaeus, Sp. Pl. 385. 1753; Hooker *f.*, Fl. Brit. Ind. 1: 544. 1875.

Vernacular name: Nim.

Trees, up to 10 m, deciduous. Leaves odd-pinnate, pinnate; leaflets opposite; lamilets ovate – elliptic to lanceolate, 3 – 7 x 2 – 3 cm, shortly acuminate, crenate to entire, base ± oblique and cuneate to broadly cuneate. Flowers fragrant. Calyx 5 parted; sepals ovate to oblongovate, acute. Petals lilac-colored, obovate spatulate. Staminal tube purple; anthers 10. Ovary spherical, glabrous, 5 – 8 locular, with 2 ovules per locule; style acerose; stigma capitate. Drupe globose to ellipsoid. Seed ellipsoid.

Flowers & Fruits: March to December.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0452*, dated 22.07.2007.

Local Distribution: Cultivated in village areas.

General Distribution: Pantropical.

CHUKRASIA A. Jussieu, Bull. Sci. Nat. G ol. 23: 239. 1830.

Chukrasia tabularis A. Jussieu in Mem. Mus. Hist. Nat. 19: 251. t. 22. 1830; Hooker *f.* in Hooker *f.*, Fl. Brit. India 1: 568. 1875; Hajra *et al.*, Fl. Ind. 4: 481. 1997; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 39. 1991.

Vernacular name: Chikrasi.

Trees, up to 25 m. Leaves usually 30 – 50 cm; lamilets 10 – 15; lamilet ovate to oblong-lanceolate, 6 – 12 x 3 – 5 cm, papery, acute to acuminate, entire, base oblique. Thyrses lax; bracts linear. Flowers fragrant. Calyx puberulent. Petals cream-colored to ± lavender, linear-oblong to spatulate,

12 – 15 x 5 – 6 mm. Staminal tube cylindrical; anthers 10, oblong. Ovary on a short disk, elongate. Capsule yellowish gray to brown, subglobose to oblong, usually 3-valved, woody. Seeds flat, oblong.

Flowers & Fruits: April to January.

Specimen Cited: Atiamochar, *Rajib & AP Das 0454*, dated 22.07.2007.

Local Distribution: Forests.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Indonesia, Laos, Malaysia, Thailand, Vietnam.

MELIA Linnaeus, Sp. Pl. 1: 384. 1753.

Melia azedarach Linnaeus, Sp. Pl. 384. 1753; Hooker *f.*, Fl. Brit. Ind. 1: 544. 1875; Hajra *et al.*, Fl. Ind. 4: 494. 1997; Grierson in Grierson *et Long*, Fl. Bhut. 2 (1): 30. 1991.

Vernacular name: Ghoranim.

Trees, up to 10 m, deciduous. Leaves odd-pinnate, 2 to 3-pinnate; leaflets opposite; lamilets ovate – elliptic to lanceolate, 3 – 7 x 2 – 3 cm, shortly acuminate, crenate to entire, base ± oblique and cuneate to broadly cuneate. Flowers fragrant. Calyx 5 parted; sepals ovate to oblongovate, acute. Petals lilac-colored, obovate spatulate. Staminal tube purple; anthers 10. Ovary spherical, glabrous, 5 – 8 locular, with 2 ovules per locule; style acerose; stigma capitate. Drupe globose to ellipsoid. Seed ellipsoid.

Flowers & Fruits: March to December.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0243*, dated 09. 02. 2007.

Local Distribution: Cultivated in village areas.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Indonesia, Laos, Papua New Guinea, Philippines, Thailand, Vietnam; tropical Australia, Pacific islands.

SWIETENIA Jacquin, Enum. Syst. Pl. 4. 1760.

Swietenia mahagoni (Linnaeus) Jacquin, Enum. Syst. Pl. 20. 1760; Hajra *et al.*, Fl. Ind. 4: 525. 1997. *Cedrela mahagoni* Linnaeus, Syst. Nat., ed. 10, 2: 940. 1759.

Vernacular name: Mehagoni.

Large trees, up to 25 m. Leaves alternate, base slightly swelling; leaflets 8 – 12; leaflet blades ovate to lanceolate, 10 – 18 x 4 – 6 cm, leathery, long acuminate, entire or with 1 to 2 serrations, base oblique. Thyrses axillary. Flowers small. Calyx cup-shaped, 5 lobed; lobes short and truncate, apex rounded. Petals greenish white, obovate. Staminal tube subcylindric, glabrous; anthers 10. Disk annular. Ovary conic to ovoid. Capsule brown, ovoid. Seeds apically winged.

Flowers & Fruits: May to October.

Specimen Cited: Bochamari, *Rajib & AP Das 0390*, dated 21.07.2007.

Local Distribution: Cultivated in village areas.

General Distribution: India, tropical Asia. Native to tropical America.

TOONA (Endlicher) M. Roemer, Fam. Nat. Syn. Monogr. 1: 131. 1846.

Toona ciliata M. Roemer, Fam. Nat. Syn. Monogr. 1: 139. 1846; Grierson in Grierson *et Long*, Fl. Bhut. 2 (1): 38. 1991. *Cedrela toona* Roxburgh *ex* Rottler, Ges. Naturf. Freunde Berlin Neue Schriften 4: 198. 1803; Hooker *f.*, Fl. Brit. Ind. 1: 568. 1875.

Vernacular Name: Tun.

Trees, up to 25m. Leaves pilose; leaflets usually 7 – 15 pairs, glabrescent; leaflet blades lanceolate to ovate-lanceolate, 9 – 11 x 3 – 5 cm, acute to acuminate, entire, base usually asymmetric. Inflorescences pendent. Flowers sweetly scented. Sepals spatulate, margins shortly ciliate. Petals white to creamy white. Disk reddish orange. Seeds winged at both ends; wings unequal, apex narrowly obtuse.

Flowers & Fruits: January to November.

Specimen Cited: Park, *Rajib & AP Das 0267*, dated 10.02. 2007.

Local Distribution: Cultivated in village areas and Park sector.

General Distribution: Tropical and sub-tropical parts of the world. India, Bangladesh, Bhutan, Nepal, Sri Lanka, Pakistan, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, Vietnam; E Australia, W Pacific islands.

APHANAMIXIS Blume, Bijdr. 165. 1825.

Aphanamixis polystachya (Wallich) R. Parker, Indian Forester 57: 486. 1931; Grierson in Grierson et Long, Fl. Bhut. 2 (1): 35. 1991. *Amoora rohituka* (Roxburgh) Wight & Arnott in Wight, Cat. Ind. Pl. 24. 1833; Hooker f., Fl. Brit. Ind. 1: 559. 1875. *Andersonia rohituka* Roxburgh, Fl. Ind. 2: 213. 1832. *Aglaia polystachya* Wallich in Roxburgh, Fl. Ind. 2: 429. 1824.

Medium trees, up to 30 m. Leaves odd- or evenpinnate, 30 – 60 cm; leaflets 7 – 21, opposite; leaflet blades oblong-elliptic to ovate, 12 – 23 x 4 – 10 cm with basal pair smallest, subleathery to leathery when mature, caudate-acuminate to obtuse, entire, base oblique and cuneate to broadly cuneate or sometimes one side rounded. Inflorescences axillary. Sepals 5, suborbicular. Petals concave. Staminal tube globose, glabrous. Ovary 3 locular. Capsule spherical-pyriform to nearly ovoid. Seeds grayish brown, oblate.

Flowers & Fruits: May to October.

Specimen Cited: Takomari forest, *Rajib & AP Das 0532*, dated 23.07.2007.

Local Distribution: Forests near conservation area.

General Distribution: India, Bhutan, Indonesia, Sri Lanka, Laos, Malaysia, Papua New Guinea, Philippines, Thailand, Vietnam; Pacific islands.

Rutaceae A.L. de Jussieu, Gen. Pl. 296. 1789; *nom. cons.*

Key to the genera:

- 1a. Fruit follicular or drupaceous; endocarp cartilaginous; seeds with endosperm *Toddalia*
- 1b. Fruit baccate; endocarp membranous or fleshy; seeds without endosperm 2
- 2a. Leaves digitately 3-foliolate 3
- 2b. Leaves odd-pinnately with 5 to 7 leaflets 4
- 3a. Plants evergreen; fruit with leathery exocarp and spongy mesocarp *Citrus*
- 3b. Plants deciduous; fruit with thin, parenchymatous exocarp and woody mesocarp ... *Aegle*
- 4a. Style persistent in fruit *Glycosmis*
- 4b. Style deciduous in fruit 5
- 5a. Flower buds globose *Clausena*
- 5b. Flower buds ellipsoid to obovoid *Murraya*

AEGLE Corr a, Trans. Linn. Soc. London 5: 222. 1800, *nom. cons.*

Aegle marmelos (Linnaeus) Correa in Trans. Linn. Soc. London 5:223.1800; Hooker *f.*, Fl. Brit. Ind. 1:516.1875; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 10. 1991. *Crateva marmelos* Linnaeus, Sp. Pl. 444.1753. Fl. Ind. 4: 264. 1997.

Vernacular name: Bel.

Trees; shoots dimorphic, some spineless others bearing straight spines. Lamina ovate – elliptic, crenate, bluntly acuminate, base cuneate, glabrous or sparsely pubescent; petioles unwinged. Calyx cup-shaped. Petals elliptic oblong, white. Fruits ellipsoid or broadly ovoid.

Flowers & Fruits: March to December.

Specimen Cited: Bochamari village, *Rajib & AP Das 0598*, dated 26.07.2007.

Local Distribution: Village areas.

General Distribution: India, Myanmar and Sri Lanka.

CITRUS Linnaeus, Sp. Pl. 2: 782. 1753.

Key to the species:

- 1a. Shrubs *C. limon*
- 1b. Trees *C. maxima*

Citrus limon (Linnaeus) Osbeck, Reis Ostindien China, 250. 1765; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 22. 1991. *Citrus medica* Linnaeus var. *limon* Linnaeus, Sp. Pl. 2: 782. 1753. [PLATE: 7, Figure-73]

Vernacular Name: Lebu.

Shrubs. Branches spiny. Leaf blade ovate to elliptic, margin conspicuously crenulate, apex usually mucronate. Flowers solitary. Calyx cup-shaped. Petals purplish, inside white. Ovary subcylindric or barrel-shaped. Fruit yellow, ellipsoid to ovoid.

Flowers & Fruits: April to May.

Specimen Cited: Near conservation sector, *Rajib & AP Das 0594*, dated 25.07.2007.

Local Distribution: Forests.

General Distribution: Tropical and sub-tropical parts of the world.

Citrus maxima (Burman) Merrill, Interpr. Herb. Amboin. 296.1917; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 21. 1991. *Aurantium maximum* Burman in Rumphius & Burman, Herb. Amboin. Auctuar. 7: Index [16]. 1755.

Vernacular Name: Jambura.

Trees; twigs spiny. Leaves obtuse, base rounded, margin obscurely crenate, pubescent along midrib beneath; petiole broadly winged. Flowers solitary or in axillary clusters. Petals white, oblong. Ovary subglobose, sharply delimited from deciduous style. Fruit globose or subpyriform; peel yellow, thick.

Flowers & Fruits: April to December.

Specimen Cited: Bochamari village, *Rajib & AP Das 0600*, dated 26.07.2007.

Local Distribution: Cultivated in village areas.

General Distribution: Pantropical.

CLAUSENA N.L. Burman, Fl. Indica, 87, 243. 1768.

Clausena excavata Burman *f.*, Fl. Ind. 87, t. 29, 2. 1768; Hooker *f.*, Fl. Brit. Ind. 1: 504. 1875; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 16. 1991; Fl. Ind. 4: 325. 1997.

Vernacular name: Bonkari.

Shrubs, up to 2 m. Leaves 21 – 27 foliolate but on young plants to 41 foliolate; lamina ovate - lanceolate to rhomboid, asymmetric, 2 – 9 x 1 – 3 cm, both surfaces pubescent, Obtuse to shortly acuminate, repand, base oblique. Inflorescences terminal; bracts opposite. Flowers globose in bud. Petals pale yellowish white, ovate to obovate. Stamens 8; filaments basally dilated, geniculate at middle, apically linear. Style stout. Fruit ellipsoid; 1 to 2 seeded.

Flowers & Fruits: April to October.

Specimen Cited: Road side near gate, *Rajib & AP Das 0528*, dated 23.07.2007.

Local Distribution: Forests.

General Distribution: India: tropical; Bhutan, Bangladesh, Nepal, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

GLYCOSMIS Corr a, Ann. Mus. Natl. Hist. Nat. 6: 384. 1805, *nom. cons.*

Glycosmis pentaphylla (Retzius) de Candolle, Prodr. 1: 538. 1924 ; Grierson in Grierson *et Long*, Fl. Bhut. 2 (1) : 15. 1991. *Limonia pentaphylla* Retzius, Observ. Bot. 5: 24. 1789.

Trees, up to 5m. Leaves 3 to 5 foliolate; leaflet blades oblong, 10 – 25 x 3 – 7 cm, papery, mucronate, serrate, base cuneate. Inflorescences axillary or terminal paniculate. Flowers globose in bud. Sepals broadly ovate. Petals white or pale yellow. Stamens 10. Ovary globose to broadly ovoid; style extremely short; stigma slightly expanded. Fruit reddish, subglobose.

Flowers & Fruits: July to March.

Specimen Cited: Rasik Beel forest, *Rajib & AP Das 0561*, dated 24.07.2007.

Local Distribution: Forests.

General Distribution: Tropical and sub-tropical parts of the world. India, Bhutan, Sri Lanka, Indonesia, Cambodia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Thailand, N.W. Vietnam.

MURRAYAJ. Koenig ex Linnaeus, Mant. Pl. 2: 554, 563. 1771 [“*Murraea*”], *nom. cons.*

Key to the species:

- 1a. Fruits bluish black, ovoid to oblong *M. koenigii*
- 1b. Fruit orange, narrowly ellipsoid *M. paniculata*

Murraya koenigii (Linnaeus) Sprengel, Syst. Veg. 2: 315. 1817; Hooker *f.*, Fl. Brit. Ind. 1: 503. 1875; H. Ohashi in Hara, Fl. E. Himal. 3: 75. 1975; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 82. 1979; Grierson in Grierson *et Long*, Fl. Bhut. 2 (1): 17. 1991. *Bergera koenigii* Linnaeus, Mant. Pl. 2: 555, 563. 1771.

Vernacular Name: Karipata.

Shrubs, up to 5 m. Leaves 17 – 31-foliolate; lamina ovate, 2–5 x 0.5–2 cm, entire, base obtuse to rounded and oblique. Inflorescences terminal, many flowered. Flowers 5 – merous, ellipsoid in bud. Sepals ovate. Petals white, oblanceolate to oblong. Stamens 10. Stigma capitate. Fruits bluish black, ovoid to oblong.

Flowers & Fruits: March to August.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0679*, dated 14. 02. 2008.

Local Distribution: Forests.

General Distribution: Tropical and sub-tropical parts of the world. India, Bhutan, Nepal, Pakistan, Sri Lanka, Thailand, Laos, Vietnam.

Murraya paniculata (Linnaeus) Jack, Malayan Misc. 1: 31. 1820; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 17. 1991. *Chalcas paniculata* Linnaeus, Mant. Pl. 1: 68. 1767.

Vernacular name: Kamini.

Shrubs, up to 6 m. Leaves 2–5 foliolate; petiolules less than 1 cm; lamina mostly suborbicular-ovate to elliptic, 2–6 1.5–3 cm, rounded to acuminate, entire to crenulate. Inflorescences terminal or axillary. Flowers 5 merous, fragrant. Sepals ovate to lanceolate, persistent in fruit. Petals white, narrowly elliptic to oblanceolate. Stamens 10. Fruit orange, narrowly ellipsoid or rarely ovoid. Seeds villous.

Flowers & Fruits: May to February.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0642*, dated 12. 02. 2008.

Local Distribution: Forests.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Pakistan, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Philippines, Thailand, Vietnam; Australia, S.W. Pacific islands.

TODDALIA Jussieu, Gen. Pl. 371. 1789, nom. cons.

Toddalia asiatica (Linnaeus) Lamarck, Tabl. Encycl. 2: 116. 1797; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 9. 1991. *Paullinia asiatica* Linnaeus, Sp. Pl. 1: 365. 1753, *typ. cons.*

Vernacular name: Belkanta.

Woody climbers, usually armed. Petiole 1–4 cm; leaflet blades usually sessile to subsessile, elliptic to obovate or oblanceolate, 3–12 1–4 cm, acuminate or rarely acute to obtuse, base narrowly cuneate to attenuate. Inflorescences up to 17 cm. Sepals 0.3–0.5 mm. Petals cream-white, ovate to elliptic. Stamens in male flowers 3–4 mm, in female flowers ligulate. Gynoecium in female flowers ovoid to ellipsoid. Fruit 5–10 mm in diam.

Flowers & Fruits: August to January.

Specimen Cited: Salmari forest, *Rajib & AP Das 0724*, dated 14.02. 2008.

Local Distribution: Forests.

General Distribution: India: tropical; Bhutan, Nepal, Bangladesh, Indonesia, Japan, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Madagascar.

Sapindaceae A.L. de Jussieu, Gen. Pl. 246. 1789 ('Sapindi'); *nom. cons.*

LITCHI Sonnerat, Voy. Indes Orient. 3: 255. 1782.

Litchi chinensis Sonnerat, Voy. Indes Orient. 3: 255-258. 1782; Long in Grierson *et* Long, Fl. Bhut. 2 (1): 72. 1991. *Nephelium litchi* Cambess, M m. Mus. Hist. Nat. 18: 30. 1829.

Vernacular Name: Lichu.

Evergreen tree, up to 30 m. Leaflets coriaceous, elliptic – lanceolate, 6–15 2–4 cm, sharply acuminate, base obliquely cuneate, lateral veins inconspicuous. Inflorescences terminal panicles. Calyx greenish-white. Stamens 6 to 7; filaments ca. 4 mm. Ovary densely tuberculous and hispid. Fruit globose; pericarp dry and brittle when ripe, warted; aril whitish, fleshy.

Flowers & Fruits: February to July.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0313*, dated 10. 02. 2007.

Local Distribution: Cultivated in study area.

General Distribution: S.E. Asia; widely cultivated in subtropical regions. Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam, New Guinea; widely cultivated in subtropical regions.

Core-Eudicots: Asterids (fr.: Ast rid es)**Order 47: Cornales** Link (1829)

Cornaceae Dumortier, Anal. Fam. Pl. 33. 1829 ('Corneae'); Link, Handb. 2: 2. 1831.

ALANGIUM Lamarck, Encycl. 1: 174. 1783, *nom. cons.*

Alangium chinense (Loureiro) Harms in Ber. Deutsch. Bot. Ges. 15: 24. 1897; Clement in Grierson *et* Long, Fl. Bhutan 2(1): 332. 1991. *Stylidium chinense* Loureiro, Fl. Cochinch. 1: 221. 1790. *Marlea begoniaefolia* Roxburgh, Cor. Pl. 3: 80t. 203. 1819; Clarke in Hook.f, Fl. Brit. Ind. 2: 743. 1879; Prain, Beng. Pl.?? *Stylidium chinense* Loureiro, Fl. Cochinch. 221. 1790. *Guettarda jasminiflora* Blanco, Fl. Filip. 722. 1837.

Small trees. Leaves alternate; pubescent, ovate – suborbicular or broadly subquadrate, margin entire to angular lobed, tip long acuminate, base oblique, truncate or deeply cordate, glabrous above. Flowers white, inflorescence axillary. Fruits ovoid, dark purple when ripe, glabrous.

Flowers & Fruits: March to October.

Specimen Cited: Road side near conservation sector, *Rajib & AP Das 0640*, dated 12. 02. 2008.

Local Distribution: Forest.

General Distribution: India: tropical; Bhutan, Nepal, Myanmar, Malaysia, Tropical Africa.

Order: Ericales Berchtold & J. Presl (1820)

Balsaminaceae De Candolle, Prodr. 1: 685. 1824 ('Balsamineae'); *nom. cons.*

IMPATIENS Linnaeus, Sp. Pl. 2: 937. 1753.

Key to the species:

- 1a. Upper petal cucullate; ovary glabrous *I. trilobata*
- 1b. Upper petal orbicular, mucronulate; ovary densely pubescent *I. balsamina*

Impatiens balsamina Linnaeus, Sp. Pl. 2: 938. 1753; C. Grey-Wilson in Grierson *et* Long, Fl. Bhut. 2 (1): 103. 1991.

Vernacular name: Dopati.

Annual herbs, up to 80 cm. Stem succulent. Leaves alternate, sometimes lowest ones opposite; lamina narrowly elliptic to oblanceolate, 4 – 12 x 1.5 – 3 cm, lateral veins 4 – 7 pairs, acuminate, deeply serrate, base cuneate. Inflorescences 1 to 3 flowered axillary fascicle without peduncles. Flowers pink, simple or double petalous. Lateral sepals 2. Lower sepal deeply navicular. Upper petal orbicular, mucronulate; lateral united petals shortly clawed, 2 lobed; basal lobes obovate-oblong, small; distal lobes suborbicular. Stamens 5; filaments linear; anthers ovoid, apex obtuse. Ovary densely pubescent. Capsule broadly fusiform. Seeds many, black-brown, globose.

Flowers & Fruits: July to October.

Specimen Cited: Garden, *Rajib & AP Das 0620*, dated 11. 2. 2008.

Local Distribution: Garden.

General Distribution: Native to SE Asia; cultivated worldwide.

Impatiens trilobata Colebrooke, Exot. Fl. 2: t. 141. 1825; C. Grey-Wilson in Grierson *et* Long, Fl. Bhut. 2 (1): 90. 1991. *Impatiens flavida* Hooker f. & Thomson, J. Proc. Linn. Soc., Bot. 4: 127. 1860.

Vernacular name: Dopati.

Annual herbs, up to 70 cm. Stem succulent. Leaves alternate, sometimes lowest ones opposite; lamina narrowly elliptic – lanceolate to oblanceolate, 3 – 10 x 1.5 – 2.5 cm, lateral veins 5 – 7 pairs, acuminate, serrate, base cuneate. Inflorescences 2 to 3 flowered axillary fascicle. Flowers pink, simple or double petalous. Lateral sepals 2. Lower sepal deeply saccate. Upper petal cucullate; lateral united petals shortly clawed, 2 lobed; basal lobes obovate-oblong, small; distal lobes suborbicular. Stamens 5; filaments linear; anthers ovoid. Ovary fusiform, glabrous. Capsule fusiform. Seeds many, black, globose.

Flowers & Fruits: July to October.

Specimen Cited: Atiamochar forest margin, *Rajib & AP Das 0554*, dated 24.07.2007.

Local Distribution: Forest margin.

General Distribution: Tropical Asia.

Ebenaceae Ventenat, Tabl. Regne V6g. 2: 443. 1799; *nom. cons.*

DIOSPYROS Linnaeus, Sp. Pl. 2: 1057. 1753.

Diospyros malabarica (Desrousseaux) Kosteletsky, Allg. Med. Pharm. Fl. 3: 1099. 1834; Long et Rae in Grierson et Long, Fl. Bhut. 2(2): 576. 1999. *Garcinia malabarica* Desrousseaux in Lam., Ency. 3: 701. 1792. *Diospyros embryopteris* Persoon, Syn. 2: 624. 1807(*illegitimate*); C.B. Clarke in Hooker f., Fl. Brit. India 3: 556. 1882. *Embryopteris glutinifera* Roxburgh, Pl. Coromandel 1: 49. 1796. *Diospyros glutinifera* (Roxburgh) Wallich, Numer. List. 4123. B. 1831.

Vernacular Name: Gab.

Trees; branchlets glabrous. Leaves coriaceous, oblong, acute-obtuse, base rounded, reticulate above; petiole stout. Flowers unisexual, fragrant, white; males in umbellate cymes, females solitary; calyx accrescent. Fruits globose, reddish, yellow when ripe.

Flowers & Fruits: May to July.

Specimen Cited: Rasik Bil village, *Rajib & AP Das 0222*, dated 09. 02. 2007.

Local Distribution: Planted in Villages.

General Distribution: India, Sri Lanka, Thailand.

Lecythidaceae Poiteau, Mem. Mus. Hist. Nat. Paris 13: 141. t. 2-8. 1825; *nom. cons.*

Key to the genera:

- 1a. Leaves clustered at apex of branchlets; fruits globose, many-seeded *Careya*
- 1b. Leaves not clustered at apex; fruits 4 angled, 1 seeded *Barringtonia*

BARRINGTONIA J. R. Forster & G. Forster, Char. Gen. Pl. 38. 1775, *nom. cons.*

Barringtonia acutangula (Linnaeus) Gaertner, Fruct. 2: 97. 1791; Clarke in Hooker f., Fl. Brit. Ind. 2: 508. 1879. *Eugenia acutangula* Linnaeus, Sp. Pl. 471. 1753. *Butonica acutangula* (Linnaeus) Lamarck, Tabl. Encycl. t. 591. 1794. *Caryophyllus acutangulus* (Linnaeus) Stokes, Bot. Mat. Med. 3: 75. 1812. *Michelia acutangula* (Linnaeus) Kuntze, Revis. Gen. Pl. 1: 240. 1891.

Vernacular Name: Hijol.

Trees. Leaves alternate; lamina obovate or oblanceolate, obscurely denticulate, rounded, obtuse or acute, base cuneate. Racemes long, drooping, many-flowered. Sepals 4, oblong, connate below; petals 4, elliptic, obtuse, pink. Fruits 4 – angled, 1 – seeded.

Flowers & Fruits: May to December.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0109*, dated 07. 02. 2007.

Local Distribution: Road side.

General Distribution: India, Bangladesh, Sri Lanka, Myanmar, Bangladesh, Australia.

CAREYA Roxburgh, Pl. Coromandel 3: 13. 1811; *nom.cons.*

Careya arborea Roxburgh, Pl. Corom. 3: 14, t.218. 1819; Clarke in Hooker f., Fl. Brit. Ind. 2:511. 1879; Long et Rae in Grierson et Long, Fl. Bhutan 2(1): 290. 1991. *Barringtonia arborea* (Roxburgh) F. Mueller, Fragm. 5: 184. 1866. *Careya orbiculata* Miers, Trans. Linn. Soc. London, Bot. 1: 98. 1875. *Cumbia coneanae* Buchanan-Hamilton, Trans. Linn. Soc. London 15: 97. 1827. *Careya sphaerica* Roxburgh, Fl. Ind. 2: 636. 1824.

Vernacular Name: Kumbhi.

Deciduous trees; fibrous bark. Leaves clustered towards apex of branchlets; lamina obovate, crenate-denticulate to entire, shortly acuminate, base cuneate. Flowers sessile, in terminal cymes; calyx campanulate, lobes 4; petals 4, white. Berries globose, green, many-seeded.

Flowers & Fruits: April to July.

Specimen Cited: Forest, *Rajib & AP Das 0153*, dated 08. 02. 2007.

Local Distribution: Forests.

General Distribution: India, Bhutan, China, Sri Lanka, Bangladesh, Pakistan.

Primulaceae Ventenat, Tabl. Regne V6g. 2: 285. 1799; *nom. cons.*

Key to the genera:

1a. Lamina elliptic to oblanceolate; petals nearly free *Ardisia*

1b. Lamina broadly ovate to oblong; petals campanulate *Maesa*

ARDISIA Swartz, Prodr. Veg. Ind. Occ. 3: 48. 1788.

Ardisia solanacea Roxburgh, Pl. Coromandel 1: 27. 1795; Long et Rae in Grierson et Long, Fl. Bhut. 2(2): 514. 1999.

Shrubs, glabrous. Lamina elliptic to oblanceolate, papery, base cuneate, margin subrevolute, entire, apex acute. Inflorescences at bases of new shoots, paniculate with racemose. Flowers leathery, pink. Sepals broadly ovate to reniform, ciliate, apex rounded. Petals nearly free; lobes broadly ovate, margin entire, hyaline, apex obtuse or acute. Fruits purplish red or blackish, densely black punctate.

Flowers & Fruits: February to November.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0249*, dated 10. 02. 2007.

Local Distribution: Through out forests.

General Distribution: India, Nepal, Singapore, Sri Lanka, cultivated in Hawaii.

MAESA Forssk 1, Fl. Aegypt. Arab. 66. 1775.

Maesa indica (Roxburgh) A. de Candolle, Trans. Linn. Soc. London 17(1): 134. 1834; Long et Rae in Grierson et Long, Fl. Bhut. 2(2): 507. 1999. *Baeobotrys indica* Roxburgh, Fl. Ind. 2: 230. 1824.

Shrubs, up to 2m tall, scandent. Leaves simple, alternate; lamina broadly ovate to oblong, 8 – 18 x 5 – 9cm, serrate-dentate or -denticulate, teeth not callose, acute or acuminate, base obtuse or

subrounded, papery. Inflorescences axillary or subterminal, racemose or paniculate; bracteoles broadly ovate. Flowers white or light yellow-green. Calyx lobes broadly ovate, pellucid punctate, margin entire, sparsely ciliate. Corolla campanulate, orange punctate-lineate; lobes broadly ovate. Stamens inserted at middle of corolla tube. Style short; stigma lobed. Fruit globose or subglobose.

Flowers & Fruits: April to September.

Specimen Cited: Atiamochar, Rajib & AP Das 0177, dated 08. 02. 2007.

Local Distribution: Throughout forests.

General Distribution: India: throughout; Bhutan, China, Vietnam.

Sapotaceae A.L. de Jussieu, Gen. Pl. 151. 1789 ('Sapotae'); *nom. cons.*

MANILKARA Adanson, Fam. Pl. 2: 166. 1763, *nom. cons.*

Manilkara zapota (Linnaeus) P.Royen, Blumea 7: 410. 1953. *Achras sapota* Linnaeus, Sp. Pl. ed. 2: 470. 1762. *Achras zapota* Linnaeus, Sp. Pl. App.: 1190. 1753. *Pouteria mammosa* (Linnaeus) Cronquist, Lloydia 9: 287. 1946. *Sapota achras* Miller, Gard. Dict. ed. 8: 1. 1768.

Vernacular name: Sabeda.

Shrubs or small trees. Branchlets glabrous. Leaves alternate, often closely clustered at end of branchlets; lamina obovate to obovate elliptic, 5 – 10 x 3 – 7 cm, glabrous, apex retuse, base broadly cuneate to obtuse. Flowers axillary, fascicled. Pedicel thick. Sepals ovate triangular. Corolla white or light yellow; lobes oblong. Stamens 4 – 5 mm; staminodes 2 parted, lobes linear. Ovary ovoid. Berry obovoid-oblong to ellipsoid, 1 or 2 seeded.

Flowers & Fruits: August to December.

Specimen Cited: Bochamari, Rajib & AP Das 0104, dated 07. 02. 2007.

Local Distribution: Cultivate in villages.

General Distribution: India: cultivate throughout; Sri Lanka, Thailand, Vietnam, Cambodia.

Theaceae Mirbel, Bull. Soc. Philom. 3: 381. 1813 (*nom. lect.* vs. Ternstroemiaceae, vide D. Don, 1825); *nom. cons.*

CAMELLIA Linnaeus, Sp. Pl. 2: 698. 1753.

Camellia japonica Linnaeus, Sp. Pl. 698. 1753. *Camellia florida* Salisbery, Prodr. Stirp. Chap. Allerton 370. 1796. *Camellia bonnardii* Berlese ex Lemaire, Hort. Universel 3: 161. 1842.

Vernacular name: Camelia.

Shrubs. Petiole glabrous or adaxially pubescent; leaf blade broadly elliptic to oblong-elliptic, 5 – 10 x 3 – 6 cm, serrulate, shortly acuminate and with an obtuse tip, base cuneate to broadly cuneate, leathery, secondary veins 6 – 9 on each side of midvein, slender, and visible on both surfaces. Flowers axillary or subterminal, solitary or paired, subsessile. Stamens glabrous; outer filament whorl basally connate. Gynoecium glabrous. Ovary ovoid, 3 loculed. Capsule globose. Seeds brown.

Flowers & Fruits: February to September.

Specimen Cited: Garden, Rajib & AP Das 0060, dated 07. 02. 2007.

Local Distribution: Garden.

General Distribution: India: cultivated throughout; China. Cultivated world wide.

Core-Eudicots: Asterids: Euasterids (I)

unassigned to order - Keine Ordnungseinteilung

Boraginaceae A.L. de Jussieu, Gen. Pl. 143. 1789 ('Borragineae'); *nom. cons.*

Key to the genera:

- 1a. Inflorescences terminal and axillary, branched; flowers pedicilate *Cynoglossum*
 1b. Inflorescences terminal, solitary; flowers sessile *Heliotropium*

CYNOGLOSSUM Linnaeus, Sp. Pl. 1: 134. 1753.

Cynoglossum lanceolatum Forsskal, Fl. Aegypt. – Arab. 41.1775; Clarke in Hooker f., Fl. Brit. Ind. 4: 156.1883; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 907.1999. *Cynoglossum micranthum* Desfontaines, Tab. Ecol. ed. 1: 220.1804; Hooker f., Fl. Brit. Ind. 4: 156.1883. *Cynoglossum racemosum* Roxburgh, Fl. Ind. 2: 6. 1824. *Cynoglossum hirsutum* Thunberg, Prodr. Pl. Cap. 34. 1794.

Perennial herbs, up to 90 cm. Stems erect, branched, densely hispid, hairs discoid at base; branches spreading. Basal and lower stem leaves petiolate, oblong-lanceolate, 7 – 10 x 1 - 3 cm, densely pubescent, hairs discoid at base, base attenuate, apex acute; upper stem leaves sessile or short petiolate, lanceolate, smaller. Inflorescences terminal and axillary; branches spreading at an obtuse angle, ebracteate. Pedicel 1 mm. Calyx lobes ovate, pubescent outside, glabrous inside, slightly enlarged in fruit, apex obtuse. Corolla light blue, campanulate. Anthers ovoid. Style tetragonous. Nutlets ovoid-globose, 2–2.5 mm, abaxially concave, with dense glochids, marginal glochids not confluent at base.

Flowers & Fruits: April to December.

Specimen Cited: Near gate, Rajib & AP Das 0332, dated 21.07.2007.

Local Distribution: Road side shrubland.

General Distribution: India, Bhutan, China, Indo-Malayan.

HELIOTROPIUM Linnaeus, Sp. Pl. 1: 130. 1753.

Heliotropium indicum Linnaeus, Sp. Pl. 1: 139.1753; Clarke in Hooker f., Fl. Brit. Ind. 4:152.1883; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 878. 1999; Bora *et* Kumar, Flor. Div. Ass., 222. 2003. *Tiaridium indicum* Lehmann, Pl. Asperif. Nacif. 14. 1818. *Heliotropium foetidum* Salisbury, Prodr. Stirp. Chap. Allerton 112. 1796. *Tiaridium indicum* (Linnaeus) Lehman, Pl. Asperif. Nucif. 1: 14. 1818. *Heliophytum indicum* (Linnaeus) de Candolle, Prodr. 9: 556. 1845. *Local Name:* Hatisura.

Annual herbs, up to 50 cm. Stems erect, stout, much branched, strigose. Leaves alternate to subopposite; petiole 3 cm; leaf blade 5 – 10 x 3 – 4 cm, pubescent to strigose, base rounded to truncate, decurrent to petiole, margin undulate, apex acute. Cymes solitary, scorpioid, ebracteate. Flowers sessile, crowded. Calyx lobes lanceolate, strigose. Corolla light blue to bluepurple, salverform; lobes rotund, margin crispate. Anthers narrowly ovate. Ovary glabrous. Style 0.5 mm; stigma conical, pubescent. Fruit ribbed, glabrous; mericarps longitudinally ribbed.

Flowers & Fruits: September to August.

Specimen Cited: Near gate, Rajib & AP Das 0411, dated 22.07.2007.

Local Distribution: Road side shrubland.

General Distribution: India, Bhutan, Bangladesh, China, America, Tropical Africa and Malaysia.

Icacinaceae (Bentham) Miers, Ann. Mag. Nat. Hist. ser. 2. 9: 221. 1852; *nom. cons.*

NATSIATUM Buchanan-Hamilton ex Arnott, Edinburgh New Philos. J. 16: 314. 1834.

Natsiatum herpeticum Buchanan-Hamilton *ex* Arnott, Edinburgh New Philos. J. 16: 314. 1834; Hooker *f.* in Hooker *f.*, Fl. Brit. India 1: 595. 1875; H. Ohashi in Hara, Fl. E. Himal. 1: 191. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 87. 1979; Long in Grierson *et* Long, Fl. Bhut. 2(1): 135. 1991. *Natsiatum tonkinense* Gagnepau, Notul. Syst. (Paris) 1: 205. 1910.

Young branches yellow – brown strigose; old branches conspicuously lenticellate. Petiole slender; leaf blade cordate – ovate, apex acute. Flowers yellow – green. Sepals lanceolate, petals narrowly lanceolate. Drupes yellow – green, becoming black with age.

Flowers & Fruits: June to September.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0610*, dated 26.07.2007.

Local Distribution: Through out Forest.

General Distribution: Throughout India; Bhutan, China, Bangladesh, Nepal, Sri Lanka, NE Thailand, N Vietnam, NE Laos, S Myanmar.

Order: Gentianales Lindle (1846).

Apocynaceae A.L. de Jussieu, Gen. Pl. 143. 1789 ('Apocineae'); *nom. cons.*

Key to the genera:

- | | |
|---|------------------------|
| 1a. Carpels united only at stigmatic disc | 2 |
| 1b. Carpels usually united by styles | 4 |
| 2a. Erect shrubs | <i>Calotropis</i> |
| 2b. Climbing or prostrate herbs | 3 |
| 3a. Corolla tube cylindrical, campanulate | <i>Marsdenia</i> |
| 3b. Corolla rotate to shallowly bowl-shaped | <i>Dregea</i> |
| 4a. Subshrubs or perennial herbs | 5 |
| 4b. Climbers or Shrubs or trees | 6 |
| 5a. Fruits a follicle | <i>Catharanthus</i> |
| 5b. Fruits a subglobose drupe | <i>Rauvolfia</i> |
| 6a. Leaves whorled, at least toward tips of branches | <i>Alstonia</i> |
| 6b. All leaves opposite | 7 |
| 7a. Corolla lobes overlapping to left | 8 |
| 7b. Corolla lobes overlapping to right | 9 |
| 8a. Stamens well exerted; corona usually present | <i>Wrightia</i> |
| 8b. Stamens included or barely exerted; corona absent | <i>Tabernaemontana</i> |
| 9a. Trees; corolla lobes not caudate | <i>Holarrhena</i> |
| 9b. Climbers, corolla lobes caudate | 10 |
| 10a. Corolla funnelform to subcampanulate | <i>Vallaris</i> |
| 10b. Corolla cylindric | <i>Ichnocarpus</i> |

ALSTONIAR. Brown, Mem. Wern. Nat. Hist. Soc. 1: 75. 1811, *nom. cons.*

Alstonia scholaris (Linnaeus) Robert Brown, Mem. Wern. Nat. Hist. Soc. 1:76. 1811; Hooker *f.*, Fl. Brit. Ind. 3: 642. 1882; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 672. 1999. *Echites scholaris* Linnaeus, Mant. Pl. 1:53.1767. *Pala scholaris* (Linnaeus) Roberty, Bull. Inst. Fran . Afrique Noire 15: 1426. 1953.

Vernacular name: Chhatim.

Trees up to 40 m, glabrous. Bark gray; branchlets copiously lenticellate. Leaves in whorls of 3–10; petiole 2–3 cm; leaf blade narrowly obovate to very narrowly spatulate, 7–28 x 2–11 cm, leathery, base cuneate, apex usually rounded; lateral veins 25–50 pairs. Cymes dense, pubescent; peduncle 5–8 cm. Pedicel usually as long as or shorter than calyx. Corolla white; lobes broadly ovate or broadly obovate, overlapping to left. Ovaries distinct, pubescent. Follicles distinct, linear. Seeds oblong, margin ciliate.

Flowers & Fruits: June to December.

Specimen Cited: Takomari Forest, *Rajib & AP Das 0372*, dated 21.07.2007.

Local Distribution: Throughout the study area.

General Distribution: India, Bhutan, Bangladesh, Sri Lanka, Singapore, Malay Archipelago, tropical Australia and Africa.

CATHARANTHUS G. Don, Gen. Hist. 4: 95. 1837.

Catharanthus roseus (Linnaeus) G. Don, Gen. Hist. 4: 95. 1837; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 670. 1999. *Vinca rosea* Linnaeus, Syst. Ed. 10: 944. 1759; Hooker *f.*, Fl. Brit. Ind. 3: 640. 1882. *Ammocallis rosea* (Linnaeus) Small, Fl. S.E. U.S. 936. 1903. *Pervinca rosea* (Linnaeus) Moench, Methodus 463. 1794.

Vernacular name: Nayantara.

Subshrubs or perennial herbs to 1 m tall, erect or decumbent. Young stems puberulent. Leaves obovate or elliptic, 6 x 3 cm, herbaceous, apex minutely apiculate; lateral veins 8–11 pairs. Corolla red to pink or white and then mostly with a pink; tube 2.5–3 cm, pilose inside, throat villous; lobes broadly obovate. Follicles 4 x 0.5 cm.

Flowers & Fruits: April to December.

Specimen Cited: Park, *Rajib & AP Das 0388*, dated 21.07.2007.

Local Distribution: Parks.

General Distribution: Tropical Asia, Africa.

HOLARRHENA R. Brown, Mem. Wern. Nat. Hist. Soc. 1: 62. 1811.

Holarrhena pubescens Wallich *ex* G. Don, Gen. Hist. 4: 78. 1837; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 671. 1999. *Chonemorpha antidysenterica* G. Don, Gen. Hist. 4: 76. 1837.

Vernacular name: Kurchi.

Shrubs or trees, up to 10 m tall. Branchlets with whitish, dotlike lenticels. Petiole 1–5 mm, grooved, glandular inside groove; leaf blade ovate or elliptic, 10–24 x 4–11.5 cm, membranous, pubescent, sometimes densely so abaxially, base rounded, apex acute or obtuse; lateral veins 10–15 pairs. Cymes 4–9 cm; peduncle 2 cm. Pedicel 1–3 cm. Sepals elliptic to linear. Corolla white, pubescent; lobes oblong. Anthers included, narrowly ovate, base rounded. Follicles linear, with whitish, dotlike lenticels. Seeds 1–1.6 cm.

Flowers & Fruits: April to December.

Specimen Cited: Takomari Forest, *Rajib & AP Das 0459*, dated 23.07.2007.

Local Distribution: Forest.

General Distribution: , India, Bhutan, Nepal, Bangladesh, Cambodia Laos, Myanmar, Thailand,

ICHNOCARPUS R. Brown, Mem. Wern. Nat. Hist. Soc. 1: 61. 1811, *nom. cons.*

Ichnocarpus frutescens (Linnaeus) W.T. Aiton in Aiton *f.*, Hort. Kew. ed. 2, 2: 69. 1811; Hooker *f.*, Fl. Brit. Ind. 3: 669. 1882; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 686. 1999. *Apocynum frutescens* Linnaeus, Sp. Pl. 213. 1753. *Echites frutescens* (Linnaeus) Roxburgh, Hort. Bengal.

20. 1814. *Gardenia voluBeelis* Loureiro, Fl. Cochinch. 148. 1790. *Ichnocarpus frutescens* (Linnaeus) R. Brown, Mem. Wern. Nat. Hist. Soc. 1: 62. 1809.

Vernacular name: Dudheli lata.

Extensively woody climber. Leaves lanceolate to elliptic – oblong 5.2 x 1.4 cm, acute – acuminate, base cuneate to obtuse, sub – coriaceous, to coriaceous, glabrous above, sparsely pubescent on main veins below; petiole 2 – 13 mm. Flowers small and fragrant, white. Calyx lobes ovate, obtuse to sub acute. Corolla tube cylindrical; lobes lanceolate, tips curved, particularly around mouth. Follicles very slender, curved and divergent, 2.5 – 6 x 0.2 cm. Seeds narrow, with scanty white coma 1.2 – 1.8 cm long.

Flowers & Fruits: April to September.

Specimen Cited: Takomari Forest, *Rajib & AP Das 0506*, dated 23.07.2007.

Local Distribution: Throughout the study area.

General Distribution: India, Bhutan, China, Bangladesh, Nepal, Sri Lanka, Myanmar, Java and Australia.

RAUVOLFIA Linnaeus, Sp. Pl. 1: 208. 1753.

Rauvolfia tetraphylla Linnaeus, Sp. Pl. 208. 1753. *Rauvolfia heterophylla* Willdenow ex Roemer & Schultes, Syst. Veg. 4: 805. 1819. *Rauvolfia hirsuta* Jacquin, Enum. Syst. Pl. 14. 1760. *Rauvolfia tomentosa* Jacquin, Enum. Syst. Pl. 14. 1760.

Vernacular name: Chando.

Small shrubs, up to to 1 m. Leaves in whorls of 3–5; petiole 2–5 mm; lamina ovate to oblong, 2 – 12 x 0.8 – 3 cm, membranous, acute or obtuse, base broadly cuneate to rounded; lateral veins 5 – 12 pairs. Peduncle 1–4 cm. Corolla white, tube urceolate, long hairy inside distal half; lobes ovate to suborbicular. Stamens inserted at corolla throat. Ovaries connate. Drupes subglobose, glabrous, connate. Seeds 2.

Flowers & Fruits: May to September.

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0425*, dated 22.07.2007.

Local Distribution: Forest near Leopard Cage.

General Distribution: Native to tropical America.

TABERNAEMONTANA Linnaeus, Sp. Pl. 1: 210. 1753.

Tabernamontana divaricata (Linnaeus) R. Brown in Roemer *et* Schultes, Syst. Veg. 4: 427. 1819; H. Ohashi in Hara, Fl. E. Himal. 1: 259. 1966; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 675. 1999. *Nerium divaricatum* Linnaeus, Sp.Pl. 209. 1753. *Tabernaemontana coronaria* (Jacquin) Willdenow, Enum. Hort. Bertol 275. 1809; Hooker *f.*, Fl. Brit. Ind. 3: 646. 1882. *Tabernaemontana recurva* Roxburgh, Hort. Bengal. 20. 1814. *Nyctanthes acuminata* Burman *f.*, Fl. Indica 5. 1768. *Kopsia cochinchinensis* Kuntze, Revis. Gen. Pl. 2: 415. 1891.

Vernacular name: Sadaful.

Shrubs or small trees 0.5–5 m tall, glabrous. Petiole 3–10 mm; leaf blade elliptic, 3–18 x 1–6 cm, apex acuminate; lateral veins 5 – 17 pairs. Cymes dichotomous, 1–8-flowered; bracts scale like. Flower buds with an ovoid head, apex acute or obtuse. Calyx lobes often ciliate. Corolla white, tube 1.5–2.7 cm; lobes simple or double, obovate or broadly so, 1.5–2.7 x 0.8–2 cm. Stamens inserted at basal third of corolla tube. Follicles obliquely and narrowly ellipsoid.

Flowers & Fruits: April to Nov

Specimen Cited: Atiamochar forest, *Rajib & AP Das 0306*, dated 10. 02. 2007.

Local Distribution: Through out Forest.

General Distribution: Native of Tropical Asia, widely naturalised.

WRIGHTIA R. Brown, Mem. Wern. Nat. Hist. Soc. 1: 73. 1811.

Wrightia arborea (Dennstaedt) Mabberley in Taxon 26(5/6): 533.1977. Watson in Grierson *et* Long, Fl. Bhut. 2(2): 676.1999. *Periploca arborea* Dennstaedt in Schluessel Hort. Malab. 13, 23 & 25.1818. *Wrightia tomentosa* Roemer *et* Schultes in Linnaeus, Syst. Veg. 4/414. 1819; C.B. Clarke in Hooker *f.*, Fl. Brit. India 3:653.1882. *Nerium tomentosum* (Roemer *et* Schultes) Roxburgh, Fl. Indica ed. 1832. 2: 6. 1832.

Vernacular name: Khira.

Trees upto 20 m tall. Branches gray or brown, pubescent, lenticellate. Petiole 2 – 8mm; lamina elliptic to broadly elliptic - obovate, 5 – 18 x 3 – 8 cm, pubescent to glabrescent adaxially, tomentose abaxially; lateral veins 10–14 pairs. Cymes pubescent. Sepals ovate or broadly ovate. Corolla yellowish, rotate or subrotate; tube 3–8 mm, glabrous; lobes narrowly elliptic to ovate; corona scales 10, shorter than anthers, glabrous inside, apex dentate. Ovaries connate. Follicles connate, cylindrical, lenticellate. Seeds linear-fusiform, coma 3 cm.

Flowers & Fruits: May to December.

Specimen Cited: Atiamochar forest, Rajib & AP Das 0273, dated 10. 02. 2007.

Local Distribution: Atiamochar and Takomari Forest.

General Distribution: India, Bhutan, China, Bangladesh, Pakistan, Sri Lanka, Myanmar, Thailand.

VALLARIS N. Burman, Fl. Indica 51. 1768.

Vallaris solanacea (Roth) Kuntze, Revis. Gen. Pl. 2: 417. 1891; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 678. 1999. *Peltanthera solanacea* Roth, Nov. Sp. 132. 1821. *Vallaris assamensis* Griffith, Not. Pl. Asiat. 4: 77. 1854. *Vallaris solanacea* (Roth) K. Schuman, Nat. Pflanzenfam. 4(2): 186. 1895.

Climbing shrubs, often twining. Bark dirty whitish gray; flowering branchlets, slender, grayish pubescent. Petiole 0.2–1.5 cm; lamina elliptic to narrowly elliptic, 2–16 x 0.8–5 cm, densely pubescent on both surfaces, base cuneate or rounded; lateral veins 7–12 pairs. Flowers fragrant; pedicel 0.5 – 3 cm. Sepals ovate or narrowly elliptic. Corolla white or pale yellow, tube 5–10 mm, lobes rounded at apex. Staminal glands yellow, globose; disc shorter than ovary, apex pilose. Follicles oblong, 8 – 12 x 1.5 - 3 cm. Seeds ellipsoid, coma 3–4 cm.

Flowers & Fruits: March to July.

Specimen Cited: Atiamochar forest, Rajib & AP Das 0393, dated 22.07.2007.

Local Distribution: Through out Forest.

General Distribution: Cambodia, India, Indonesia, Laos, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam.

CALOTROPIS R. Brown, Mem. Wern. Nat. Hist. Soc. 1: 39. 1810 (preprint).

Calotropis gigantea (Linnaeus) Dryander in Aiton, Hortus Kew. ed. 2, 2: 78. 1811; Hooker *f.*, Fl. Brit. Ind. 4: 17. 1883; H. Ohashi in Hara, Fl. E. Himal. 1: 260. 1966; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 700. 1999. *Asclepias gigantea* Linnaeus, Sp. Pl. 214. 1753. *Calotropis gigantiea* (Linnaeus) R. Brown *ex* Schultes, Syst. Veg. 6: 91. 1820. *Periploca cochinchinensis* Loureiro, Fl. Cochinch. 1: 167. 1790. [PLATE: 7, Figure-71]

Vernacular name: Akanda.

Shrubs, 1–3 m tall. Leaf blade obovate-oblong or oblong, 7–25 x 3–12 cm, base cordate, apex obtuse, cottony tomentose when young, frequently glabrescent and glaucous green; lateral veins 6–9 pairs. Cymes umbel-like, with fine woolly hairs; peduncle robust. Pedicel thick. Calyx almost flat. Flower buds cylindrical. Corolla usually purplish or lilac with paler greenish base, fleshy, glabrous; lobes ovate, 1.5 x 1 cm, spreading or reflexed, margin revolute. Corona shorter than gynostegium. Follicles obliquely elliptic to oblong-lanceolate in outline, both ends incurved. Seeds broadly ovate; coma 3–4 cm.

Flowers & Fruits: Throughout the year

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0410*, dated 22.07.2007.

Local Distribution: Villages.

General Distribution: India, Bhutan, Bangladesh, Nepal, Pakistan, Sri Lanka, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam; tropical Africa.

MARSDENIA R. Brown, Prodr. 460. 1810.

Marsdenia tinctoria R. Brown in Mem. Wern. Nat. Hist. Soc. 1: 28-30. 1810; Hooker *f.*, Fl. Brit. Ind. 4: 34. 1883; H. Ohashi in Hara, Fl. E. Himal. 1: 262. 1966; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 709. 1999. *Pergularia tinctoria* (Robert Brown) Sprengel, Syst. Veg. 1: 844. 1824. *Marsdenia tinctoria* var. *tomentosa* Masamune *ex* Tsiang & P.T. Liis, Acta Phytotax. Sin. 12(1): 117. 1974. *Marsdenia globifera* Tsiang, Sunyatsenia 3(2-3): 199-202, pl. 22, f. 13, 199. 1936. *Asclepias tinctoria* Roxburgh, [H. Beng. 20. 1814. nom. nud.] Fl. Ind. ed. 2, 2: 43. 1832.

Climbing undershrub. Plant nearly glabrous, young parts often softly pubescent-tomentose. Leaves ovate to elliptic 7–17 x 3–9 cm, apex acuminate or caudate, base rounded to truncate, somewhat shallowly cordate, membranous, sparsely hairy, particularly on veins. Flowers white, very small, subsessile, in distinctive crowded spike-like cymose inflorescence; flowering axis 4 cm long; peduncle short; pedicels slender. Calyx lobes rounded-ovate, ciliate, sparsely puberulent. Corolla tube cylindrical, slightly swollen at base, glabrous outside; lobes very short, oblong-rounded, glabrous. Gynostegium 1.2 mm high; staminal coronal scales with caudate tips extending above; stigmatic head hidden by anthers. Follicles densely covered in fine pubescence.

Flowers & Fruits: Mar to Dec.

Specimen Cited: Atiamochar, *Rajib & AP Das 0422*, dated 22.07.2007.

Local Distribution: Atiamochar and Takomari Forest.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Indonesia, Japan, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

DREGEA E. Meyer, Comm. Pl. Afr. Austr. 199. 1838, *nom. cons.*

Dregea volubilis (Linnaeus *f.*) Bentham *ex* Hooker *f.*, Fl. Brit. India 4: 46. 1883. *Wattakaka volubilis* (Linnaeus *f.*) Stapf, Bot. Mag. 148: , sub pl. 8976. 1923; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 723. 1999. *Asclepias volubilis* Linnaeus *f.*, Suppl. Pl. 170. 1782. *Marsdenia volubilis* (Linnaeus *f.*) Cooke, Fl. Bombay 2: 166. 1904. *Tylophora macrantha* Hance, J. Bot. 20(231): 79. 1882.

Lianas, up to 12 m. Lamina broadly ovate to suborbicular, 7–16 x 3–12 cm, acute to short acuminate, base shallowly cordate. Inflorescences pendent, many flowered. Sepals ovate-oblong. Corolla glabrous; lobes broadly ovate, ciliate. Corona yellowish green. Anther appendages white; pollinia oblong. Ovaries pilose. Follicles narrowly ovoid. Seeds ovate, flattened, marginate.

Flowers & Fruits: May to December.

Specimen Cited: Near conservation sector, *Rajib & AP Das 0465*, dated 23.07.2007.

Local Distribution: Through out Forest.

General Distribution: India, Bhutan, Bangladesh, Nepal, Sri Lanka, Cambodia, Indonesia, Kashmir, Laos, Malaysia, Philippines, Thailand, Vietnam.

Rubiaceae A.L. de Jussieu, Gen. Pl. 196. 1789; *nom. cons.*

Key to the genera:

- | | |
|--|---------------------|
| 1a. Herbs, soft subshrubs, or herbaceous vines | 2 |
| 1b. Low to tall woody shrubs or trees | 6 |
| 2a. Ovary and fruit densely covered by well-developed | <i>Dentella</i> |
| 2b. Ovary and fruit smooth and glabrous | 3 |
| 3a. Plants extensively twininer or climber | 4 |
| 3b. Plants erect or creepier but not climber | 5 |
| 4a. Fruit capsular with several to numerous small angled seeds | <i>Oldenledia</i> |
| 4b. Fruit schizocarpous, with 2 flattened winged pyrenes | <i>Paederia</i> |
| 5a. Calyx and corolla lobes each 6 | <i>Richardia</i> |
| 5b. Calyx and corolla lobes 3–5 | <i>Spermacoce</i> |
| 6a. Flowers fused together by their ovaries; fruit multiple | <i>Morinda</i> |
| 6b. Flowers free; fruit free | 7 |
| 7a. Flowers in globose heads, terminal..... | <i>Neolamarckia</i> |
| 7b. Flowers variously arranged in cymes, axillary | <i>Coffea</i> |

NEOLAMARCKIA Bosser, Bull. Mus. Natl. Hist. Nat., B, Adansonia 6: 247. 1985.

Neolamarckia cadamba (Roxburgh) J. Bosser in Bull. Mus. Nation. Hist. Nat. 4e ser., B. Adansonia 6: 247. 1984; Springate, Mill, Wood, Wright *et* Long in Grierson *et* Long, Fl. Bhut. 2(2): 739. 1999. *Nanilea cadamba* Roxburgh, Fl. Ind. ed. Carey, 2: 121. 1824. *Sarcocephalus cadamba* (Roxburgh) Kurz, Prelim. Rep. Forest Pegu App. A: lxxviii. 1875. *Samama cadamba* (Roxburgh) Kuntze, Revis. Gen. Pl. 1: 296. 1891. *Anthocephalus cadamba* (Roxburgh) Miquel, Fl. Ned. Ind. 2: 135. 1856.

Vernacular name: Kadam.

Large deciduous trees, up to 30 m; branches horizontally spreading. Lamina elliptic to oblong - elliptic, 12 – 20 x 5 - 11 cm, thinly leathery, acute, entire, base rounded; stipules lanceolate. Flowering heads solitary, terminal; peduncles stout. Calyx tube glabrous; lobes oblong, hairy. Corolla yellowish white, funnelform; lobes lanceolate. Fruiting head yellowish green at maturity. Seeds nearly 3 angled.

Flowers & Fruits: June to November.

Specimen Cited: Bochamari, Rajib & AP Das 0587, dated 25.07.2007.

Local Distribution: Cultivated in villages.

General Distribution: Tropical and sub-tropical parts of the world.

SPERMACOCE Linnaeus, Sp. Pl. 1: 102. 1753.

Key to the species:

- | | |
|---|---------------------|
| 1a. Angles of stems narrowly winged | <i>S. alata</i> |
| 1b. Angles of stems not winged | <i>S. ocymoides</i> |

Spermacoce alata Aublet, Hist. Pl. Guiane 60. 1775. *Borreria alata* (Aublet) de Candolle, Prodr. 4: 544. 1830.

Vernacular name: Aalughas.

Diffuse herbs, stem distinctly 4 angled, angles narrowly winged. Lamina ovate – elliptic to oblong, 4 – 8 x 2 – 4 cm, obtuse, entire, base broadly cuneate; stipules triangular. Flowers in axillary clusters, sessile; tube cylindrical, limb 4 lobed. Corolla funnelform, white. Style 4 – 6 mm long; stigma 2, lobes linear. Capsule ovoid. Seeds ovoid to globose.

Flowers & Fruits: May to December.

Specimen Cited: Garden, Rajib & AP Das 0529, dated 23.07.2007.

Local Distribution: Throughout study areas.

General Distribution: Pantropical.

Spermacoce ocymoides Burman f., Fl. Indica 34. 1768; Springate, Mill, Wood, Wright *et* Long in Grierson *et* Long, Fl. Bhut. 2(2): 819. 1999. *Bigelovia parviflora* Sprengel, Syst. Veg. 1: 405. 1824. *Borreria ocymoides* (Burman f.) de Candolle, Prodr. 4: 544. 1830.

Diffuse herbs, stem distinctly 4 angled. Lamina lanceolate to elliptic – oblong, Fl. Bhut. 2 – 4 x 1 – 2 cm, acute, base cuneate; stipules membranous. Flowers in axillary clusters, sessile; tube cylindrical, limb 4 lobed. Corolla funnelform, white. Style 4 – 6 mm long; stigma 2, lobes linear. Capsule ellipsoid. Seeds ellipsoid.

Flowers & Fruits: June to August.

Specimen Cited: Road side, Rajib & AP Das 0632, dated 12. 02. 2008

Local Distribution: Road side forest ground throughout.

General Distribution: Pantropical.

COFFEA Linnaeus, Sp. Pl. 1: 172. 1753.

Coffea bengalensis Roxburgh *ex* Schultes, Syst. Veg. 5: 200. 1819 *et*. Fl. Ind. 1: 540. 1820; C.B. Clarke in Hooker f., Fl. Brit. India 3: 153. 1880; H. Ohashi in Hara, Fl. E. Himal. 1: 308. 1966. *Psilanthus bengalensis* (Roxburgh *ex* Schultes) J.F. Leroy, Bull. Mus. Natl. Hist. Nat., B, Adansonia 3: 252. 1981; Springate, Mill, Wood, Wright *et* Long in Grierson *et* Long, Fl. Bhut. 2(2): 803. 1999. *Coffea floreifolia* A. Chevalier, Rev. Bot. Appl. Agric. Trop. 18: 836. 1938. *Coffea semiexserta* Colebrooke *ex* Roxburgh, Fl. Ind. 2: 195. 1824. *Psilanthus bababudanii* Sivarajan, Biju *et* P. Mathew, Bot. Bull. Acad. Sin. n.s., 33: 212. 1992. [PLATE: 7, Figure-70]

Vernacular Name: Chaiti Phul.

Deciduous shrubs, up to 50 cm; branches spreading. Lamina elliptic to ovate-lanceolate, 4 – 10 x 2 – 5 cm, caudate-acuminate, entire, base rounded to acute, nerves hairy beneath. 2 – 5 flowered cymes in the axil, white. Calyx glabrous. Corolla white, funnelform, outside glabrous. Ovary ellipsoid. Drupes ovoid or subglobose, black when ripe. Seeds grooved.

Flowers & Fruits: February to November.

Specimen Cited: Forest, Rajib & AP Das 0462, dated 23.07.2007.

Local Distribution: Throughout the study area.

General Distribution: Subtropical Himalaya, Bangladesh, Myanmar.

DENTELLA J. R. Forster & G. Forster, Char. Gen. Pl. 13. 1775.

Key to the species:

- 1a. Fruit densely multicellular transparent villose *D. repens*
 1b. Fruit glabrous *D. repens* var. *serpyllifolia*

Dentella repens (Linnaeus) J.R. Froster & G. Froster, *Charact. Gen. Pl.* 26, t. 13. 1775; Hooker *f.*, in Hooker *f.*, *Fl. Brit. Ind.* 3: 42. 1880; Prain *Beng. Pl.* 1: 555. 1903; Springate, Mill, Wood, Wright *et Long* in Grierson *et Long*, *Fl. Bhut.* 2(2): 755. 1999. Haines, *Bot. Bihar & Orissa Pt. IV*: 443. 1922; Mooney, *Suppl. Bot. Bihar & Orissa* 71. 1950; Panda *et Das*, *Fl. Sambalp.*, 168. 2004. *Oldenlandia repens* Linnaeus, *Mantius Pl.* 1: 40. 1767. *Hedyotis repens* (Linnaeus) de Lamarck, *Tabl. Encycl.* 1: 271. 1792. [PLATE: 8, Figure-79]

Creeping, small herbs, much branched; adventitious roots at nodes. Leaves with short petiole; blade small, oblong-lanceolate to obovate – spatulate, 2 - 8 x 2 – 4 mm, apex acute, entire, base cuneate; stipules triangular. Flowers usually solitary in forks of branchlets, rarely axillary. Hypanthium covered in pellucid trichomes. Calyx tube 1 mm in diameter. Corolla white. Stamens included. Style 2 – 6mm. Fruit compressed globose, densely multicellular transparent villose.

Flowers & Fruits: August to February.

Specimen Cited: Garden, Rajib & AP Das 0472, dated 23.07.2007.

Local Distribution: Throughout study areas.

General Distribution: Tropical India; Bhutan, Sri Lanka, Myanmar, Singapore, Malayan Island to N. Australia and Polynesia.

Dentella repens* var. *serpyllifolia (Wallich *ex* Craib) Verdcourt, *Kew Bull.* 37: 545 1983; Springate, Mill, Wood, Wright *et Long* in Grierson *et Long*, *Fl. Bhut.* 2(2): 755. 1999. *Dentella serpyllifolia* Wallich *ex* Craib, *Fl. Siam.* 2: 27 1932.

Creeping, small herbs, much branched; adventitious roots at nodes. Leaves with short petiole; blade small, oblong-lanceolate to obovate – spatulate, 2 - 8 x 2 – 4 mm, apex acute, entire, base cuneate; stipules triangular. Flowers usually solitary in forks of branchlets, rarely axillary. Hypanthium glabrous. Calyx tube 1 mm in diameter. Corolla white. Stamens included. Style 2 – 6mm. Fruit compressed globose, glabrous.

Flowers & Fruits: August to February.

Specimen Cited: Garden, Rajib & AP Das 0644, dated 12. 02. 2008.

Local Distribution: Throughout study areas.

General Distribution: Pantropical.

OLDENLANDIA Linnaeus, *Sp. Pl.* 1: 119. 1753.

Key to the species:

- 1a. Leaves linear; capsule globose 2
 1b. Leaves elliptic to lanceolate; capsule ovate *O. verticillata*
 2a. Flowers in axillary corymbose Calyx lobes narrowly triangular *O. corymbosa*
 2b. Flowers solitary; calyx lobes ciliate *O. diffusa*

Oldenlandia corymbosa Linnaeus, *Sp. Pl.* 1: 119. 1753; Hooker *f.*, *Fl. Brit. Ind.* 3: 64. 1880; H. Ohashi in Hara, *Fl. E. Himal.* 1: 309. 1966; Springate, Mill, Wood, Wright *et Long* in Grierson *et Long*, *Fl. Bhut.* 2(2): 766. 1999. Prain *Beng. Pl.* 1: 559. 1903 (Rep. ed. 1999). Guha Bakshi, *Fl. Mur. Dist.* 154. 1984. *Hedyotis corymbosa* (Linnaeus) Lamark, *Tab. Encl.* 1: 272. 1791; Panda *et Das*, *Fl. Sambalp.*, 172. 2004. *Gerontogea corymbosa* (Linnaeus) Chamisso & Schlechtendal, *Linnaea* 4: 154. 1829. *Hedyotis biflora* var. *corymbosa* (Linnaeus) Kurz, *J. Asiat. Soc. Bengal* 46(2): 133. 1877.

Diffuse, annual herbs, up to 40 cm. Leaves opposite, subsessile; lamina membranous, linear to narrowly lanceolate, 1 - 2 x 0.2 – 0.4 cm, acute, entire, base cuneate; stipules membranous, sheath-like. Inflorescence axillary, arranged in corymbose, 2 to 4 flowered; bracts minute. Flowers 4 merous. Calyx tube globose; lobes narrowly triangular. Corolla white, tubulate. Stamens inserted at corolla tube. Stigma 2 lobed. Capsule membranous, globose.

Flowers & Fruits: January to December.

Specimen Cited: Road side, *Rajib & AP Das 0599*, dated 26.07.2007.

Local Distribution: Road side forest ground throughout.

General Distribution: India, Sri Lanka, Tropical Asia, Africa, America.

Oldenlandia diffusa (Willdenow) Roxburgh, Hort. Beng. 11. 1814; Fl. Ind. 1: 444.1820; Prain Beng. Pl. 1: 559.1903; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 3: 65.1880; Springate, Mill, Wood, Wright *et* Long in Grierson *et* Long, Fl. Bhut. 2(2): 765. 1999. Haines, Bot. Bihar & Orissa Pt. 447. 1922; Guha Bakshi, Fl. Mur. Dist. 157. 1984. *Hedyotis diffusa* Willdenow, Sp. Pl. 1: 566. 1798; Panda *et* Das, Fl. Sambalp., 172. 2004. *Hedyotis diffusa* var. *extensa* (Hooker *f.*) R. Dutta, Taxon. Revis. Hedyotis Indian Subcont. 146. 2004. *Oldenlandia pauciflora* Roxburgh *ex* Wight & Arnott, Prodr. Fl. Ind. Orient. 415. 1834. *Oldenlandia diffusa* var. *extensa* Hooker *f.*, Fl. Brit. India 3: 65. 1880. *Oldenlandia diffusa* var. *polygonoides* Hooker *f.*, Fl. Brit. India 3: 65. 1880.

Diffuse, annual herbs, up to 50 cm; stems slightly flattened. Leaves opposite, sessile; lamina membranous, linear, 1 - 5 x 0.3 mm, acute; stipules connate at base, apex aristate. Flowers 4 merous, solitary; pedicels slightly stout. Calyx tube globose, ciliate. Corolla white, tabulate; lobes ovate- oblong. Stamens inserted at corolla tube throat; anthers exerted, oblong. Stigma 2 lobed, lobes spreading. Capsule compressed globose. Seeds angled.

Flowers & Fruits: January to December.

Specimen Cited: Forest, *Rajib & AP Das 0526*, dated 23.07.2007.

Local Distribution: Throughout study areas.

General Distribution: Tropical and sub-tropical India; S. China, Japan, Malaysia, Borneo and Philippines.

Oldenlandia verticillata Linnaeus, Mant. Pl. 1: 40. 1767. *Hedyotis verticillata* (Linnaeus) Lamarck, Tabl. Encycl. 1: 271. 1792; Springate, Mill, Wood, Wright *et* Long in Grierson *et* Long, Fl. Bhut. 2(2): 763. 1999. *Hedyotis wallichii* Walpers, Repert. Bot. Syst. 2: 498. 1843. *Oldenlandia hispida* (Retzius) de Lamarck, Encycl. 4: 536. 1798. *Scleromitron crassifolium* Miquel, Fl. Ned. Ind. 2: 185. 1857. *Hedyotis verticillata* (Linnaeus) de Lamarck, Tabl. Encycl. 1: 271. 1792. [PLATE: 9, Figure-101]

Annual, diffuse, prostrate herbs, up to 25 cm. Leaves opposite, sessile; lamina thinly leathery, elliptic to lanceolate, 2 – 5 x 1 – 2 cm, acuminate, base cuneate; stipules slightly hairy, connate at base. Flowers sessile. Calyx tube obconical; lobes 4, lanceolate. Corolla white, lobes lanceolate. Stamens inserted at corolla tube throat; anthers exerted. Style apex inflated. Capsule ovate. Seeds many in each cell.

Flowers & Fruits: March to November.

Specimen Cited: Forest, *Rajib & AP Das 0653*, dated 13. 02. 2008.

Local Distribution: Road side forest ground throughout.

General Distribution: India, Nepal, Vietnam, Malaysia, Indonesia

PAEDERIA Linnaeus, Syst. Nat., ed. 12, 2: 135, 189; Mant. Pl. 1: 7, 52. 1767, *nom. cons.*

Paederia foetida Linnaeus, Mant. Pl. 1: 52. 1767; Fl. Ind. 2:517. 1824; C.B. Clarke in Hooker f., Fl. Brit. India 3:195. 1881; H. Ohashi in Hara, Fl. E. Himal. 1:314. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2:206. 1979; Springate, Mill, Wood, Wright *et Long* in Grierson *et Long*, Fl. Bhut. 2 (2): 812. 1991. *Psychotria volubilis* Roxburgh *ex* Wight & Arnott, Prodr. Fl. Ind. Orient. 424. 1834. *Paederia tomentosa* Blume, Bijdr. 968. 1826. *Paederia scandens* var. *mairi* (H.L. Veill.) H. Hara, Enum. Sperm. Jap. 2: 24. 1952. *Paederia scandens* f. *microphylla* (Honda) H. Hara, Enum. Sperm. Jap. 2: 25. 1952. *Paederia scandens* (Loureiro) Merrill, Contr. Arnold Arbor. 8: 163. 1934. *Paederia prainii* Gandoger, Bull. Soc. Bot. France 65: 35. 1918. *Paederia foetida* var. *Sessiliflora* (Poiret) Baker, Fl. Mauritius 158. 1877. [PLATE: 9, Figure-103]

Vernacular Name: Gondhopata.

Large climbers. Leaves opposite; lamina membranous, ovate to lanceolate, 5 – 11 x 2 – 4 cm, acute, base rounded to cordate; stipules ovate-lanceolate, bifid. Panicles axillary to terminal, spreading; bracteoles minute. Flowers subsessile. Calyx lobes triangular. Corolla outside purplish beneath whitish pubescence; lobes ovate with broad undulate margin. Fruits globose.

Flowers & Fruits: July to January.

Specimen Cited: Forest, Rajib & AP Das 0412, dated 22.07.2007.

Local Distribution: Throughout study areas.

General Distribution: Throughout India; China, Malaysia.

MORINDA Linnaeus, Sp. Pl. 1: 176. 1753.

Morinda angustifolia Roxburgh, Pl. Coromandel 3: 32. 1815 *et*. Pl. Coromandel tab. 287. 1819; C.B. Clarke in Hooker f., Fl. Brit. India 3: 156. 1880; Springate, Mill, Wood, Wright *et Long* in Grierson *et Long*, Fl. Bhut. 2(2): 804. 1999. *Morinda angustifolia* var. *scabridula* Craib, Fl. Siam. 2: 174. 1934. *Morinda squarrosa* Buchanan-Hamilton, Trans. Linn. Soc. London 13: 535. 1822.

Vernacular Name: Haldikath.

Erect, tall shrubs, up to 6 m. Leaves opposite, lamina oblong-elliptic to oblong-lanceolate, 15 - 35 x 7 - 12 cm, acuminate, entire, attenuate at base; stipules interpetiolar, acuminate. Capitulum many-flowered. Flowers sessile. Calyx tube appressed mutually at anthesis, truncate. Corolla white, incurved; limb 5 lobed; lobes ovate-lanceolate. Stamens 5; anthers linear. Style bifid at apex. Ovary 4 celled. Drupecetum white, mulberry-shaped; drupes obovate, 4 seeded.

Flowers & Fruits: March to June.

Specimen Cited: Forest, Rajib & AP Das 0662, dated 13. 02. 2008.

Local Distribution: Throughout Forest.

General Distribution: Tropical and sub-tropical parts of the world.

RICHARDIA Linnaeus, Sp. Pl. 1: 330. 1753.

Richardia scabra Linnaeus, Sp. Pl. 330. 1753. *Spermacoce hirsuta* Willdenow *ex* Roemer & Schultes, Syst. Veg. 3: 531. 1818. *Plethyrasis glauca* Rafinesque, Autik. Bot. 13. 1840. *Richardia pilosa* Ruiz & Pavon, Fl. Peruv. 3: 50. 1802. *Richardsonia cubensis* A. Richard, Hist. Fis. Cuba, Bot. 11: 31. 1850.

Decumbent, annual herbs, up to 80cm; lamina ovate to elliptic lanceolate, 1 – 5 x 1 – 3cm, thickly papery, bluntly acute, ciliate, base attenuate; stipules fused with petioles into a sheath. Inflorescence a terminal, subsessile capitulum of many flowers, bracts broadly ovate. Flowers 5 merous. Calyx tube constricted at apex; lobes usually 6, lanceolate to narrowly lanceolate. Corolla white; lobes 6. Stamens 6. Ovary usually 3 celled. Stigma capitate, 3 lobed. Mericarp obovoid.

Flowers & Fruits: February to July.

Specimen Cited: Road side, *Rajib & AP Das 0494*, dated 23.07.2007.

Local Distribution: Road side forest ground throughout.

General Distribution: India, Native to tropical America.

Order: Lamiales Bromhead (1838)

Acanthaceae A.L. de Jussieu, Gen. Pl. 102. 1789 ('Acanthi'); *nom. cons.*

Key to the genera:

- | | |
|---|-----------------------------|
| 1a. Large vines | <i>Thunbergia</i> |
| 1b. Prostrate or erect herbs, shrubs | 2 |
| 2a. Hooklike retinacula present in fruits | 3 |
| 2b. Retinacula absent in fruits | <i>Nelsonia</i> |
| 3a. Calyx lobes heteromorphic | 4 |
| 3b. Calyx lobes homomorphic | 5 |
| 4a. Upper lip of corolla 4-lobed and lower lip 1-lobed | <i>Barleria</i> |
| 4b. Upper lip of corolla 2-lobed and lower lip 3-lobed | <i>Lepidagathis</i> |
| 5a. Corolla lobes contorted in bud; stamens 4 | 6 |
| 5b. Corolla lobes not contorted in bud; stamens and staminodes 0 or 2 | 7 |
| 6a. Inflorescence secund with orbicular to reniform bracts | <i>Phaulopsis</i> |
| 6b. Inflorescence not second, bracts linear to oblong | <i>Hygrophila</i> |
| 7a. Ovules 3 to many per locule; seeds 6 to many per capsule | <i>Phlogacanthus</i> |
| 7b. Ovules 2 per locule; seeds 4 per capsule | 8 |
| 8a. Stamens 4 | <i>Asystasia</i> |
| 8b. Stamens 2 | 9 |
| 9a. Flowers subtended by 2 involucre | <i>Dicliptera</i> |
| 9b. Flowers subtended by a single pair of bracteoles | 10 |
| 10a. Inflorescence often dense with imbricate bracts 2 to 4-ranked | <i>Rungia</i> |
| 10b. Inflorescence a spike | <i>Justicia</i> |

ASYSTASIA Blume, Bijdr. 796. 1826.

Asystasia macrocarpa Nees in Wallich, Pl. As. Rar. 3: 89. 1832; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 495. 1885; H. Ohashi in Hara, Fl. E. Himal. 1: 300. 1966; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1282. 2001. *Mackaya macrocarpa* (Nees) Das, Fl. Assam 3: 447. 1939.

Ascending herbs. Stems branched, 4 angled. Lamina ovate to elliptic, 4–10 2–5 cm, glabrous, acuminate, entire, base truncate to rounded. Racemes axillary and terminal; bracts triangular; bracteoles linear-lanceolate. Calyx lobes linear-lanceolate, margin ciliate. Corolla white; tube basally cylindrical; lobes obovate; middle lobe of lower lip with violet or maroon markings. Stamens included. Ovary ellipsoid; stigma slightly capitate, 2-lobed. Capsule pubescent. Seeds irregularly obovate.

Flowers & Fruits: June to September.

Specimen Cited: Forest, *Rajib & AP Das 0571*, dated 24.07.2007

Local Distribution: Throughout Forest.

General Distribution: India, Thailand, Indo-China peninsula to Malaysia.

BARLERIA Linnaeus, Sp. Pl. 2: 636. 1753.

Key to the species:

- 1a. Flowers in axillary and terminal dense spikes *B. strigosa*
 1b. Flowers in axillary cymes *B. cristata*

Barleria cristata Linnaeus, Sp. Pl. 636.1753; C.B. Clarke in Hooker *f.*, Fl. Brit. India 4:488. 1884; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1281. 2001. *Barleria alba* Loddiges, Bot. Cab. 4: t. 360. 1820. *Barleria ciliata* Roxburgh, Fl. Ind. 3: 38. 1832. *Barleria dichotoma* Roxburgh, Fl. Ind. ed. 1832 3: 39. 1832. *Barleria laciniata* Wallich, Pl. Asiat. Rar. 3: 91. 1832. *Barleria indica* Linnaeus *ex* T. Anderson, J. Linn. Soc., Bot. 7: 115. 1864.

Vernacular name: Jaati.

Branched, subshrubs. Leaves caducous; lamina elliptic to ovate, 2 – 10 x 1 – 4 cm, papery, acute to shortly acuminate, entire, base cuneate and decurrent. Flowers usually 2 in leaf axil or clustered on branched shoots. Bracts foliose. Two outer calyx segments ovate to lanceolate; adaxial 2 segments linear to lanceolate, margin ciliate. Corolla purple, 2 lipped; limb 5 lobed. Fertile stamens 4, didynamous. Staminode 1. Ovary compressed, long elliptic.

Flowers & Fruits: November to December.

Specimen Cited: Forest, Rajib & AP Das 0669, dated 13. 02. 2008.

Local Distribution: Throughout Forest.

General Distribution: Indo-China, India; Islands of Indian Ocean.

Barleria strigosa Willdenow, Sp. Pl. 3: 379. 1800; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1281. 2001. *Barleria caerulea* Roxburgh, *Fl. Ind.* 3: 39. 1832. *Barleria polystachya* Hooker *ex* Nees, Prodr. 11: 226. 1847. *Barleria strigosa* var. *polystachya* (Nees) C.B. Clarke, Fl. Brit. India 4: 490. 1884. *Barleria strigosa* var. *terminalis* (Nees) C.B. Clarke, Fl. Brit. India 4: 490. 1884. [PLATE: 6, Figure-60]

Much branched subshrubs. Stems subterete, coarsely fulvous strigose. Lamina elliptic to ovate, 6–15 x 2–5cm, both surfaces fulvous strigose especially along veins, acute, sub-entire, base cuneate. Flowers in axillary and terminal dense spikes; bracts oblong to elliptic-oblong; bracteoles elliptic, ciliate. Outer calyx lobes purple, ovate; inner calyx lobes yellowish brown, lanceolate. Corolla purplish red; tube basally cylindrical; lobes obovate-oblong. Stamens 4; staminode 1. Ovary ovoid. Capsule ellipsoid, 4 seeded.

Flowers & Fruits: November to February.

Specimen Cited: Forest, Rajib & AP Das 0536, dated 23.07.2007

Local Distribution: Throughout Forest.

General Distribution: India, Bhutan, China, Nepal, Sri Lanka, Indonesia, Malaysia, Myanmar, Thailand, Cambodia and Vietnam.

DICLIPTERA Jussieu, Ann. Mus. Natl. Hist. Nat. 9: 267. 1807, *nom. cons.*

Dicliptera bupleuroides Nees in Wallich, Pl. As. Rar. 3: 111. 1832; H. Ohashi in Hara, Fl. E. Himal. 1: 301. 1966; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1292. 2001. *Dicliptera roxburghii* T. Anderson, J. Linn. Soc., Bot. 9: 519. 1867. *Justicia canescens* Wallich, Numer. List 72: n. 2423. 1830. *Dicliptera cardiocarpa* Nees, Pl. Asiat. Rar. 3: 111. 1832. *Dicliptera roxburghiana* var. *bupleuroides* (Nees) C.B. Clarke in Fl. Brit. India 4: 554. 1885.

Ascending herbs. Stems sulcate, pubescent. Lamina ovate, base cuneate, sub-entire, acuminate. Inflorescences axillary and subsessile, cymes, many flowered; bracts lanceolate. Calyx lobes subulate,

pubescent. Corolla lip orbicular to oblong, 3 lobed, lobes ovate. Staminal filaments 2 – 2.3 mm; anther thecae spherical. Ovary pilose. Capsule pilose. Seeds ovate.

Flowers & Fruits: September to May.

Specimen Cited: Road side, *Rajib & AP Das 0546*, dated 23.07.2007.

Local Distribution: Road side forest ground throughout.

General Distribution: Tropical India; Bhutan, Bangladesh, Himalayas, Afghanistan, Thailand, Indo-Chinese Peninsula.

HYGROPHILAR. Brown, Prodr. 479. 1810.

Key to the species:

- 1a. Flowers axillary, in whorls upward *H. phlomoides*
 1b. Inflorescences terminal, spikes *H. polysperma*

Hygrophila polysperma (Roxburgh) Anderson, J. Linn. Soc. (Bot.) 9: 456. 1867; Clarke in Hooker f., Fl. Brit. Ind. 4: 406. 1884; Prain, Beng. Pl. 2: 597. 1903; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1252. 2001; Majumdar, Bull. Bot. Soc. Bengal 20(2): 112. 1966. *Justicia polysperma* Roxburgh, Fl. Ind. 1: 119. 1832. *Hemidelphis polyspermus* (Roxburgh) Nees in Wallich, Pl. As. Rar. 3: 80. 1832; Guha Bakshi, Fl. Mur. Dist. 238. 1984. *Ruellia uliginosa* Wallich, Numer. List 2378. 1830.

Perennials, prostrate herbs, up to 1m. Stems 4 angled, slightly swollen above nodes. Lamina oblong-lanceolate to ovate, 2 – 4 x 1 – 1.5 cm, glabrous, subobtuse, entire, base attenuate. Inflorescences terminal, spikes; bracts ovate-elliptic to obovate. Calyx lobes lanceolate, unequal. Corolla white; lower lip 3-lobed; upper lip 2-lobed. Stamens 2, slightly exserted; staminodes 2, bristlelike. Capsule linear-oblong.

Flowers & Fruits: March to August.

Specimen Cited: Batikata Beel, *Rajib & AP Das 0562*, dated 24.07.2007.

Local Distribution: Beel margins through out.

General Distribution: Tropical regions of Asia, Africa and America.

Hygrophila phlomoides Nees, in Wallich, *Pl. Asiat. Rar. 3: 80. 1832*; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1252. 2001. *Cardanthera longifolia* Buchanan-Hamilton *ex* Nees, Prodr. 11: 90. 1847. *Ruellia phlomoides* Wallich, Numer. List 2376. 1830. [PLATE: 8, Figure-80]

Perennial, erect herbs. Stems 4-angled, brown strigose. Petiole hirsute; lamina elliptic to obovate – oblong, Fl. Bhut. 2 – 10 x 1 – 4cm, papery, base usually attenuate, entire to slightly undulate, acute or obtuse. Flowers axillary, in whorls upward; bracteoles linear-oblong, hirsute. Calyx white hirsute, 5-lobed; lobes linear. Corolla pinkish, pubescent; lower lip oblong, 3-lobed; upper lip triangular, 2-lobed. Stamens 4. Ovary glabrous; style pubescent. Capsule pilose.

Flowers & Fruits: October to December.

Specimen Cited: Batikata Beel, *Rajib & AP Das 0426*, dated 22.07.2007.

Local Distribution: Beel margins through out.

General Distribution: India, Bhutan, Indonesia, Philippines, Indo-Chinese peninsula, Pakistan, Thailand, Vietnam.

JUSTICIA Linnaeus, Sp. Pl. 1: 15. 1753.

Key to the species:

- 1a. Calyx unequally 5-lobed 2
 1b. Calyx equally 5-lobed 3
 2a. Spikes dense *J. japonica*
 2b. Spikes slender *J. diffusa*
 3a. Lamina narrowly lanceolate *J. gendarussa*
 3b. Lamina ovate to elliptic-ovate *J. adhatoda*

Justicia adhatoda Linnaeus, Sp. Pl. 1: 15. 1753, Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1287. 2001. *Adhatoda vasica* Nees in Pl. As. Rar., 3: 103. 1832; C.B. Clarke in Hooker *f.*, Fl. Brit. India 4: 540. 1885. *Adhatoda zeylanica* Medik., Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 6: 393. 1790. *Dianthera latifolia* Salisb., Prodr. Stirp. Chap. Allerton 103. 1796.

Vernacular name: Basak.

Shrubs up to 3m. Petiole puberulent; lamina ovate to elliptic-ovate, 5–16 2–6 cm, acuminate, entire, base broadly cuneate. Spikes terminal; bracts ovate-oblong; bracteoles linear-lanceolate. Calyx 5 lobed; lobes linear-oblong. Corolla white, broadly tubular; upper lip ovate-oblong, shallowly 2 lobed; lower lip oblong-circular, 3-lobed, middle lobe subcircular. Stamens exserted; anther thecae ellipsoid. Ovary pubescent; style recurved. Capsule obovoid.

Flowers & Fruits: January to June.

Specimen Cited: Rasik Bil village, Rajib & AP Das 0542, dated 23.07.2007.

Local Distribution: Cultivated in villages.

General Distribution: Probably native to India, Tropical and sub-tropical parts of the world.

Justicia gendarussa Burman *f.*, Fl. Indica 10. 1768; C.B. Clarke in Hooker *f.*, Fl. Brit. India 4: 532. 1885; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1287. 2001. *Gendarussa vulgaris* Nees in Wallich, Pl. As. Rar. 3: 104. 1832. *Justicia gandarussa* Linnaeus *f.*, *Suppl. Pl.* 85. 1782. *Ecbolium gendarussa* (Burman *f.*) Kuntze, *Revis. Gen. Pl.* 2: 487. 1891.

Vernacular name: Kalakasunda.

Subshrubs up to 1.5 cm tall, much branched. Stems swollen at nodes. Lamina narrowly lanceolate, 5–9 x 1–1.5 cm, glabrous, acute to shortly acuminate, subsinuate, base cuneate. Spikes terminal and axillary, usually in a leafy panicle; bracts triangular. Calyx 5 lobed. Corolla creamy white; tube basally cylindric; lower lip violet dotted basally, cuneate-obovate, 3 lobed; upper lip violet blotched, triangular. Stamens exserted. Ovary glabrous; style glabrous; stigma capitate. Capsule clavate.

Flowers & Fruits: February to April.

Specimen Cited: Bochamari, Rajib & AP Das 0651, dated 12. 02. 200

Local Distribution: Cultivated in villages.

General Distribution: India, Nepal, Bhutan, Sri Lanka, Thailand, Cambodia, Myanmar; widely cultivated.

Justicia diffusa Willdenow, Sp. Pl. 1: 87. 1797; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 538. 1885; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1288. 2001. *Justicia procumbens* Linnaeus, Sp. Pl. 1: 15. 1753, *Rostellaria diffusa* (Willdenow) Nees, Pl. Asiat. Rar. 3: 100. 1832.

Woody herbs. Stems procumbent, diffuse. Petioles 2 mm; lamina lanceolate – elliptic to suborbicular – linear, 3 – 5cm, minutely pubescent. Spikes composed of cymes, slender; bracts oblong-lanceolate, less broad than calyx, base ovate. Calyx 5 parted, splitting to base; 4 segments lanceolate, lower 2 longer, 1 segment small. Calyx segments and bracts ciliate. Corolla flesh colored, small. Capsule oblong, glabrous.

Flowers & Fruits: July to November.

Specimen Cited: Forest, *Rajib & AP Das 0477*, dated 23.07.2007.

Local Distribution: Atiamochar.

General Distribution: India, Nepal, Bhutan, Sri Lanka, Myanmar and Thailand.

Justicia japonica Thunb., *Fl. Jap.* 20. 1784. *Justicia simplex* D. Don, *Prodr. Fl. Nepal.* 118. 1825; Clarke in Hooker *f.*, *Fl. Brit. Ind.* 4: 539. 1885; Wood in Grierson *et* Long, *Fl. Bhut.* 2(3): 1288. 2001. *Justicia japonica* Thunberg, *Fl. Jap.* 20.1784.

Rostellaria mollissima Nees, *Pl. Asiat. Rar.* 3: 101. 1832.

Annual herbs. Stems repens. Leaves orbicular, scariously hirsute, blade 1cm, orbicular, apex rounded, with long petioles. Spike small, dense. Bracts minutely shorter calyx segments, base ovate to caudate, margin ciliate. Calyx 5-parted, segments slender. Capsule pure white, barbarte pubescent.

Flowers & Fruits: August to November.

Specimen Cited: Garden, *Rajib & AP Das 0531*, dated 23.07.2007.

Local Distribution: Garden.

General Distribution: India, Nepal, Bhutan, Sri Lanka, Myanmar, Thailand and Malaya.

LEPIDAGATHIS Willdenow, *Sp. Pl.* 3: 400. 1800.

Lepidagathis incurva Buchanan-Hamilton *ex* D. Don, *Prodr. Fl. Nepal.* 119. 1825; H. Ohashi in Hara, *Fl. E. Himal.* 1: 303. 1966; *Fl. Nep.* 3:142.1982; Wood in Grierson *et* Long, *Fl. Bhut.* 2(3): 1286. 1991. *Lepidagathis hyalina* Nees in Wall., *Pl. As. Rar.* 3: 95. 1832; C.B.Clarke in Hooker *f.*, *Fl. Brit. India* 4: 521. 1885.

Ascending herbs, up to 90 cm, anisophyllous. Stems 4-angled, sulcate. Lamina ovate to elliptic, 3–10 x 1–5cm, base cuneate, entire and slightly sinuate, acute to shortly acuminate. Spikes elongate, secund; bracts oblong-lanceolate, 1-veined, long acuminate. Calyx glabrescent; posterior lobe oblong-lanceolate, 3-veined; lateral lobes lanceolate; anterior lobes connate at base. Corolla white streaked with purple. Stamens slightly exerted. Ovary pubescent. Capsule 5mm, distally pubescent. Seeds subcircular.

Flowers & Fruits: November to April.

Specimen Cited: Chhotojan Beel, *Rajib & AP Das 0634*, dated 12. 02. 2008.

Local Distribution: Beel margins through out.

General Distribution: India, China, Mayanmer, Malaysia, Phillipins.

NELSONIA R. Brown, *Prodr.* 480. 1810.

Nelsonia canescens (de Lamarck) Sprengel in Linnaeus, *Syst. Veg. ed.* 16. 1: 42. 1824; Wood in Grierson *et* Long, *Fl. Bhut.* 2(3): 1250. 2001. *Justicia canescens* de Lamarck, *Tab. Encycl. Method Bot.* 1: 41. 1791. *Nelsonia campestris* R. Brown, *Prodr. Fl. Nov. Hall.* 1: 481. 1810; Clarke in Hooker *f.*, *Fl. Brit. Ind.* 4: 394. 1884; Prain, *Beng. Pl.* 2: 594.1903. *Justicia lamiifolia* Roxburgh, *Fl. Ind.*, ed. 1820 1: 135. 1820. *Dianthera tomentosa* Roxburgh *ex* C.B.Clarke in Hooker *f.*, *Fl. Brit. India* 4: 395. 1884. *Nelsonia lamiifolia* (Roxburgh) Sprengel, *Syst. Veg.* 1: 42. 1824. *Nelsonia rotundifolia* Robert Brown, *Prodr.* 481. 1810.

Annual herbs, creeping, prostrate to decumbent. Stems subterete, villous. Petiole villous; lamina elliptic to ovate, 1–3 x 1–1.5cm, lamina of basal leaves 6–10 x 3–5 cm, both surfaces villous, base cuneate, entire, acute. Spikes 3 – 4cm; bracts elliptic. Calyx 2-lobed. Corolla bluish purple or

white; tube cylindric. Stamens inserted at base of throat; filaments glabrous. Ovary glabrous; ovules 4–8 per locule. Capsule 6–14 seeded. Seeds broadly ellipsoid.

Flowers & Fruits: February to April.

Specimen Cited: Road side, *Rajib & AP Das 0681*, dated 14. 02. 2008.

Local Distribution: Road side forest ground throughout.

General Distribution: India, Bhutan, China, Nepal, Indonesia, Laos, Malaysia, Myanmar, Cambodia, Philippines, Thailand, Vietnam; Africa, Madagascar.

PHAULOPSIS Willdenow, Sp. Pl. 3: 4, 342. 1800 [“Phayloopsis”], *nom. cons.*

Phaulopsis imbricata (Forsskal) Sweet, Hort. Brit. Ed. 1. 327. 1826; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1275. 2001. *Ruellia imbricata* Forsskal, Fl. Aegypt – Arab. 113. 1775. *Aetheilema mucronatum* Griffith, Not. Pl. Asiat. 4: 137. 1854. *Aetheilema reniforme* Nees, Pl. Asiat. Rar. 3: 94. 1832. *Phaulopsis parviflora* Willdenow, Sp. Pl. 3: 342. 1800. *Aetheilema reniforme* Nees, Pl. Asiat. Rar. 3: 94. 1832. [PLATE: 9, Figure-100]

Ascending herbs, up to 50 cm, slightly anisophyllous. Stems ascending, 4-angled. Petiole 4–5 cm; lamina ovate to elliptic, 7–10 x 3–5 cm, papery, acuminate, entire, base cuneate to attenuate and slightly oblique. Spikes terminal; bracts orbicular to reniform. Posterior calyx lobes ovate-elliptic, other lobes linear to subulate. Corolla white; lower lip 3-lobed, lobes ovate-oblong; upper lip narrow, 2-lobed. Staminal filaments glabrous. Style pilose. Capsule ellipsoid.

Flowers & Fruits: October to February.

Specimen Cited: Forest, *Rajib & AP Das 0570*, dated 24.07.2007.

Local Distribution: Throughout Forest.

General Distribution: India, Bhutan, Bangladesh, Indo-China, Vietnam, Himalaya, tropic Africa.

PHLOGACANTHUS Nees in Wallich, Pl. Asiat. Rar. 3: 76, 99. 1832.

Phlogacanthus thyrsoformis (Roxburgh *ex* Hardwicke) Mabberley, Bot. Hist. Hortus Malabaricus 189. 1980. *Justicia thyrsoformis* Hardwicke, Asiat. Res. 6: 349. 1799. *Phlogacanthus thyrsoflorus* Nees, Pl. Asiat. Rar. 3: 99. 1832. C.B. Clarke in Hooker *f.*, Fl. Brit. India 4: 512. 1884; H. Ohashi in Hara, Fl. E. Himal. 1: 303. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 143. 1982; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1284. 1991. *Justicia thyrsooides* Roxburgh *ex* Nees, Prodr. 11: 321. 1847. *Phlogacanthus thyrsoflorus* (Hardwicke) Mabberley in Bot. Hist. Hortus Malabaricus 83. 1980.

Vernacular name: Jaglibasak.

Large shrubs, up to 4m. Lamina elliptic-oblong to oblong, 8–16 x 4–5 cm, acuminate to long acuminate, base attenuate, undulate. Inflorescences in terminal thyrses; bracts small. Calyx lobes linear-lanceolate, unequal. Corolla orange; tube slightly curved; lower lip deeply 3 lobed, lobes ovate; upper lip 2 cleft. Stamens much exerted; filaments glabrous; staminodes 2. Ovary glabrous. Capsule glabrous, 8-seeded.

Flowers & Fruits: January to March.

Specimen Cited: Forest, *Rajib & AP Das 0467*, dated 23.07.2007.

Local Distribution: Throughout Forest.

General Distribution: India, Bhutan, Myanmar, Nepal.

RUNGIA Nees in Wallich, Pl. Asiat. Rar. 3: 77, 109. 1832.

Rungia pectinata (Linnaeus) Nees in de Candolle, Prodr. 11: 470. 1847; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1291. 2001. Guha Bakshi, Fl. Mur. Dist. 244. 1984. *Justicia pectinata* Linnaeus, Torner, Cent. II: Pl. 3. 1756; Amoen. Acad. 4: 299. 1760. *Dicliptera pectinata* (Linnaeus) Jussieu, Ann. Mus. Hist. Nat. 9: 169. 1807. *Dianthera parviflora* Roxburgh *ex* Nees, Prodr. 11: 471. 1847. *Rungia parviflora* Nees, Pl. Asiat. Rar. 3: 110. 1832. *Rungia parviflora* (Retzius) Nees var. *pectinata* (Linnaeus) Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 550. 1985. Prain, Beng. Plants 2: 613. 1903.

Annual, prostrate herbs, rooting at nodes, up to 50 cm. Lamina oblong-elliptic, 1–4 x 0.5–1.5 cm, glabrous, acute, entire, base cuneate. Spikes axillary and terminal, 1 sided, solitary to compound; bracts dimorphic; sterile bracts green, elliptic; fertile bracts circular to obovate, pubescent, broadly hyaline. Calyx colorless, pubescent; lobes linear-lanceolate, narrowly hyaline, mucronulate. Corolla blue; lower lip 3-lobed, lobes triangular; upper lip ovate. Staminal filaments glabrous. Ovary glabrous. Capsule ellipsoid. Seeds orbicular.

Flowers & Fruits: September to May

Specimen Cited: Park, Rajib & AP Das 0344, dated 21.07.2007.

Local Distribution: Throughout study areas.

General Distribution: India, Bhutan, Sri Lanka, Bangladesh, Myanmar, Nepal, Thailand, Vietnam and Malaysia.

THUNBERGIA Retzius, Physiogr. S. Isk. Handl. 1(3): 163. 1780, *nom. cons.*

Key to the species:

- 1a. Petiole hirsute; lamina oblong-ovate *T. fragrans*
- 1b. Petiole grooved; lamina triangular-ovate *T. grandiflora*

Thunbergia fragrans Roxburgh, *Pl. Coromandel 1*: 47. 1795; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1247. 2001. *Roxburghia rostrata* Russell *ex* Nees, Prodr. 11: 57. 1847. *Thunbergia volubilis* Persoon, Syn. Pl. 2: 179. 1806.

Large vines, herbaceous. Stems 4-angled, sulcate. Petiole hirsute; lamina oblong-ovate, broadly ovate to oblong-lanceolate, 5–15 x 2–6 cm, subglabrous, palmately 3–5-veined, acute to acuminate, irregularly sinuate to shallowly coarsely dentate, base rounded to cuneate or cordate. Flowers axillary, solitary; bracteoles ovate. Calyx dentate. Corolla red; tube basally cylindrical; lobes obovate. Stamens included; filaments glabrous; anther thecae divergent. Ovary glabrous; style exserted; stigma funnel-shaped. Capsule glabrous.

Flowers & Fruits: September to April.

Specimen Cited: Forest, Rajib & AP Das 0381, dated 21.07.2007.

Local Distribution: Takomari forest.

General Distribution: India, Bhutan, China, Sri Lanka, Indonesia, Laos, Philippines, Cambodia, Thailand, Vietnam.

Thunbergia grandiflora (Roxburgh *ex* Rottler) Roxburgh, Bot. Reg. 6: 495. 1820; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1248. 2001. *Flemingia grandiflora* Roxburgh *ex* Rottler, Neue Schriften Ges. Naturf. Freunde Berlin 4: 202. 1803. *Thunbergia chinensis* Merrill, Philipp. J. Sci. 21(5): 510. 1922. *Thunbergia cordifolia* Nees, Prodr. 11: 35. 1847.

Large, woody vines up to 15 m. Stems 4-angled. Petiole grooved; lamina ovate to triangular-ovate, 5–15 x 3–9 cm, papery, palmately 3–7-veined, acuminate to acute, undulate, base subcordate to truncate. Flowers solitary, paired in leaf axils or arranged in terminal racemes with 2–4 flowers;

bracts subulate. Calyx unlobed. Corolla bluish; limb subactinomorphic; lobes ovate. Staminal filaments 6–8 mm; anther thecae pubescent. Style glabrous; stigma with 2 subequal lobes. Seeds ovate.

Flowers & Fruits: September to April.

Specimen Cited: Forest, Rajib & AP Das 0460, dated 23.07.2007.

Local Distribution: Atiamochar forest.

General Distribution: India, Bhutan, China, Myanmar, Thailand, Vietnam.

Bignoniaceae A.L. de Jussieu, Gen. P11. 137. 1789 ('Bignoniae'); *nom. cons.*

Key to the genera:

- 1a. Leaflets 2 to 4; lamina triangular-ovate ***Oroxylum***
 1b. Leaflets 9 to 19; lamina elliptic-oblong to obovate-oblong ***Spathodea***

OROXYLUM Ventenat, Decas Gen. Nov. 8. 1808.

Oroxylum indicum (Linnaeus) Bentham ex Kurz, Forest Fl. Burma 2: 237. 1877; Aitken in Grierson et Long, Fl. Bhut. 2(3): 1241. 2001. *Bignonia indica* Linnaeus, Sp. Pl. 2: 625. 1753. *Bignonia tuberculata* Roxburgh ex de Candolle, Prodr. 9: 177. 1845. *Bignonia pentandra* Loureiro, Fl. Cochinch. 379. 1790. *Spathodea indica* (Linnaeus) C.H. Persoon, Syn. Pl. 2: 173. 1807.

Trees up to 10 m. Leaves 2 to 4 pinnately compound, 60 – 130 cm; lamina triangular-ovate, 5 – 12 x 3 – 9 cm, glabrous, becoming blue after drying, short acuminate, entire, base subrounded or cordate, oblique. Inflorescences 60 – 140 cm. Flowers usually open at night. Calyx purple, campanulate. Corolla purple-red; tube fleshy; upper lip 2 lobed, lower lip 3 lobed, lobes slightly reflexed. Stamens inserted at middle of corolla tube; anthers ellipsoid, slightly divergent. Disc large, fleshy, 5 lobed. Style 5 – 7 cm. Capsule woody, flattened. Seeds rounded.

Flowers & Fruits: September to December.

Specimen Cited: Near Forest Bungalow, Rajib & AP Das 0299, dated 10. 02. 2007.

Local Distribution: Forests.

General Distribution: India: tropical and sub-tropical; Bhutan, China, Nepal, Indonesia, Cambodia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

SPATHODEA Palisot de Beauvois, Fl. Oware 1: 46, t. 27. 1805.

Spathodea campanulata Palisot de Beauvois, Fl. Oware 1: 47. 1805. *Spathodea nilotica* Seemon, J. Bot. 3: 333. 1865. *Spathodea tulipifera* (Schuman) G. Don, Gen. Hist. 4: 223. 1838. *Bignonia tulipifera* Schuman, Beskr. Guin. Pl. 273. 1827.

Trees, up to 18 m. Leaves imparipinnate, opposite, estipulate; rachis grooved above, swollen at base; leaflets 9-19, opposite; lamina 5 – 14 x 3 – 7.5 cm, elliptic-oblong to obovate-oblong, acuminate, margin entire, base round to oblique. Flowers bisexual, bright red in terminal racemes. Calyx spathaceous, recurved. Corolla tube bright reddish-orange; lobes 5, deltoid; Stamens subequal, unequally inserted at the base of swollen portion of the tube; staminodium small. Ovary superior, ovate-oblong, pubescent; style slender; stigma 2-lipped, lips flattened. Fruit a capsule, woody, 2-valved; seeds many, winged.

Flowers & Fruits: November to May.

Specimen Cited: Bochamari, Rajib & AP Das 0176, dated 08. 02. 2007.

Local Distribution: Planted in Villages.

General Distribution: Cultivated throughout India; Native in Tropical Africa.

Lamiaceae Lindley, Nat. Syst. ed. 2. 275. 1836 (*nom. alt. cum Labiatae*); *nom. cons.*

Key to the genera:

- 1a. Inflorescences verticillasters 2 to many flowered 2
- 1b. Inflorescences terminal or axillary, racemose, cymose or thyrses 9
- 2a. Style arising above base of ovary; corolla 1 lipped **Ajuga**
- 2b. Style inserted at base of ovary; corolla 2 lipped 3
- 3a. Stamens ascending under upper corolla lip or spreading or projected 4
- 3b. Stamens declinate, lying along or included in lower lip of corolla7
- 4a. Anthers not globose; corolla tube mostly exserted5
- 4b. Anthers globose; corolla tube always included **Pogostemon**
- 5a. Upper lip of corolla mostly short **Anisomeles**
- 5b. Upper lip of corolla larger and convex or galeate6
- 6a. Style lobes unequal in length, posterior much shorter than anterior **Leucas**
- 6b. Style lobes subequal or equal in length **Leonurus**
- 7a. Lower lobe of corolla saccate, abruptly reflexed **Hyptis**
- 7b. Lower lobe of corolla navicular or plane or slightly concave 8
- 8a. Lower lobe of corolla longer than other lobes, narrow at base **Isodon**
- 8b. Lower lobe of corolla equal or shorter as other lobes, not
narrowed at base **Ocimum**
- 9a. Corolla actinomorphic; stamens subequal 10
- 9b. Corolla zygomorphic or slightly oblique; stamens didynamous 11
- 10a. Inflorescences axillary cymes; calyx tube always shorter than fruit **Callicarpa**
- 10b. Inflorescences terminal panicles; calyx inclosing fruit **Tectona**
- 11a. Flower bud conspicuously swollen at tip 12
- 11b. Flower buds not swollen at tip 13
- 12a. Calyx truncate at anthesis **Rotheca**
- 12b. Calyx dentate at anthesis **Clerodendrum**
- 13a. Leaves palmately compound **Vitex**
- 13b. Leaves simple 14
- 14a. Corolla funnellform; stigma lobes very unequal **Gmelina**
- 14b. Corolla tubular; stigma lobes equal **Premna**

ANISOMELES R. Brown, Prodr. 503. 1810.

Anisomeles indica (Linnaeus) Kuntze, Revis. Gen. Pl. 2: 512. 1891; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 967. 1999. *Nepeta indica* Linnaeus, Sp. Pl. 571. 1753. *Anisomelis indica* Linnaeus, Sp. Pl. 1: 571. 1753; Bora & Kumar, Flor. Div. Assam. 267. 2003. *Anisomelis ovata* R. Brown in Aiton, Hort. Kew 3: 364. 1811; Hooker *f.*, Fl. Brit. Ind. 4: 672. 1885; Prain, Beng. Pl. 2: 853. 1903; Kanjilal *et al.*, Fl. Ass. 3: 521. 1939. *Monarda zeylanica* Burman *f.*, Fl. Indica 12. 1768. *Marrubium indicum* (Linnaeus) Burman *f.*, Fl. Indica 127. 1768. *Ajuga glabrata* Bentham *ex* Wallich, Numer. List 2041. 1829. *Ajuga disticha* (Linnaeus) Roxburgh, Hort. Bengal. 44. 1814. *Ballota disticha* Linnaeus, Mant. Pl. 1: 83. 1767.

Erect, branched, herbs up to 2 m. Lamina broadly ovate, 4–9 x 2.5–6 cm, abaxially densely white minutely tomentose, acute to short acuminate, irregularly dentate, base broadly truncate cuneate. Flowers in spikes. Calyx hirsute; teeth purple-red, triangular-lanceolate. Corolla purplish; tube funnellform; upper lip oblong; lower lip subhorizontally spreading; middle lobe obcordate; lateral lobes ovate. Ovary glabrous. Nutlets ovoid.

Flowers & Fruits: September to December.

Specimen Cited: Forest, Rajib & AP Das 0283, dated 10.02.2007.

Local Distribution: Throughout the study areas.

General Distribution: India, Bhutan, Bangladesh, Laos, Malaysia, Cambodia, Myanmar, Philippines, Thailand, Vietnam.

AJUGA Linnaeus, Sp. Pl. 2: 561. 1753.

Ajuga macrosperma Wallich ex Benth, Pl. Asiat. Rar. 1: 58. 1830; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 944. 1999. *Bulga macrosperma* (Wallich ex Benth) Kuntze, Revis. Gen. Pl. 2: 512. 1891.

Erect herbs, up to 40 cm, pilose to subglabrous when old, young parts densely white villous. Lamina ovate-lanceolate to elliptic-ovate, 4–12 x 2–5 cm, villous to strigose, obtuse to acute, undulate to irregularly undulate-crenate, ciliate, base cuneate-decurrent. Verticillasters 6–12 flowered, in axillary and apically forming spikes; ovate-lanceolate. Calyx funnellform, teeth ovate. Corolla blue to purple, tubular, obliquely spreading; upper lip oblong, straight; middle lobe of lower lip narrowly cordate, emarginate at apex.

Flowers & Fruits: January to May.

Specimen Cited: Barajan Beel, Rajib & AP Das 0408, dated 22.07.2007.

Local Distribution: Borojan Beel side herbland.

General Distribution: India, Bhutan, Nepal, Laos, Myanmar, Thailand, Vietnam.

HYPTIS Jacquin, Collectanea 1: 101. 1787, *nom. cons.*

Hyptis suaveolens (Linnaeus) Poiteau, Ann. Mus. Hist. Nat. 7: 472. 1806; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 990. 1999. *Ballota suaveolens* Linnaeus, Syst. Nat. ed. 10 2: 1100. 1759. *Schaueria graveolens* (Blume) Hasskarl, Flora 25(2 Beibl.): 25. 1842. *Mesosphaerum suaveolens* (Linnaeus) Kuntze, Revis. Gen. Pl. 2: 525. 1891. *Marrubium indicum* Blanco, Fl. Filip. 477. 1837. *Bystropogon graveolens* Blume, Bijdr. 824. 1826.

Vernacular name: Bontulsi.

Annual, branched, robust herbs, aromatic. Lamina ovate to broadly ovate, 1.5–11 x 1.4–9 cm, adaxially olive green, abaxially pilose, subacute to obtuse, serrulate, base rounded to shallow cordate, oblique. Cymes 2 to 5 flowered, in racemes or panicles. Calyx throat tufted villous, veins very elevated; teeth broadly triangular. Corolla blue; upper lip lobes reflexed; middle lobe of lower lip shorter. Nutlets dark brown.

Flowers & Fruits: August to June.

Specimen Cited: Forest, Rajib & AP Das 0318, dated 21.07.2007.

Local Distribution: Pantation forests.

General Distribution: India; native in tropical America, widespread tropical weed.

ISODON (Schrader ex Benth) Spach, Hist. Nat. Veg. Phan. 9: 162. 1840.

Isodon rugosus (Wallich ex Benth) Codd, Taxon 17: 239. 1968; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 997. 1999. *Plectranthus rugosus* Wallich ex Benth, Pl. Asiat. Rar. 2: 17. 1830.

Rabdosia rugosa (Wallich ex Benth) H.Hara, J. Jap. Bot. 47: 199. 1972.
Ocimum densiflorum Roth, Nov. Pl. Sp. 275. 1821. *Isodon plectranthoides* Schrader ex Benth, Labiat. Gen. Spec. 43. 1832.

Erect shrubs, much branched, up to 2 m; densely stellate tomentose. Stem leaves opposite; lamina ovate to elliptic, 2 – 4 x 0.5 – 2 cm, papery, densely stellate tomentose, obtuse, crenulate, base broadly cuneate to rounded. Cymes axillary, basal cymes long branched to 20 to more flowered, apical cymes 3–5 flowered. Calyx campanulate; teeth broadly triangular, subequal, minute. Corolla white, tinged rose. Stamens included. Nutlets dark brown, triquetrous, oblong.

Flowers & Fruits: July to October.

Specimen Cited: Forest, Rajib & AP Das 0482, dated 23.07.2007.

Local Distribution: Pantation forests.

General Distribution: India, Bhutan, Bangladesh, Nepal, Pakistan, Afghanistan.

LEONURUS Linnaeus, Sp. Pl. 2: 584. 1753.

Leonurus sibiricus Linnaeus, Sp. Pl. 584. 1753. *Phlomis sibirica* (Linnaeus) Medik., Bot. Beob. 124. 1784. *Leonurus sibiricus* var. *grandiflorus* Benth, Prodr. 12: 502. 1849. *Leonurus occidentalis* Colla, Mem. Reale Accad. Sci. Torino 33: 154. 1829. [PLATE: 7, Figure-64]

Vernacular name: Raktadron.

Annual herbs or biennial, up to 80 cm. Lower stem leaves early deciduous. Lamina ovate, 5 – 7 x 2 – 4 cm, sparsely strigose, lobes narrowly oblong-rhombic, 3 lobulate, base broadly cuneate. Verticillasters many flowered, 3 palmatisect; bracteoles spiny, reflexed, shorter than calyx tube, strigose. Flowers sessile. Calyx tubular-campanulate. Corolla reddish to purple-red. Filaments sparsely scaly. Nutlets brown, oblong, triquetrous.

Flowers & Fruits: July to September.

Specimen Cited: Rasik Beel, Rajib & AP Das 0580, dated 25.07.2007.

Local Distribution: Near Noldoba Beel.

General Distribution: India, China, Bangladesh, Nepal, Bhutan, Mongolia, Russia.

LEUCAS R. Brown, Prodr. 504. 1810.

Key to the species:

- 1a. Verticillasters loosely globose, few flowered; calyx teeth narrowly triangular *L. indica*
- 1b. Verticillasters compact-globose, many flowered; calyx teeth broadly triangular *L. aspera*

Leucas indica (Linnaeus) R. Brown ex Vatke in Oesterr. Bot. Zeits. 25: 95. 1875; Clement in Grierson et Long, Fl. Bhut. 2(2): 963. 1999. *Leonurus indicus* Linnaeus, Syst. ed 10: 1101. 1760. *Leucas linifolia* (Roth) Spreng., Syst. 2: 743. 1825; Prain, Beng. Pl. 2: 856. 1903. Hooker f., Fl. Brit. Ind. 4: 690. 1885; Haines, Bot. Bihar & Orissa pt. IV: 751. 1922. *Leucas indica* (Linnaeus) Robert Brown ex Smith, Cycl. 20: 5. 1812. *Phlomis indica* Linnaeus, Sp. Pl. 586. 1753. *Spermacoce denticulata* Walpers, Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 19 (Suppl. 1): 353. 1843. *Leucas zeylanica* var. *linearis* L.H.Cramer, Revised Handb. Fl. Ceylon 3: 184. 1981. [PLATE: 10, Figure-108]

Vernacular name: Madhuful.

Annual herbs, up to 30 cm. Lamina linear, 2.5 – 5 x 1 – 1.3 cm, obtuse, margin sparsely crenate to subentire. Verticillasters loosely globose, few flowered, densely hispid; bracts linear, as long as calyx. Calyx tubular; mouth oblique, erect; teeth straight, narrowly triangular. Corolla white, slightly longer than calyx tube. Nutlets brown, oblong.

Flowers & Fruits: Through out the Year.

Specimen Cited: Garden, *Rajib & AP Das 0292*, dated 10. 02. 2007.

Local Distribution: Throughout the study areas.

General Distribution: Pantropical hemisphere.

Leucas aspera (Willdenow) Link, Enum. Hort. Berol. Alt. 2: 113. 1822; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 963. 1999. *Phlomis aspera* Willdenow, Enum. Pl. 621. 1809. *Leucas dimidiata* Bentham, Prodr. 12: 532. 1848. *Leucas obliqua* Buchanan-Hamilton *ex* Dillwyn, Rev. Hortus Malab. 57. 1839. *Phlomis obliqua* Buch.-Hamilton *ex* Hooker *f.*, Fl. Brit. India 4: 690. 1885.

Vernacular name: Madhuful.

Annual herbs, up to 40 cm. Lamina linear to oblong-linear, 2.5 – 6 x 1 – 1.5 cm, obtuse, margin sparsely crenate to subentire. Verticillasters compactly globose, many flowered, densely hispid; bracts linear, as long as calyx, margin hispid ciliate. Calyx tubular; mouth oblique, erect; teeth straight, broadly triangular. Corolla white, slightly longer than calyx tube. Nutlets brown, oblong, triquetrous.

Flowers & Fruits: Through out the Year.

Specimen Cited: Conservation sector, *Rajib & AP Das 0138*, dated 07. 02. 2007.

Local Distribution: Throughout the study areas.

General Distribution: India, Indonesia, Malaysia, Philippines, Thailand.

OCIMUM Linnaeus, Sp. Pl. 2: 597. 1753.

Key to the species:

- 1a. Posterior filaments dentate at base *O. basilicum*
- 1b. Posterior filaments puberulent at base..... *O. tenuiflorum*

Ocimum basilicum Linnaeus, Sp. Pl. 1: 597. 1753; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind. 4: 608. 1885; Prain, Beng. Pl. 2: 842. 1903; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 1001. 1999; Haines, Bot. Bihar & Orissa Pt. IV: 728. 1922. *Ocimum album* Linnaeus, Mant. Pl. 1: 85. 1767. *Ocimum ciliare* B. Heyne *ex* Hooker *f.*, Fl. Brit. India 4: 608. 1885. *Ocimum caryophyllatum* Roxburgh, Fl. Ind. ed. 1832 3: 16. 1832. *Ocimum basilicum* var. *album* (Linnaeus) Bentham, Pl. Asiat. Rar. 2: 13. 1830. [PLATE: 6, Figure-61]

Vernacular name: Tulsi.

Erect, annual herbs, up to 80 cm. Lamina ovate to oblong, Fl. Bhut. 2 .5 – 5 x 1 – 2.5 cm, subobtuse to acute, irregularly dentate or subentire, base attenuate. Thyrses 10 – 20 cm; bracts sessile, oblanceolate, base attenuate, ciliate, acute. Calyx campanulate, concave, mucronate. Corolla white, limb puberulent outside. Stamens free, slightly exserted, posterior 2 dentate, base puberulent. Nutlets dark brown, ovoid.

Flowers & Fruits: July to December.

Specimen Cited: Garden, *Rajib & AP Das 0321*, dated 21.07.2007.

Local Distribution: Garden.

General Distribution: India; Tropical Asia, Africa.

Ocimum tenuiflorum Linnaeus, Sp. Pl. 2: 597. 1753; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 1002. 1999. *Ocimum sanctum* Linnaeus, Mant. Pl. 1: 85. 1767. *Ocimum subserratum* B. Heyne *ex* Hooker *f.*, Fl. Brit. India 4: 609. 1885. *Ocimum sanctum* var. *hirsutum* (Bentham) Hooker *f.*, Fl. Brit. India 4: 609. 1885. *Ocimum scutellarioides* Willdenow *ex* Bentham, Linnaea 11: 344. 1837. *Ocimum inodorum* Burman *f.*, Fl. Indica 130. 1768. *Ocimum hirsutum* Bentham, Pl. Asiat. Rar. 2: 14. 1830.

Vernacular Name: Kalo Tulsi.

Erect, subshrubs, up to 1 m, much branched. Lamina oblong, Fl. Bhut. 2.5 – 5.5 x 1 – 3 cm, obtuse, shallowly undulate-serrate, base cuneate to rounded. Verticillasters 6 flowered, in terminal thyrses or panicles; bracts sessile, cordate. Calyx campanulate, villous; middle tooth of upper lip broadly obovate; lateral teeth broadly triangular, shorter than lower lip teeth. Corolla white to reddish purple, slightly exerted. Stamens slightly exerted, free; posterior filaments puberulent at base. Nutlets brown, ovoid.

Flowers & Fruits: February to August.

Specimen Cited: Bochamari, Rajib & AP Das 0560, dated 24.07.2007.

Local Distribution: Panted in Villages.

General Distribution: Throughout India; Malaysia, Myanmar, Philippines, Thailand, Cambodia, Indonesia, Laos, Vietnam; Africa, SWAsia, Australia.

POGOSTEMON Desfontaines, M m. Mus. Hist. Nat. 2: 154. 1815.

Pogostemon amaranthoides Bentham in de Candolle, Prodr. 12: 153. 1848; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 634. 1885; H. Ohashi in Hara, Fl. E. Himal. 280. 1966; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 985. 1999.

Herbs; stems erect or sprawling, pubescent – tomentose in young. Leaves ovate – lanceolate, acute – acuminate, base cuneate-attenuate, numerous glands on lower surface. Calyx obovoid; corolla white. Nutlets trigonous.

Flowers & Fruits: September to October.

Specimen Cited: Forest, Rajib & AP Das 0603, dated 26.07.2007.

Local Distribution: Pantation forests.

General Distribution: India, Bhutan, China; pantropical.

CALLICARPA Linnaeus, Sp. Pl. 1: 111. 1753.

Callicarpa arborea Roxburgh, Fl. Ind. 1: 405. 1820; Long in Grierson *et* Long, Fl. Bhut. 2(2): 919. 1999. *Callicarpa arborea* Roxburgh *ex* Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 567. 1885; H. Ohashi in Hara, Fl. E. Himal. 1: 268. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 145. 1982; Grierson & Long, Fl. Bhut. 2(2): 919. 1999. *Premna arborea* (Roxburgh) Roth, Nov. Pl. Sp. 287. 1821. *Aganum umbellata* Rafinesque, Sylva Tellur. 161. 1838. *Callicarpa magna* Schauer, Prodr. 11: 641. 1847.

Trees, up to 8 m; branchlets, inflorescences, and petioles densely tomentose, hairs stellate. Leaf blade elliptic to elliptic-ovate, 15 – 35 x 7 – 12 cm, leathery, abaxially densely yellow-brown stellate tomentose, adaxially dark green and shiny, base cuneate to rounded, margin entire. Cymes 6 – 10 cm across; peduncle 4 angled, longer than petioles. Calyx cup-shaped, truncate, outside densely gray stellate tomentose. Corolla purple. Stamens much longer than corolla. Ovary densely stellate tomentose. Fruit purple-brown.

Flowers & Fruits: April to November.

Specimen Cited: Forest, Rajib & AP Das 0295, dated 10. 02. 2007.

Local Distribution: Forests.

General Distribution: India, Bhutan, China, Myanmar, Malaysia.

CLERODENDRUM Linnaeus, Sp. Pl. 2: 637. 1753.

Key to the species:

- 1a. Leaves whorled with 4 – 5 per node *C. indicum*
- 1b. Leaves opposite at node 2
- 2a. Petiole up to 5 cm; flowers in terminal thyrses with dens flowers *C. infortunatum*
- 2b. Petiole up to 18 cm; flowers in terminal lax thyrses with few flowers *C. japonicum*

Clerodendrum indicum (Linnaeus) O. Kuntze, Rev. Gen. Pl. 2: 586. 1891; Long in Grierson *et* Long, Fl. Bhut. 2(2): 931. 1999. *Siphonanthus indicus* Linnaeus, Sp. Pl. 1: 109. 1753. *Clerodendrum siphonanthud* R. Brown in Aitton *f.*, Hort. Kew. 4: 65. 1812; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 593. 1885. *Clerodendrum verticillatum* D. Don, Prodr. Fl. Nepal. 102. 1825. *Clerodendrum indicum* f. *Semiserratum* (Wallich) Moldenke, Phytologia 22(3): 214. 1971.

Subshrubs to shrubs, up to 4 m. Branchlets purple to purplish, channeled, smooth. Leaves whorled with 4 – 5 per node, subsessile; leaf blade narrowly lanceolate to oblong-lanceolate, 10 – 20 x 1 – 2 cm, membranous, glabrous, base attenuate, margin entire, apex short acuminate; midvein prominent. Inflorescences terminal leafy thyrses; cymes red, many flowered; bracts linear-lanceolate to lanceolate. Calyx densely minute round glandular; lobes ovate-lanceolate, apex acute. Corolla white, becoming cream colored; tube funnellform, curved; lobes spreading, lanceolate to elliptic-oblong, apex obtuse. Stamens long exserted. Ovary glabrous. Fruiting calyx crimson, leathery. Drupes dark blue.

Flower & Fruits: June to February.

Specimen Cited: Forest, Rajib & AP Das 0316, dated 10. 02. 2007.

Local Distribution: Near Deer Rehabilitation centre.

General Distribution: India, Bhutan, Bangladesh, Sri Lanka, Myanmar, Nepal, S. China and Malaysia.

Clerodendrum infortunatum Linnaeus, Sp. Pl. 637. 1753. *Clerodendrum viscosum* Ventenat, Jord. Malm. f. 1803; Deb *et al.*, Fl. Ass. 3: 487. 1939; Long in Grierson *et* Long, Fl. Bhut. 2(2): 934. 1999; Prain, Beng. Pl. 2: 82. 1903. *Clerodendrum calycinum* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 36(2): 222. 1863. *Clerodendrum viscosum* Ventenat, Jard. Malmaison t. 25. 1803. [PLATE: 7, Figure-68]

Vernacular name: Vant.

Shrubs, up to 2 m. Branchlets 4 angled, pubescent. Leaves opposite; petiole up to 5 cm, densely pubescent; lamina subcordate, 4 – 14 x 3 – 12 cm, sparsely pubescent, base cordate, margin sparsely serrulate to dentate, acute to obtuse. Inflorescences terminal thyrses with dens flowers; bracts and bractlets reddish or green. Calyx red, deeply 5 lobed, pubescent; lobes ovate-lanceolate to ovate. Corolla red; lobes oblong. Stamens and style longer than corolla tube. Fruiting calyx much longer than fruit, becoming reflexed. Drupes green when young, subglobose.

Flower & Fruits: January to September.

Specimen Cited: Forest, Rajib & AP Das 0398, dated 22.07.2007.

Local Distribution: Throughout forest and open shrubland.

General Distribution: India, Bhutan, China, Sri Lanka, Myanmar, Australia.

Clerodendrum japonicum (Thunberg) Sweet, Hort. Brit. 822. 1826; Long in Grierson *et* Long, Fl. Bhut. 2(2): 934. 1999. *Volkameria japonica* Thunberg, Syst. Nat. ed. 14: 578. 1784. *Volkameria dentata* Roxburgh, Fl. Ind. ed. 3: 61. 1832. *Clerodendrum coccineum* H.J.Lam, Verben. Malay. Archip. 296. 1919. *Volkameria japonica* Thunberg, Nova Acta Regiae Soc. Sci. Upsal. 3: 203. 1780.

Vernacular name: Bara Vant.

Shrubs, up to 4 m. Branchlets 4 angled, pubescent, nodes sometimes villous. Petiole up to 18 cm, densely yellow-brown pubescent; lamina subcordate, 8–35 x 6–25 cm, sparsely pubescent, base cordate, margin sparsely serrulate to dentate, apex acuminate to acute. Inflorescences terminal thyrses; bracts and bractlets usually reddish. Calyx red, deeply 5 lobed, pubescent, outside glandular; lobes ovate-lanceolate to ovate. Corolla red; lobes oblong. Stamens and style longer than corolla tube. Fruiting calyx much longer than fruit, becoming reflexed. Drupes green when young, blue-black at maturity, subglobose.

Flowers & Fruits: May to November.

Specimen Cited: Forest, Rajib & AP Das 0430, dated 22.07.2007. *Status:*

Local Distribution: Throughout forest and open shrubland.

General Distribution: India, Bhutan, Bangladesh, Indonesia, Laos, Malaysia, Vietnam.

ROTHECA Rafinesque-Schmaltz, Fl. Tellur. 4: 69. 1838.

Rotheca serrata (Linnaeus) Steane & Mabberley, Novon 8: 206. 1998. *Clerodendrum serratum* (Linnaeus) Moon, Cat. Ceylon Pl. 46. 1824; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 146. 1982; Long in Grierson *et* Long, Fl. Bhut. 2(2): 933. 1999. *Volkameria serrata* Linnaeus, Mant. Pl. 90. 1767. *Volkameria serrata* Linnaeus, Mant. Pl. 1: 90. 1767. *Volkameria herbacea* Roxburgh, Hort. Bengal. 46. 1814. *Clerodendrum grandifolium* Salisbury, Prodr. Stirp. Chap. Allerton 108. 1796.

Shrubs, up to 3 m. Branchlets densely yellow pubescent, becoming dark brown to gray-yellow and glabrous. Leaves opposite or in threes; leaf sessile; leaf blade obovate-oblong to elliptic-ovate, 6–22 x 3–7 cm, papery, pubescent, margin serrulate, apex acuminate to acute; veins abaxially prominent. Inflorescences terminal thyrses, densely yellow-brown pubescent, cymes sometimes monochasial; bracts sessile, ovate to broadly ovate, pubescent; bractlets lanceolate. Calyx truncate, pubescent. Corolla white, bluish; lobes oblong. Stamens long exerted, base pubescent. Ovary glabrous. Style long exerted. Drupes green when young, becoming black, subglobose.

Flowers & Fruits: July to February.

Specimen Cited: Batikata Beel, Rajib & AP Das 0463, dated 23.07.2007.

Local Distribution: Batikata Beel marginal forest.

General Distribution: India, Bhutan, China, Sri Lanka, Bangladesh, Myanmar.

GMELINA Linnaeus, Sp. Pl. 2: 626. 1753.

Gmelina arborea Roxburgh, Hort. Bengal. 46. 1814; Pl. Corom. 3: 4. t. 246. 1815; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 581. 1885; H. Ohashi in Hara, Fl. E. Himal. 2: 113. 1971; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 147. 1982; Long in Grierson *et* Long, Fl. Bhut. 2(2): 928. 1999. *Gmelina sinuata* Link, Enum. Hort. Berol. Alt. 2: 128. 1822. *Gmelina arborea* var. *canescens* Haines, Forest Fl. Chota Nagpur 82. 1910.

Vernacular name: Gamabri

Trees, up to 15 m; bark grayish brown; branchlets, petioles and inflorescences densely yellow-brown tomentose. Branchlets slightly 4 angled when young, becoming terete, lenticellate, leaf scars

prominent. Petiole terete; leaf blade broadly ovate, 8 – 20 x 5 – 15 cm, papery, base broadly cuneate to subcordate, apex acuminate; veins abaxially prominent. Inflorescences terminal, narrow thyrses. Calyx with several black discoid gland patches; teeth 5, sharply triangular. Corolla yellow, 2-lipped, sparsely glandular. Ovary glabrous, glandular. Stigma unequally 2 cleft. Drupes yellow when ripe and black when dry, obovoid-ellipsoid.

Flowers & Fruits: February to June.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0524*, dated 23.07.2007.

Local Distribution: Panted in Villages.

General Distribution: India, Bhutan, Nepal, Sri Lanka and Philippines.

TECTONA Linnaeus f., Suppl. Pl. 151. 1781 (publ. 1782), *nom. cons.*

Tectona grandis Linnaeus f., Suppl. Pl. 151. 1782; Clarke in Hooker f., Fl. Brit. Ind. 4: 570. 1885; Long in Grierson *et* Long, Fl. Bhut. 2(2): 921. 1999. *Tectona theca* Loureiro, Fl. Cochinch. 137. 1790. *Theka grandis* (Linnaeus f.) de Lamarck, Tabl. Encycl. 2: 111. 1797. *Jatus grandis* (Linnaeus f.) Kuntze, Revis. Gen. Pl. 2: 508. 1891.

Vernacular name: Segun.

Trees, up to 40 m. Branchlets gray to grayish brown, 4 angled, yellowish to grayish brown stellate tomentose. Petiole robust, 3 cm; leaf blade ovate-elliptic to ovate, 15 – 50 x 8 – 25 cm, papery, abaxially densely grayish brown to yellowish brown, minutely stellate tomentose, puberulent along veins, base cuneate and de-current, margin entire, apex acuminate to obtuse, veins 7 to 12 pairs. Panicles 30 - 40 cm. Flowers fragrant. Calyx tube with white stellate hairs. Corolla white; tube outside puberulent glandular; lobes obtuse. Ovary strigose. Style 3 mm. Fruit globose, minutely tomentose.

Flowers & Fruits: June to December.

Specimen Cited: Forest, *Rajib & AP Das 0682*, dated 14. 02. 2008.

Local Distribution: Pantation forests.

General Distribution: Indo- Malaysia.

VITEX Linnaeus, Sp. Pl. 2: 638. 1753.

Vitex negundo Linnaeus, Sp. Pl. 638. 1753; Clarke in Hooker f., Fl. Brit. Ind. 4: 583. 1885; H. Ohashi in Hara, Fl. E. Himal. 1: 270. 1966; Long in Grierson *et* Long, Fl. Bhut. 2(2): 926. 1999. *Agnus-castus negundo* (Linnaeus) Carri re, Rev. Hort. 42: 415. 1871. *Vitex nogondo* Linnaeus, Hortus Maurit. 258. 1837.

Vernacular Name: Nishinda.

Shrubs to small trees. Branchlets densely gray tomentose. Leaves 3 – 5 foliolate; central leaflet distinctly petiolulate, 4 – 13 x 1 – 4 cm, leaflets lanceolate, oblong-lanceolate, base cuneate, margin entire. Inflorescences 10 – 27 cm; peduncle densely gray tomentose. Calyx campanulate, 5 dentate, gray tomentose. Corolla 2 lipped. Stamens exerted. Ovary subglabrous.

Flower & Fruits: April to October.

Specimen Cited: Bochamari, *Rajib & AP Das 0513*, dated 23.07.2007.

Local Distribution: Panted in Villages.

General Distribution: India, Bhutan, China, Sri Lanka, Afganistan, Myanmar, Malaysia.

PREMNA Linnaeus, Mant. Pl. 154. 1771, *nom. cons.*

Key to the species:

- 1a. Trees; leaves opposite, ovate, cordate *P. latifolia*
 1b. Subshrubs; leaves rosulate; obovate-oblong to spatulate *P. herbacea*

Premna latifolia Roxb., Fl. Ind. 3: 76. 1832; Hooker f., Fl. Brit India 4: 577. 1885; Long in Grierson *et* Long, Fl. Bhut. 2(2): 924. 1999.

Vernacular name: Guniari.

Small trees, up to 8 m. Branchlets dark brown, striate, pubescent when young, subglabrescent. Leaves simple, opposite, estipulate; lamina ovate-oblong to ovate, subrounded or cordate, 5 – 12 x 3 – 5 cm, papery, abaxially densely yellow pilose, base cuneate, rounded, apex acuminate; veins 5 – 7 pairs, reticulate veins obscure. Flowers bisexual, in terminal corymbose cymes; bracts linear, deciduous. Calyx slightly 2 lipped, 5 dentate, outside minutely hirsute, inside glabrous. Corolla dusty yellow, slightly 2 lipped, 5 lobed, outside puberulent, villous in throat. Stamens equal or longer than style, exerted; anthers black. Drupe black, tuberculate, glabrous.

Flowers & Fruits: March to June.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0453*, dated 22.07.2007.

Local Distribution: Panted in Villages.

General Distribution: India: Cambodia, Indonesia, Laos, Myanmar, Philippines, Vietnam

Premna herbacea Roxburgh, Fl. Ind. ed. 1832, 3: 80. 1832; Long in Grierson *et* Long, Fl. Bhut. 2(2): 925. 1999. *Gumira herbacea* (Roxburgh) Kuntze, Revis. Gen. Pl. 2: 507. 1891. *Premna obovata* Merrill, J. Arnold Arbor. 32: 77. 1951.

Subshrubs up to 5 cm. Rhizomes woody. Branches glabrous. Leaves rosulate; lamina obovate-oblong to spatulate, 3 – 10 x 2 – 7 cm, sparsely pubescent and yellow glandular, base cuneate, margin serrate to sparsely crenulate, apex rounded. Inflorescences paniculate capitate corymbs; peduncle densely puberulent; bracts linear to lanceolate. Calyx cup-shaped, outside pubescent and yellow glandular. Corolla purple, white in bloom, slightly 2 lipped, 4 lobed, outside puberulent. Ovary 2 locular.

Flowers & Fruits: June to August.

Specimen Cited: Road side, *Rajib & AP Das 0338*, dated 21.07.2007.

Local Distribution: Road near Leopard rehaBeelitation centre.

General Distribution: India, Bhutan, Nepal, Cambodia, Laos, Myanmar, New Guinea, Philippines, Thailand, Vietnam; Australia.

Lentibulariaceae L.C. Richard in Poiteau *et* Turpin, Fl. Paris 1: 26. 1808 ('Lenti- bularieae'); *nom. cons.*

UTRICULARIA Linnaeus, Sp. Pl. 1: 18. 1753.

Key to the species:

- 1a. Flowers pale yellow with violet spots; capsule globose *U. inflexa*
 1b. Flower fully bright yellow; capsule sub globose 2
 2a. Inflorescences with 1 to 3 flowered *U. gibba*
 2b. Inflorescences with 3 to 10 flowered *U. aurea*

Utricularia aurea Loureiro, Fl. Cochinch. 26. 1790; Noltie in Grierson *et* Long, Fl. Bhut. 2(3): 1339. 2001. *U. flexuosa* Vahl, Fnum. Pl. 1: 198. 1804; Clark in Hooker f., Fl. Brit. Ind. 4: 329. 1884; Prain, Beng. Pl. 2: 581. 1903. *Utricularia blumei* (A. de Candolle) Miquel, Fl. Ned. Ind. 2: 997. 1859. *Utricularia confervifolia* Jackson & D. Don, Prodr. Fl. Nepal. 84. 1825.

Utricularia fasciculata Roxburgh, Hort. Bengal. 4. 1814 *Utricularia extensa* Hance, Ann. Bot. Syst. 3: 3. 1852. [PLATE: 8, Figure-89]

Vernacular name: Jhanji.

Aquatic floating or suspended herbs; rhizoids usually present. stolons much branched. Stolons filiform to relatively thick, branched. Traps on leaf segments, stalked, obliquely ovoid. Leaves numerous on stolons, 2–8 cm, submerged; whorled, multifid into filiform segments, interspersed with bladders. Inflorescences erect, 9–25 cm, 3 to 10 flowered; bracts basifixed. Calyx lobes ovate, enlarged in fruits. Corolla yellow, lower lip transversely elliptic, base with a prominent 2-lobed swelling. Filaments curved. Ovary ovoid. Capsules globose.

Flowers & Fruits: September to January

Specimen Cited: Ververi Beel, *Rajib & AP Das 0077*, dated 06. 02. 2007.

Local Distribution: Throughout Wetlands.

General Distribution: India, China, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam, Malaysia to Tropical Australia.

Utricularia gibba Linnaeus, Sp. Pl. 18. 1753; Noltie in Grierson *et* Long, Fl. Bhut. 2(3): 1340. 2001. *Utricularia gibbosa* Linnaeus ssp. *exoleta* (R. Brown) P. Taylor, Mitt. Bot. Staat. Munchen 4: 101. 1961 & Kew Bull. 18(1): 204. 1954. *Utricularia exoleta* R. Brown Prodr. 430: 1810; Hooker *f.*, Fl. Brit. Ind. 4: 329. 1884; Prain, Beng. Pl. 2: 581. 1903. *Utricularia diantha* Roxburgh *ex* Roemer & Schultes, *Mant. Pl. 1: 169. 1822. Utricularia diflora* Roxburgh, *Hort. Bengal. 4. 1814. Utricularia gracilis* Kunth, *Nov. Gen. Sp. (quarto ed.) 2: 225. 1818. Utricularia gibbosa* Hill, *Veg. Syst. 20: 45. 1772.* [PLATE: 8, Figure-90]

Vernacular name: Jhanji.

Small, submerged aquatic herbs, usually floating at maturity. Stolons filiform, much branched, often mat-forming. Traps lateral on leaf segments, stalked, ovoid. Leaves numerous on stolons, sparsely filiform simple or divided with capillary segments, one or more represented by racemes; spur conical obtuse. Inflorescences erect, 2–15 cm, 1 to 3 flowered. Calyx lobes subequal, broadly ovate to orbicular. Corolla yellow; lower lip slightly smaller than upper lip, base with a prominent 2-lobed swelling. Ovary globose. Capsules globose; seeds orbicular, flat.

Flowers & Fruits: September to January

Specimen Cited: Batikata Beel, *Rajib & AP Das 0356*, dated 21.07.2007.

Local Distribution: Throughout Wetlands.

World distribution: India (Throughout), Bhutan, Nepal, Sri Lanka, Malaysia, China and Africa.

Utricularia inflexa Forsskal, Fl. Aegypt.-Arab. 9. 1775. *Utricularia inflexa* Forsskarl var. *stellaris* (Linnaeus *f.*) Taylor, Mitt. Bot. Staat. Munchen 4: 96. 1961 & Kew Bull. 18: 204. 1964. *Utricularia stellaris* Linnaeus *f.* Suppl. 86. 1781; Taylor, Polhill, Fl. Trop. E. Africa-Lentibulariaceae 16: 1973; Clarke, Hooker *f.*, Fl. Brit. Ind. 4: 328. 1884; Prain, Beng. Pl. 2: 581. 1903.

Vernacular name: Jhanji.

Submerged aquatic herbs with exposed scape, supported on whorls of spongy floats. Leaves highly dissected. Flowers in aerial racemes; calyx enlarged in fruits; corolla yellow or cream. Capsules globose.

Flowers & Fruits: September to January.

Specimen Cited: Raichangmari Beel, *Rajib & AP Das 0658*, dated 13. 02. 2008.

Local Distribution: Throughout Wetlands.

General Distribution: India, Sri Lanka, Malaya, S.E. Asia, Australia and Africa.

Linderniaceae Borsch, Kai Mueller *et* Eberhard Fischer, Pl. Biol. (Stuttgart) 7(1): 76. 2005.

Key to the genera:

- 1a. Calyx 5-angular; capsule septum persistent *Lindernia*
 1b. Calyx 5-winged; capsule septum not persistent *Torenia*

LINDERNIA Allioni, Mlanges Philos. Math. Soc. Roy. Turin. 3: 178. 1766.

Key to the species:

- 1a. Leaves sessile 2
 1b. Leaves petiolate 3
 2a. Leaf margin entire to weakly obtusely toothed *L. procumbens*
 2b. Leaf margin densely aristate-serrate *L. ciliata*
 3a. Leaves ovate 4
 3b. Leaves oblong to oblong oblanceolate *L. antipoda*
 4a. Corolla white 5
 4b. Corolla purple *L. crustacea*
 5a. Capsule linear-ovoid *L. anagallis*
 5b. Capsule globose *L. viscosa*

Lindernia anagallis (Burman f.) Pennell in J. Arnold Arbor. 24(3): 252-253. 1943; Mooney, Suppl. Bot. Bihar & Orissa 100. 1950; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1123. 2001; Panda *et* Das, Fl. Sambalp. 252. 2004. *Ruellia anagallis* Burman f., fl. Indica 135. 1768. *Vandellia penunculata* Benth, Scorph. India. 37. 1835; Hooker f. in Hooker f., Fl. Brit. Ind. 4: 282. 1884; Prain, Beng. Pl., 2: 769. 1903. *Vandellia cordifolia* (Colsm.) G. Don, Gen. Syst. 4: 549. 1838; Haines, Bot. Bihar & Orissa pt. IV: 610. 1922; Mooney, Suppl. Bot. Bihar & Orissa 94. 1950. *Vandellia anagallis* (Burman f.) T. Yamaz., J. Jap. Bot. 30(6): 176. 1955. *Lindernia cordifolia* (Colsm.) Merr., Enum. Philipp. Fl. Pl. 3: 437. 1923.

Annuals, creeping herbs, up to 40 cm; rooting from nodes. Leaves short petiolate to sessile; lamina triangular-ovate to ovate – oblong, 0.5 – 2 x 0.7 – 1.5 cm, glabrous, rounded to acute, shallowly crenate, base truncate to subcordate. Flowers axillary, solitary. Calyx basally connate; lobes narrowly lanceolate. Corolla white; lower lip slightly longer than upper lip, spreading flat, 3 lobed; upper lip ovate, 2 lobed. Filaments with a clavate appendage. Stigma 2 lobed. Capsule linear-ovoid. Seeds ovoid.

Flowers & Fruits: February to October.

Specimen Cited: Batikata Beel Margin, Rajib & AP Das 0665, dated 13. 02. 200

Local Distribution: Beel margins through out.

General Distribution: India, Bhutan, Sri Lanka, Japan, Myanmar, Malaysia, Indonesia, Siam, China, Philippines Islands and Java.

Lindernia ciliata (Colsmann) Pennell, J. Arnold Arbor. 24(3): 253. 1943; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1125. 2001. *Gratiola ciliate* Colsmann, Prodr. Descr. Gratiol. 14. 1793. *Ilysanthes serrata* (Roxburgh) Urban, Ber. Deutsch. Bot. Ges. 2: 436. 1884.

Annual, diffuse herbs, up to 20 cm. Leaves sessile; lamina oblong to lanceolate-oblong, 0.6 – 5 x 0.3 – 1.5 cm, glabrous, acute to obtuse, densely aristateserrate, base amplexicaul. Racemes terminal; bracts lanceolate. Calyx lobes narrowly lanceolate. Corolla white, lower lip as long as upper lip, middle lobe larger than other lobes; upper lip ovate. Fertile stamens 2, posterior; reduced stamens 2, anterior. Style as long as fertile stamens. Capsule cylindrical. Seeds irregularly triangular.

Flowers & Fruits: March to October.

Specimen Cited: Forest, Rajib & AP Das 0535, dated 23.07.2007.

Local Distribution: Throughout study areas.

General Distribution: India, Bhutan, China, Japan, Laos, Malaysia, Myanmar, Cambodia, Philippines, Vietnam; N Australia.

Lindernia crustacea (Linnaeus) F. Mueller, Syst. Census Austral. Pl. 1: 97. 1882; Pennell, Scroph. West. Himal. 29. 1943; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1124. 2001; Guha Bakshi, Fl. Mur. Dist. 227. 1984. *Capraria crustacea* Linnaeus, Mant. Pl. 1: 87. 1767; *Vandellia crustacea* Benth. Scroph. Ind. 35. 1835; Hooker *f.*, Fl. Brit. Ind. 4: 279. 1884; Prain, Beng. Pl. 2: 768. 1903. *Pyxidaria crustacea* (Linnaeus) Kuntze, Revis. Gen. Pl. 2: 464. 1891. *Antirrhinum hexandrum* Forssk., Fl. Aegypt.-Arab. 43. 1775. *Gratiola lucida* Willdenow, Sp. Pl. 1: 103. 1797. *Torenia scabra* R. Brown, Prodr. 440. 1810. *Vandellia alba* Benth. Scroph. Ind. 35. 1835. *Gratiola aspera* Roth, Nov. Pl. Sp. 11. 1821.

Spreading, annuals herbs, up to 20 cm. Leaves shortly petiolate; lamina triangular-ovate to broadly ovate, 1 – 3 x 0.5 – 1.5 cm, obtuse to subacute, shallowly crenate or serrate, base broadly cuneate to rounded. Flowers axillary and solitary. Pedicel slender. Calyx shallowly lobed; lobes triangular-ovate. Corolla purple; tube slightly longer than calyx; lower lip 3 lobed; upper lip ovate. Stamens didynamous. Style fugacious. Capsule broadly ellipsoid. Seeds pale yellow-brown, subglobose.

Flowers & Fruits: Throughout the year.

Specimen Cited: Forest, Rajib & AP Das 0457, dated 23.07.2007.

Local Distribution: Throughout study areas.

General Distribution: widely distributed in tropics and subtropics.

Lindernia antipoda (Linnaeus) Alston in Trimen, Handb. Fl. Ceyl. Suppl. 6: 24. 1931; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1125. 2001. *Ruellia antipoda* Linnaeus, Sp. Pl. 2: 635. 1753. *Bonnaya veronicifolia* (Retzius) Sprengel, Syst. 1: 41. 1824; Hooker *f.*, Fl. Brit. Ind. 4: 285. 1884. *Ilysanthes antipoda* (Linnaeus) Merrill, Interpr. Rumph. Herb. Amb. 467. 1917. *Lindernia veronicifolia* (Retzius) F. Muell., Fragm. Pl. Filip. 6: 101. 1867. *Vandellia veronicifolia* (Retz.) Haines, Bot. Bihar Orissa 4: 633. 1922.

Annuals herbs, up to 30 cm. Petiole short and wide; lamina oblong to oblong-oblongate, 0.6 – 4 x 0.5 – 2 cm, glabrous, acute to rounded, obscurely to sharply serrate, base cuneate and decurrent. Racemes terminal, 4 – 18 flowered. Calyx lanceolate. Corolla purple or white; lower lip 3 lobed; upper lip 2 lobed. Fertile stamens 2, posterior. Reduced stamens 2, anterior; filaments slightly curved. Stigma lamellate. Capsule cylindrical. Seeds brown, irregularly triangular-ovoid.

Flowers & Fruits: March to September.

Specimen Cited: Bochamari crop field, Rajib & AP Das 0339, dated 21.07.2007.

Local Distribution: Throughout study areas.

General Distribution: India, Bhutan, Nepal, Japan, Sri Lanka, Laos, Malaysia, Myanmar, Cambodia, Philippines, Thailand, Vietnam; Australia, Pacific Islands.

Lindernia procumbens (Krocker) Borb. s, B k s V megye 80. 1881; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1121. 2001. *Vandellia erecta* Benth. Scroph. Ind. 36. 1835. *Lindernia erecta* (Benth.) Bonati, Fl. G n. Indo-Chine 4: 420. 1927. *Anagalloides procumbens* Krocker, Fl. Siles 2(1): 398. 1790.

Erect, much branched, herbs, up to 20 cm. Leaves sessile, elliptic to oblong, 1 – 3 x 0.6 – 1.5 cm, glabrous, obtuse to rounded, margin entire to weakly obtusely toothed. Flower axillary, solitary. Pedicel longer than subtending leaf, glabrous. Calyx lobes linear-lanceolate. Corolla pink; 3

lobed, lateral lobes elliptic; 2 lobed. Stamens 4, all fertile. Stigma 2 lobed. Capsule globose to ovoid-globose. Seeds oblong.

Flowers & Fruits: June to October.

Specimen Cited: Forest, Rajib & AP Das 0190, dated 09. 02. 2007.

Local Distribution: Throughout study areas.

General Distribution: India, Bhutan, China, Nepal, Pakistan, Indonesia, Japan, Kazakstan, Afghanistan, Laos, Russia, Tajikistan, Thailand, Vietnam; S Europe.

Lindernia viscosa (Hornemann) Merrill, Sp. Blancoan. 14. 1918; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1122. 2001. *Lindernia hirsuta* (Bentham) Wettstein, Nat. Pflauzen.f. 4(3b): 79. 1897; Majumdar, Ind. Agr. 6: 167. 1962. *Vandellia hirsuta* Bentham, Scroph. Ind. 36. 1835; Hooker f., Fl. Brit. Ind. 4: 280. 1884; Prain, Beng. Pl. 2: 768. 1903. *Gratiola viscosa* Hornemann, Enum. Pl. Hort. Hafn. 19. 1807. *Lindernia viscosa* (Hornemann) Boldingh, Zakfl. Landb. Java 165. 1916; Datta & Majumdar, Bull. Bot. Soc. Beng. 20(2): 108. 1967. *Pyxidaria viscosa* (Hornemann) Kuntze, Revis. Gen. Pl. 2: 464. 1891.

Sparsely diffuse, striate, annuals herbs. Leaves short petiolate below, sessile above; lamina ovate-oblong, Fl. Bhut. 2 – 5 cm x 2 – 4 cm, obtuse to rounded, undulate and toothed, base decurrent. Upper leaves sessile, wider than long and smaller than basal leaves. Raceme lax, 5 – 10 flowered; recurved after; bracts lanceolate. Calyx lobes narrowly lanceolate. Corolla white; upper lip 2 lobed. Stamens 4. Capsule globose. Seeds ellipsoid-oblong.

Flowers & Fruits: June to November.

Specimen Cited: Forest, Rajib & AP Das 0563, dated 24.07.2007.

Local Distribution: Atiamochar forest.

General Distribution: India, Bhutan, China, Bangladesh, Sri Lanka, Philippines Islands, Java and Borneo.

TORENIA Linnaeus, Sp. Pl. 2: 619. 1753.

Key to the species:

- 1a. Creeping herbs; anterior stamens appendages linear *T. asiatica*
- 1b. Erect herbs; stamens unappendaged *T. violacea*

Torenia asiatica Linnaeus, Sp. Pl. 2: 619. 1753. *Torenia glabra* Osbeck, Dagb. Ostind. Resa 210. 1757. *Lindernia multiflora* (Roxburgh) Mukerjee, J. Indian Bot. Soc. 24: 131. 1945. *Tittmannia trichotoma* Bentham, Numer. List 3943. 1831.

Creeping herbs, rooting from nodes. Lamina triangular-ovate to narrowly ovate, 1.5 – 3.5 x 1 – 2 cm, crenate and serrate, base abruptly constricted and subtruncate to broadly cuneate. Flowers axillary and solitary. Calyx 2 lipped, 5 winged; lips narrowly triangular. Corolla purple-red to blue-red. Anterior stamens appendages linear. Capsule 1cm. Seeds yellowish.

Flowers & Fruits: June to September.

Specimen Cited: Forest, Rajib & AP Das 0636, dated 12. 02. 2008.

Local Distribution: Atiamochar forest.

General Distribution: India, Bhutan, China, Japan, Vietnam.

Torenia violacea (Azaola ex Blanco) Pennell, J. Arnold Arbor. 24: 255. 1943; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1120. 2001. *Mimulus violaceus* Azaola ex Blanco, Fl. Filip., ed. 2, 357. 1845.

Erect herbs, up to 30 cm. Leaves decreasing in size upward; lamina ovate to narrowly ovate, 1.5 – 4 x 1 – 2 cm, villous, acuminate, shallowly serrate, base cuneate to somewhat truncate. Flowers in terminal fascicles or solitary in leaf axils. Calyx purple-red, oblong-fusiform, 5 winged; lobes 5. Corolla pale yellow, exceeding calyx by 1 – 2 mm; lower lip lobes with a blue patch, center of middle lobe with an additional yellow patch. Stamens unappendaged. Capsule 1 – 1.5 cm. Seeds yellowish.

Flowers & Fruits: June to September.

Specimen Cited: Forest, *Rajib & AP Das 0432*, dated 22.07.2007.

Local Distribution: Tacomari forest.

General Distribution: India, Bhutan, China, Indonesia, Laos, Cambodia, Malaysia, Philippines, Thailand, Vietnam.

Oleaceae Hoffmansegg *et* Link, Fl. Port. 1: 386. 1809 ('Oleinae'); *nom. cons.*

JASMINUM Linnaeus, Sp. Pl. 1: 7. 1753.

Key to the species:

1a. Leaves all simple; calyx sparsely pubescent; lobes 8–9, linear *J. sambac*

1b. Leaves compound and simple; calyx glabrous; lobes 5, deltate *J. dispernum*

Jasminum sambac (Linnaeus) Aiton, Hort. Kew. 1: 8. 1789; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 590. 1999. *Nyctanthes sambac* Linnaeus, Sp. Pl. 1: 6. 1753. *Jasminum sanjurium* Buchanan-Hamilton *ex de* Candolle, Prodr. 8: 302. 1844. *Jasminum heyneanum* Wallich *ex* G. Don, Gen. Hist. 4: 62. 1837. *Jasminum bicorollatum* Noronha, Verh. Batav. Genootsch. Kunsten 5(4): 10. 1790. *Jasminum odoratum* Noronha, Verh. Batav. Genootsch. Kunsten 5(4): 10. 1790. *Nyctanthes sambac* Linnaeus, Sp. Pl. 1: 6. 1753. *Jasminum sambac* (Linnaeus) Aiton var. *heyneanum* C.B. Clarke in Hooker *f.*, Fl. Brit. India 3(9): 592. 1882 [Dec 1882], as 'var. *Heyneana*'

Vernacular name: Jnui.

Erect or scandent shrubs, up to 3m. Leaves opposite, simple; lamina orbicular to elliptic-obovate, 4 – 12 x 2 – 6cm, papery, both ends blunt or base subcordate. Cymes terminal, 1 – 3 flowered; bracts subulate. Flowers very fragrant. Calyx sparsely pubescent; lobes 8–9, linear. Corolla white; lobes oblong to suborbicular. Berry purple-black, globose.

Flowers & Fruits: May to October.

Specimen Cited: Bochamari village, *Rajib & AP Das 0480*, dated 23.07.2007.

Local Distribution: Cultivated in villages.

General Distribution: Native to India, widely cultivated in S China and elsewhere in the world for its very fragrant flowers that are used in tea flavoring and in perfumes.

Jasminum dispernum Wallich in Roxburgh, Fl. Ind. 1: 99. 1820; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 591. 1999. [PLATE: 9, Figure-105]

Vernacular name: Jnui.

Scandent shrubs, up to 6m. Leaves opposite, compound and simple, sometimes all simple; leaflets 3–5, lamina broadly ovate to ovate-lanceolate, 4 – 15 x 3 – 8cm, papery, acute or acuminate, entire, base rounded or subcordate. Paniculate cymes terminal and many flowered or axillary 3 – 20 flowered; bracts linear. Calyx glabrous; lobes 5, deltate. Corolla pink outside, white inside, funnellform; lobes 5, ovate. Berry purple-black, globose to ovoid.

Flowers & Fruits: March to April.

Specimen Cited: Forest, Rajib & AP Das 0614, dated 11. 02. 2008.

Local Distribution: Throughout Forest.

General Distribution: Throughout India; Bhutan, Nepal, China.

Phrymaceae Schauer in A.P. de Candolle, Prodr. 11: 520. 1847; *nom. cons.*

MAZUS Loureiro, Fl. Cochinch. 2: 385. 1790.

Mazus pumilus (Burman f.) Steenis in Nova guinea n. sect. 9(1): 31. 1958; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1102. 2001. *Lobelia pumila* Burman f., Fl. Ind. 186. t. 60, f. 3. 1768; Panda *et* Das, Fl. Sambalp. 254. 2004. *Mazus rugosus* Loureiro, Fl. Cochinch. 385. 1790; Hooker f. in Hooker f., Fl. Brit. Ind. 4: 259. 1884; Prain Beng. Pl. 2: 759. 1903; Haines, Bot. Bihar & Orissa pt. IV: 621. 1922; *Mazus japonicus* (Thunberg) O. Kuntze, Tev. Gen. 462. 1891; Mooney, Suppl. Bot. Bihar & Orissa 94. 1950.

Erect to ascending, annuals herbs, up to 30 cm, rooting from prostrate nodes. Basal leaves rosulate; lamina obovate-spatulate to ovate-oblongate, 1 – 6 cm x 1 – 3 cm, obtuse to acute, coarsely and irregularly toothed, base cuneate and decurrent. Stem leaves opposite to alternate. Racemes terminal, 2 – 15 flowered. Calyx campanulate; lobes ovate. Corolla white; middle lobe of lower lip smaller than lateral lobes, slightly exerted; upper lip lobes ovate-triangular. Ovary glabrous. Capsule globose.

Flowers & Fruits: Almost throughout the year.

Specimen Cited: Forest, Rajib & AP Das 0357, dated 21.07.2007.

Local Distribution: Throughout study areas.

General Distribution: India, Bhutan, China, Nepal, Korea, Burma, Malaya, Afghanistan, Russia, Japan, Java and Philippines.

Plantaginaceae A.L. de Jussieu, Gen. Pl. 89. 1789 ('Plantagines'); *nom. cons.*

Key to the genera:

- 1a. Leaves heterophilous; Bractioles absent *Limnophilla*
- 1b. Leaves monophilous; Bractioles present 2
- 2a. Plant diffused herb *Bacopa*
- 2b. Plant erect herb *Scoparia*

BACOPA Aublet, Hist. Pl. Guiane 1: 128. 1775.

Bacopa monnieri (Linnaeus) Wettst., Nat. Pflanzenfam. 4(3b): 77. 1891. *Bacopa monnieri* (Linnaeus) Pennell, Proc. Acad. Nat. Sci. Philadelphia 98: 96. 1946; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1112. 2001. *Lysinachia monnieri* Linnaeus, Cent. Pl. II. t. 9. 1756. *Bramia indica* de Lamarck, Encycl. 1: 459. 1785. *Capraria monnieri* Roxburgh, Hort. Bengal. 47. 1814.

Local name: Brahmi

Creeping, succulent, herbs with rooting at nodes. Leaves sessile, oblong-oblongate, 0.7 – 1.5 cm x 3 – 5 mm, margin entire, rounded, base attenuated. Flowers axillary. Bracteoles 2, below calyx, linear. Sepals 5; lower and upper sepals ovate-lanceolate; lateral 2 sepals lanceolate to linear. Corolla white, obscurely 2 lipped. Stamens didynamous. Stigma capitate. Capsule narrowly ovoid. Seeds yellow-brown, ellipsoid.

Flowers & Fruits: September to February.

Specimen Cited: Bochamari Beel Margin, *Rajib & AP Das 0691*, dated 14. 02. 2008.

Local Distribution: BOchamari Beel margin.

General Distribution: India, tropical & warm-temperate part of world, Australia.

LIMNOPHILA R. Brown, Prodr. 442. 1810.

Key to the species:

- 1a. Leaves dimorphic, lower leaves filiform 2
- 1b. leaves monomorphic; flower sessile to sub-sessile *L. repens*
- 2a. Flower pedicillate *L. indica*
- 2b. Flower sessile to sub-sessile 3
- 3a. Plant glabrous; flowers in leafy spike *L. heterophylla*
- 3b. Plant pubescent; flowers solitary *L. sessiliflora*

Limnophila heterophylla (Roxburgh) Benth, Scroph. Ind. 25. 1835; Hooker *f*, Fl. Brit. Ind. 4: 270. 1884; Prain, Beng. Pl. 2: 764. 1903; Islam, Fl. Majuli 223. 1990. *Columnea heterophylla* Roxburgh, Fl. Ind. 3: 97. 1832. *Limnophila reflexa* Benth, Scroph. Ind. 25. 1835.

Aquatic, perennials herbs. Aerial stems with sessile glands. Submerged leaves up to 50 cm, multiparted; segments capillary. Aerial leaves opposite to whorled, sessile, oblong, Fl. Bhut. 12 – 15 x 2 – 5 mm, glabrous, subcrenate, base subamplexicaul. Flowers sessile and in terminal spikes and solitary in leaf axils. Bracteoles absent. Calyx with sessile glands. Corolla pale purple. Capsule pale brown, subglobose.

Flowers & Fruits: October to February.

Specimen Cited: Noldoba Beel, *Rajib & AP Das 0592*, dated 25.07.2007.

Local Distribution: Throughout the Water Bodies.

General Distribution: India, Nepal, Sri Lanka, Malaysia, Myanmar, Cambodia, Thailand, Vietnam.

Limnophila indica (L.) Druce, Rep. Bot. Exch. Club. Soc. Brit. Isles 3: 420. 1914; Datta, Bull. Bot. Soc. Beng. 29: 5. 1975; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1110. 2001. *Hottonia indica* Linnaeus, Syst. Nat. ed. 10. 919. 1759 et. Sp. Pl. ed. 2: 208. 1762. *Limnophila gratioloides* R. Brown, Prodr. 442. 1810; Hooker *f*, Fl. Brit. Ind. 4: 271. 1884; Prain, Beng. Pl. 2: 764. 1903.

Perennials, amphibious, much branched herbs. Submerged leaves whorled, 1 – 2.5 cm, pinnatisect. Aerial leaves usually whorled, pinnately lobed. Flowers axillary from aerial leaves, solitary. Pedicel slender. Bracteoles 2. Calyx lobes ovate to lanceolate, short acuminate. Corolla white. Capsule dark brown, compressed, ellipsoid to subglobose.

Flowers & Fruits: July to March.

Specimen Cited: Barajan Beel, *Rajib & AP Das 0507*, dated 23.07.2007.

Local Distribution: Throughout the Water Bodies.

General Distribution: India, Malaya Island, China, Nepal, Pakistan, Sri Lanka, Australia, Cambodia, Tropical Africa and Beluchistan.

Limnophila repens Benth, A. de Candolle, Prodr. 10: 387. 1846; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1112. 2001. *Limnophila sessilis* (Benth) Fischer, Bull. Misc. Inf. Kew 62. 1962. *Limnophila conferta* Benth, in de Candolle, Prodr. 10: 367. 1845; Hooker *f*, Fl. Brit. Ind. 4: 266. 1884; Prain, Beng. Pl. 2: 764. 1903; Mill in Grierson *et* Long Fl. Bhut. 2(3): 1112. 2001. *Stemodia repens* Benth in Lindley, Bot. Reg. 17: ad t.1470. sp. 11. 17. 1832.

Erect, perennial herbs, up to 45 cm. Leaves opposite, sessile, narrowly elliptic to linear-lanceolate, 0.8–3.5 cm x 3–10 mm, serrate, base subamplexicaul. Flowers solitary and axillary. Bracteoles 2–3 mm. Calyx hispidulous; lobes narrowly lanceolate, ciliate, acuminate. Corolla white or blue. Capsule ovoid.

Flowers & Fruits: November to February.

Specimen Cited: Rasik Bil, *Rajib & AP Das 0433*, dated 22.07.2007.

Local Distribution: Throughout Wetlands.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam; Australia.

Limnophila sessiliflora (Vahl) Blume, *Bijdr. Fl. Ned. Ind.* 14: 750.1826; Hooker *f.*, *Fl. Brit. Ind.* 4: 270.1884; Mill in Grierson *et Long*, *Fl. Bhut.* 2(3): 1110. 2001; Prain, *Beng. Pl.* 2: 764. 1903; Kanjilal *et al.*, *Fl. Ass.* 3: 379. 1939; Islam, *Fl. Majuli* 224. 1990; Bora & Kumar, *Flor. Div. Ass.* 240. 2003. *Hottonia sessiliflora* Vahl, *Symb. Bot.* 2: 36. 1791. *Limnophila taoyuanensis* Yang *et Yen*, *Bot. Bull. Acad. Sin.* 38: 285-295. 1997.

Perennials, amphibious herbs, up to 40 cm. Submerged stems slender, long, glabrous. Submerged leaves 0.5–4 cm, multiparted; segments flattened. Aerial leaves whorled; lamina elliptic-lanceolate, 4–16 x 3–6 mm, glabrous, crenate to lobed. Flowers sessile, solitary in axils of submerged and aerial leaves. Calyx without raised veins in fruit; lobes ovate, narrowly acuminate. Corolla purple-blue to reddish. Capsule compressed, subglobose.

Flowers & Fruits: August to February.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0624*, dated 11. 02. 2008

Local Distribution: Throughout Wetlands.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Indonesia, Japan, Korea, Malaysia, Myanmar, Vietnam.

SCOPARIA Linnaeus, *Sp. Pl.* 1: 116. 1753.

Scoparia dulcis Linnaeus, *Sp. Pl.* 1: 116.1753; Hooker *f.* in Hooker *f.*, *Fl. Brit. Ind.* 4: 289. 1884; Prain, *Beng. Pl.* 2: 772. 1903; Mill in Grierson *et Long*, *Fl. Bhut.* 2(3): 1130. 2001; Haines, *Bot. Bihar & Orissa pt. IV:* 637. 1922; Guha Bakshi, *Fl. Mur. Dist.* 229. 1984; Panda *et Das*, *Fl. Sambalp.* 257. 2004. *Capraria dulcis* var. *Albiflora* Kuntze, *Revis. Gen. Pl.* 3(2): 230. 1898. *Scoparia grandiflora* Nash, *Bull. Torrey Bot. Club* 23(3): 105. 1896. *Scoparia ternata* Forskal, *Fl. Aegypt.-Arab.* 30. 1775. *Capraria dulcis* (Linnaeus) Kuntze, *Revis. Gen. Pl.* 2: 459. 1891.

Vernacular name: Bandhone.

Erect, suffrutescent herbs, up to 1 m. Leaves petiolate; lamina rhomboid-ovate to rhomboid-lanceolate, 2–3.5 x 0.7–1.5 cm, glabrous, obtuse, toothed above middle, base cuneate. Flowers usually axillary, 1–2 per node. Bracteoles absent. Calyx lobed to base; lobes 4, ovate-oblong. Corolla white; upper lobe slightly larger. Stamens exserted. Style erect; stigma truncate to 2 parted.

Flowers & Fruits: June to May.

Specimen Cited: Garden, *Rajib & AP Das 0501*, dated 23.07.2007.

Local Distribution: Throughout study areas.

General Distribution: Tropical Asia, Africa, and America.

Verbenaceae A.L. de Jussieu, *Ann. Mus. Hist. Nat. Paris* 7: 64. 1806; *nom. cons.*

Key to the genera:

- | | |
|--|----------------|
| 1a. Inflorescences centripetal | 2 |
| 1b. Inflorescences centrifugal | <i>Duranta</i> |
| 2a. Shrubs; fruit a drupe; stem spiny | <i>Lantana</i> |
| 2b. Herbs; fruit a capsule; stem not spiny | <i>Phyla</i> |

LANTANA Linnaeus, Sp. Pl. 2: 626. 1753.

Lantana camara Linnaeus, Sp. Pl. 2: 627. 1753; Long in Grierson *et* Long, Fl. Bhut. 2(2): 914. 1999. *Camara vulgaris* Benthham, Bot. Voy. Sulphur 154. 1846. *Lantana urticifolia* Miller, Gard. Dict. ed. 8: 5. 1768. *Lantana undulate* Rafinesque, Sylva Tellur. 82. 1838. *Lantana mexicana* Turner, Flor. Kingd. 181. 1876. [PLATE: 8, Figure-83]

Shrubs with long weak branches, armed, stout recurved prickles, pubescent. Petiole 2 cm, pubescent; leaf blade ovate to oblong, 4 – 8 x 1.5 – 4 cm, papery, wrinkled, very rough, with short stiff hairs, aromatic when crushed, base rounded to subcordate, margin crenate; lateral veins 5 pairs, very prominent, elevated. Capitula terminal, 2 cm across. Flowers yellow, red and orange. Ovary glabrous. Drupes deep purple, globose.

Flowers & Fruits: Throughout the year.

Specimen Cited: Forest margin, Rajib & AP Das 0456, dated 22.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: Tropical India; tropical and subtro-pical America, often naturalized in other tropical and subtropical regions.

PHYLA Loureiro, Fl. Cochinch. 1: 66. 1790.

Phyla nudiflora (Linnaeus) Greene in Pittonia 4: 46. 1899; Long in Grierson *et* Long, Fl. Bhut. 2(2): 916. 1999; Guha Bakshi, Fl. Mur. Dist. 250. 1984. *Verbena nodiflora* Linnaeus, Sp. Pl. 1: 20. 1753. *Lippia nodiflora* (Linnaeus) Michaux, Fl. Bor. Amer. 2: 15. 1803; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 563. 1885. Haines, Bot. Bihar & Orissa pt. IV: 706. 1922; Mooney, Suppl. Bot. Bihar & Orissa 120: 1950. *Verbena lanata* Willdenow *ex* Walpers, Repert. Bot. Syst. 4: 48. 1845. *Lippia sarmentosa* (Willdenow) Sprengel, Syst. Veg. 2: 752. 1825 *Phyla chinensis* Loureiro, Fl. Cochinch. 66. 1790. [PLATE: 8, Figure-77]

Perennial herbs. Branched, creeping, rooting at distal nodes, minutely strigose. Leaves subsessile; leaf blade spatulate, 1 – 4 x 1 – 1.5 cm, papery, pubescent, base cuneate, margin distally sharply serrate, veins inconspicuously 4 paired. Inflorescences cylindric to ovate capitula, 1 – 2 cm. Corolla pinkish purple, glabrous.

Flower & Fruits: January to August.

Specimen Cited: Rasik Beel, Rajib & AP Das 0615, dated 11. 02. 2008.

Local Distribution: Bochamari Beel Marginal grass land.

General Distribution: Pantropical.

DURANTA Linnaeus, Sp. Pl. 2: 637. 1753.

Duranta erecta Linnaeus, Sp. Pl. 2: 637. 1753; Long in Grierson *et* Long, Fl. Bhut. 2(2): 918. 1999. *Duranta spinosa* Miller, Gard. Dict. ed. 8: 3. 1768. *Duranta inermis* Linnaeus, Sp. Pl. 637. 1753. *Duranta dentata* Persoon, Syn. Pl. 2: 142. 1806. *Duranta repens* Linnaeus, Sp. Pl. 2: 637. 1753.

Vernacular name: Bera gachh.

Large shrubs, often climbing. Branches spiny, pubescent when young. Petiole 1 cm, pubescent; leaf blade ovate to lanceolate, 2 – 6 x 1 – 3 cm, papery, base cuneate, margin entire to distally crenate, veins 6 pairs. Calyx pubescent on both surfaces. Corolla tube 7 mm. Stamens included. Ovary glabrous. Drupes shorter than calyx, shiny, glabrous.

Flowers & Fruits: May to October.

Specimen Cited: Bochamari, Rajib & AP Das 0488, dated 23.07.2007.

Local Distribution: Vallage.

General Distribution: India: cultivated through out; North and South America.

Order: Solanales Jussieu *ex* Berchtold *et* J. Presl (1820).

Convolvulaceae A.L. de Jussieu, Gen. Pl. 132. 1789 ('Convolvuli'); *nom. cons.*

Key to the genera:

- | | |
|--|--------------------------|
| 1a. Plants parasitic, leafless, with haustoria | <i>Cuscuta</i> |
| 1b. Plants not parasitic, with well-developed leaves, haustoria absent | 2 |
| 2a. Pollen finely spiny | 3 |
| 2b. Pollen never finely spiny | 4 |
| 3a. Fruit dehiscent | <i>Ipomoea</i> |
| 3b. Fruit indehiscent | <i>Argyria</i> |
| 4a. Fruit indehiscent; seeds 1 | <i>Poranopsis</i> |
| 4b. Fruit dehiscent; seeds usually 4 | 5 |
| 5a. Styles 2 | <i>Evolvulus</i> |
| 5b. Style 1 | <i>Merremia</i> |

ARGYREIA Loureiro, Fl. Cochinch. 1: 95, 134. 1790.

Argyria roxburghii (Wallich) Arnott *ex* Choisy in Mem. Soc. Phys. Hist. Nat. Geneve 6: 419. 1834; Hooker *f.*, Fl. Brit. Ind. 4: 185. 1883; H. Ohashi in Hara, Fl. E. Himal. 1:207. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 105. 1982; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 841. 1999. *Convolvulus roxburghii* Wallich, Numer. List n. 1415. 1829.

Large climbers. Stems terete, villous. Lamina broadly ovate to circular, 15 – 18 x 12 – 18, pubescent, acuminate to caudate, entire, base cordate. Inflorescences axillary cymose. Sepals unequal. Corolla red-purple, funnel form. Ovary glabrous. Berry enclosed by enlarged calyx, dark purple, ovoid-globose.

Flowers & Fruits: February to October.

Specimen Cited: Forest, Rajib & AP Das 0664, dated 13.02. 2008.

Local Distribution: Through out Forest.

General Distribution: Tropical and sub-tropical parts of the world.

EVOLVULUS Linnaeus, Sp. Pl. ed. 2. 391. 1762.

Evolvulus nummularius (Linnaeus) Linnaeus, Sp. Pl. (ed. 2) 1: 391. 1762; Guha Bakshi, Fl. Mur. Dist. 208. 1984. *Convolvulus nummularius* Linnaeus, Sp. Pl. 1: 157. 1753. *Evolvulus veronicaefolius* Kunth, Nov. Gen. Sp. (quarto ed.) 3: 117, t. 215, 117. 1818. *Volvolvopsis nummularium* (Linnaeus) Roberty, Candollea 14: 28. 1952. *Evolvulus repens* D. Parodi, Contrib. fl. Parag. 1: 29. 1877.

Perennial, small herbs. Stems several, rooting at nodes, prostrate, up to 40 cm, slender. Leaves distichous; lamina nearly circular, 1.5 – 2.3 x 1.4 – 2 cm, glabrous, rounded or emarginated, base cordate to rounded. Flowers 1 to 2 per leaf axil. Sepals persistent, oblong-ovate to oblong, ciliate. Corolla broadly campanulate; 5 lobed. Stamens inserted at middle of corolla tube; anthers oblong. Ovary globose. Style lobes linear; stigmas minutely capitate. Capsule ovoid. Seeds ovoid-triangular,

Flowers & Fruits: March to December.

Specimen Cited: Park, Rajib & AP Das 0684, dated 14. 02. 2008.

Local Distribution: Throughout the study area.

General Distribution: India, Tropical Africa, Madagascar, Malaya Peninsula, Mexico and West Indies.

IPOMOEA Linnaeus, Sp. Pl. 1: 159. 1753.

Key to the species:

- 1a. Shrub with milky juice *I. fisulosa*
- 1b. Annual herbs or twiner 2
- 2a. Plants of marshy places or aquatic; stems fistulose *I. aquatica*
- 2b. Plants fully terrestrial; stem not fistulose *I. hederifolia*

Ipomoea aquatica Forsskal, Fl. Aegypt. Arab. 44. 1775; Clark in Hooker f., Fl. Brit. Ind. 4: 210. 1883; Majumder, Bull. Bot. Soc. Bengal 19: 13. 1965; Guha Bakshi, Fl. Mur. Dist. 210. 1984. Bora et Kumar in Flor. Div. Ass. 229. 2003. *Ipomoea reptans* Poiret in Lamarck, Encycl., Suppl. 3(2): 460. 1814; Prain Beng. Pl. 2: 547. 1903. *Ipomoea repens* Roth, Nov. Pl. Sp. 110. 1821. *Ipomoea natans* Dinter et Suess, Mitt. Bot. Staatssamml. München 4: 112. 1952. [PLATE: 10, Figure-118]

Vernacular name: Kolmi Saak.

Annual herbs, terrestrial or floating. Stems terete, thick, hollow, rooting at nodes. Petiole glabrous; lamina variable, ovate to ovate-lanceolate, 5 – 18 x 2 – 9 cm, acute or acuminate, entire or undulate, base cordate, sagittate to hastate, occasionally truncate. Inflorescences 1 to 3 flowered. Sepals sub equal, glabrous; outer 2 ovate-oblong, mucronulate; inner 3 ovate-elliptic. Corolla pink, with a darker center. Stamens unequal. Ovary conical, glabrous. Stigma 2 lobed. Capsule ovoid to globose.

Flowers & Fruits: August to February.

Specimen Cited: Bochamari Beel, Rajib & AP Das 0698, dated 14. 02. 2008.

Local Distribution: Through out the Beel Complex.

General Distribution: Throughout the India; Tropical Asia, Australia and Africa.

Ipomoea fisulosa C. Mart ex Choisy in de Candolle, Prodr. 9: 349. 1845. *Ipomoea carnea* Jacquin, Enum. Syst. Pl. 13. 1760; Mill in Grierson et Long, Fl. Bhut. 2(2): 851. 1999. Haines, Bot. Bihar & Orissa pt. IV: 600. 1922 ssp. *fistulosa* (Choisy) D. Austin in Taxon 26: 237. 1977. *Ipomoea fruticosa* Kuntze, Revis. Gen. Pl. 2: 444. 1891. *Ipomoea crassicaulis* (Bentham) B.L. Robinson, Proc. Amer. Acad. Arts 51(10): 530. 1916. *Ipomoea carnea* f. *albiflora* Moldenke, Phytologia 2: 224. 1947. *Batatas crassicaulis* Bentham, Bot. Voy. Sulphur 134. 1845. [PLATE: 5, Figure-38]

Vernacular name: Dhalkolmi.

Shrubs with milky juice, stem erect or ascending; young parts puberulent by age, glabrous. Lamina ovate-oblong, acuminate at apex, cordate at base; midrib below with 2 small glands at the base of the petiole. Inflorescences axillary and terminal; pedicels longer than the calyx; bracts minute, ovate,

caduceus. Capsule pale-brown, finely pubescent at base, ovoid, mucronate, 4-celled, 4-valved. Seeds 4 or less, black sericeous.

Flowers & Fruits: August to March.

Specimen Cited: Noldoba Beel, *Rajib & AP Das 0663*, dated 13. 02. 2008.

Local Distribution: Marginal area of Waterbodies.

General Distribution: India; Native to America; naturalized in tropical areas.

Ipomoea hederifolia Linnaeus, Syst. Nat. (ed. 10) 925. 1759. *Ipomoea hederifolia* Linnaeus, Sp.Pl. ed. 1. 159. 1753; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 850.1991. *Ipomoea phoenicea* Roxburgh, Fl. Indica (ed. Carey) 2: 92. 1824. *Quamoclit sanguinea* (Vahl) G. Don, Gen. Hist. 4: 259. 1838. *Quamoclit phoenicea* (Roxburgh) Choisy, Convolv. Orient. 51. 1833. *Ipomoea luteola* Jacquin, Collectanea 2: 266. 1788. *Ipomoea angulata* de Lamarck, Tabl. Encycl. 1: 464. 1791. *Ipomoea coccinea* var. *hederifolia* (Linnaeus) A. Gray, Syn. Fl. N. Amer. 2(1): 209. 1878.

Annual twiner, up to 4 m, glabrous. Leaves alternate; lamina ovate to sub-orbicular, 3 – 12 x 2 – 8 cm, acuminate and mucronulate, base cordate, glabrous. Cymes terminal and axillary. Pedicels erect. Sepals oblong-rectangular, erect at anthesis, narrowly linear, herbaceous, inserted just below tip. Corolla scarlet, narrowly infundibular, glabrous; tube 3 cm, very slender. Stamens and style exserted. Capsule globose. Seeds 4, black.

Flowers & Fruits: July to December.

Specimen Cited: Garden, *Rajib & AP Das 0612*, dated 11. 02. 2008.

Local Distribution: Garden margin.

General Distribution: Tropical World.

MERREMIA Dennstedt *ex* Endlicher, Gen. Pl. 1: 1403. 1841, *nom. cons.*

Key to the species:

- 1a. Leaves palmately 3–5 lobed *M. vitifolia*
- 1b. Leaves entire or irregularly coarsely crenate 2
- 2a. Leaves linear to ovate-oblong, base truncate *M. hirta*
- 2b. Leaves ovate-cordate, base cordate to broadly cordate *M. hederacea*

Merremia hirta (Linnaeus) Merril, Philipp. J. Sci. 7(4): 244-245. 1912; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 854. 1999. *Ipomoea linifolia* Blume, Bijdr. Fl. Ned. Ind. 13: 721. 1825. *Convolvulus hirtus* Linnaeus, Sp. Pl. 1: 159. 1753. *Convolvulus caespitosus* Roxburgh, Fl. Ind., ed. 1832 1: 483-484. 1832. *Skinneria caespitose* (Roxburgh) Choisy, M m. Soc. Phys. Gen. 6: 487. 1833. [PLATE: 5, Figure-40]

Vernacular name: Vitachhara.

Twining herbs. Stems rooting at nodes. lamina linear to ovate-oblong, Fl. Bhut. 2 – 6 x 0.5 – 3 cm, obtuse, acute or mucronulate, entire, base truncate, rounded. Inflorescences 1 to 4 flowered. Sepals elliptic to elliptic-oblong, unequal. Corolla whitish, broadly funnelform. Stamens included. Ovary glabrous. Capsule broadly ovoid to globose. Seeds brownish black, trigonous-ellipsoid.

Flowers & Fruits: July to January.

Specimen Cited: Forest, *Rajib & AP Das 0543*, dated 23.07.2007.

Local Distribution: Forest near Conservation sector.

General Distribution: India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam; N Australia.

Merremia hederacea (Burman f.) Hallier f., Bot. Jahrb. Syst. 18(1-2): 118. 1893; Mill in Grierson et Long, Fl. Bhut. 2(2): 854. 1999. *Evolvulus hederaceus* Burman f., Fl. Indica 77, pl. 30, f. 2: 77. 1768. *Convolvulus lapathifolius* Sprengel, Syst. Veg. 1: 604. 1825. *Convolvulus flavus* Willdenow, Sp. Pl. 1(2): 852-853. 1797.

Twining herbs; rooting at nodes. Lamina cordate-ovate, 2 – 7.5 x 1 – 5 cm, 3-lobed, entire to irregularly crenate, base cordate to broadly cordate. Inflorescences few to many flowered, umbelliform. Sepals broadly obovate to spatulate-oblong, reflexed in fruit, unequal. Corolla yellow, campanulate. Stamens as long as corolla. Ovary globose, glabrous; stigma globose. Capsule depressed globose to broadly conical. Seeds trigonous-globose.

Flowers & Fruits: June to November.

Specimen Cited: Forest, Rajib & AP Das 0451, dated 22.07.2007.

Local Distribution: Through out Forest.

General Distribution: India, Bhutan, China, Nepal, Bangladesh, Sri Lanka, Pakistan, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Philippines, Thailand, Vietnam; Africa, N Australia, Pacific Islands.

Merremia vitifolia (Burman f.) H. Hallier, Bot. Jahrb. Syst. 16(4-5): 552. 1893; Mill in Grierson et Long, Fl. Bhut. 2(2): 852. 1999. *Convolvulus vitifolius* Burman f., Fl. Indica 45. 1768. *Convolvulus vitifolius* Burman f., Fl. Indica 45-46, pl. 18, f. 1: 45. 1768. *Ipomoea vitifolia* (Burman f.) Blume, Bijdr. Fl. Ned. Ind. 13: 709. 1825. *Convolvulus angularis* Burman f., Fl. Indica 46. 1768.

Vernacular name: Vitachhara.

Twining herbs. Lamina circular in outline, 5-15 x 4-15 cm, acuminate to obtuse, palmately 3-5 lobed, lobes broadly triangular or ovate-lanceolate, base cordate. Inflorescences 1 to 3 flowered. Sepals oblong to ovate-oblong, leathery, obtuse to acute. Corolla yellow; limb 5 angled. Anthers spirally twisted. Ovary glabrous. Capsule straw colored, globose. Seeds black-brown, trigonous-ovoid, glabrous.

Flowers & Fruits: Throughout the year.

Specimen Cited: Forest, Rajib & AP Das 0397, dated 22.07.2007.

Local Distribution: Through out Forest.

General Distribution: Tropical hemisphere.

PORANOPSIS Roberty, Candollea 14: 26. 1952.

Poranopsis paniculata (Roxburgh) Roberty, Candollea 14: 26. 1953. *Porana paniculata* Roxburgh, Pl. Coromandel 3: 31, pl. 235. 31, 1819; Mill in Grierson et Long, Fl. Bhut. 2(2): 857. 1999.

Large climbers. Lamina cordate-circular, 7 – 16 x 5 – 15 cm, smooth to rugulose, base cordate. Flowers in axillary cymes. Sepals lanceolate-linear, concave, equal. Fruiting calyx reddish, loosely clasping; outer 3 sepals elliptic-oblong to narrowly ovate, margin free. Corolla white to cream, narrowly funnelform; 5 lobed. Stamens included, equal. Ovary glabrous. Style obsolete; stigma subsessile. Fruit brownish with darker lines, globose-ellipsoid. Seeds dark brown, globose-ellipsoid.

Flowers & Fruits: October to April.

Specimen Cited: Forest, Rajib & AP Das 0328, dated 21.07.2007.

Local Distribution: Through out Forest.

General Distribution: India, Bhutan, Nepal, Pakistan, Myanmar.

CUSCUTA Linnaeus, Sp. Pl. 1: 124. 1753.

Key to the species:

- | | |
|---|---------------------|
| 1a. Stem thick; flowers in racemes or panicles; style 1 | <i>C. reflexa</i> |
| 1b. Stem thin; flowers in compact cymose; style 2 | <i>C. chinensis</i> |

Cuscuta reflexa Roxburgh, Pl. Corom. 2: 3, t. 104. 1798; Hooker f., Fl. Brit. Ind. 4: 225. 1883; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 863. 1999. *Monogynella reflexa* (Roxburgh) Holub, Folia Geobot. Phytotax. 12(4): 429. 1977. *Cuscuta hookeri* Sweet, Hort. Brit. 290. 1826.

Vernacular Name: Swarnalata.

Stems yellow to yellowish green, stout. Inflorescences lateral, few to many flowered, in racemes or panicles; bracts and bractoles scalelike. Calyx cupular; sepals 5, broadly ovate, equal. Corolla white to creamy, fragrant; lobes early deciduous, often reflexed, triangular-ovate. Stamens inserted at throat; filaments shorter than anthers; anthers elliptic-ovate. Ovary ovate-conical. Style 1; stigma divergent. Capsule conical-globose.

Flowers & Fruits: February to October.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0328*, dated 21.07.2007.

Local Distribution: Villages.

General Distribution: India through out; Bhutan, Nepal, Sri Lanka, Pakistan, Malaysia. Afghanistan, Indonesia, Malaysia, Myanmar, Thailand.

Cuscuta chinensis de Lamarck, Encycl. 2(1): 229. 1786. *Cuscuta carinata* Robert Brown, Prodr. 491. 1810. *Cuscuta chinensis* var. *carinata* (Robert Brown) Engelman, Trans. Acad. Sci. St. Louis 1(3): 480. 1859. *Cuscuta fimbriata* Bunge ex Engelman, Trans. Acad. Sci. St. Louis 1: 480. 1859.

Vernacular name: Swarnalata.

Stems yellow, thin. Inflorescences lateral, compact cymose, few to many flowered; bracts and bracteoles scalelike. Calyx cupular; sepals triangular, obtuse. Corolla white; lobes persistent triangular-ovate, reflexed. Stamens inserted at throat; scales oblong. Ovary subglobose. Styles 2, equal or unequal; stigma globose. Capsule enclosed, globose. Seeds 2–4, pale brown, ovoid.

Flowers & Fruits: March to November.

Specimen Cited: Riverine forest, *Rajib & AP Das 0280*, dated 10. 02. 2007.

Local Distribution: Forest margin.

General Distribution: India throughout; Bhutan, Afghanistan, Sri Lanka, Indonesia, Japan, Kazakhstan, Korea, Mongolia, Russia; Africa, SW Asia, Australia.

Solanaceae A.L. de Jussieu, Gen. Pl. 124. 1789 ('Solaneae'); *nom. cons.*

Key to the Genera:

- | | |
|---|------------------|
| 1a. Berries completely enclosed within the enlarged calyx | <i>Physalis</i> |
| 1b. Berries not enclosed within the enlarged calyx | 2 |
| 2a. Inflorescence many flowered | 3 |
| 2b. 1 to 3 flowers per axil | 4 |
| 3a. Plants spiny; leaves lobed | <i>Solanum</i> |
| 3b. Plants without spine; leaves unlobed | <i>Nicotiana</i> |

- 4a. Calyx 5-lobed; fruit prickly or papillate, 4-valved or irregularly
dehiscent *Datura*
- 4b. Calyx 5-parted; fruit unarmed, lacking papillae, 2-valved, dehiscent *Petunia*

DATURA Linnaeus, Sp. Pl. 1: 179. 1753.

Key to the species:

- 1a. Corolla sometimes doubled or tripled; seeds slightly reniform *D. metel*
- 1b. Corolla usually single funnel form; seeds ovate *D. stramonium*

Datura metel Linnaeus, Sp. Pl. 179. 1753; Hooker *f.*, Fl. Brit. Ind. 4: 243. 1883; H. Ohashi in Hara, Fl. E. Himal. 1: 283. 1966; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1067. 2001. *Datura nigra* Hasskarl, Cat. Hort. Bot. Bogor. 142. 1844. *Datura fruticosa* Horneman, Hort. Bot. Hafn. 1: 212. 1813. *Datura alba* F.Mueller, Fragm. 6: 144. 1868.

Vernacular name: Dhutro.

Erect, branched, annual undershrubs, up to 2m. Leaves petiolate, lamina ovate to rhomboid or elliptic, 5–20 x 4–15 cm, membranous, acuminate, sinuate-dentate, base cuneate. Flowers solitary, axillary, erect. Calyx tubular. Corolla purplish, funnellform, sometimes doubled or tripled; lobes elongate. Capsule ovoid, pericarp very sharply spiny. Seed black, slightly reniform.

Flowers & Fruits: March to December.

Specimen Cited: Rasik Beel, Rajib & AP Das 0484, dated 23.07.2007.

Local Distribution: Villages.

General Distribution: Native of the Americas, long introduced and naturalized in Asia.

Datura stramonium Linnaeus, Sp. Pl. 179.1753; Clark in Hooker *f.*, Fl. Brit. Ind. 4: 242. 1883; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1067. 2001. *Datura laevis* Linnaeus *f.*, Suppl. Pl. 146. 1782. *Stramonium vulgatum* Joseph Gaertner, Fruct. Sem. Pl. 2: 243, t. 132. 243. *Stramonium spinosum* de Lamarck, Fl. Fran. . 256. 1779. *Datura parviflora* Salisbury, Prodr. Stirp. Chap. Allerton 131. 1796.

Vernacular name: Dhutro.

Subshrubs, sometimes robust, up to 3 m. Lamina broadly ovate, 8 – 16 x 4 – 12 cm, membranous, acuminate, irregularly dentate, base asymmetric, cuneate. Flowers erect. Calyx tubular, 5-angular. Corolla white, greenish at base, sometimes purple distally, funnellform; lobes 6 – 10 cm, mucronate at apex. Filaments 2.8 – 3.3 cm. Capsules erect, globose to ovoid, with copious prickles, rarely smooth, dehiscent by 4 equal valves. Seeds black, ovate.

Flower & Fruits: April to December.

Specimen Cited: Rasik Beel, Rajib & AP Das 0360, dated 21.07.2007.

Local Distribution: Villages.

General Distribution: Temperate region of world. native of Mexico, now worldwide.

NICOTIANA Linnaeus, Sp. Pl. 1: 180. 1753.

Nicotiana plumbaginifolia Viviani, Planch, Pl. Hort. Dinagro, 26. t. 5, 1802 & Elench. Pl. 26, pl. 1, 5 26 1802; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 246. 1883; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1074. 2001; Prain, Beng. Pl. 2: 559. 1903; Guha Bakshi, Fl. Mur. Dist. 218. 1984. *Nicotiana pusilla* Linnaeus, Syst. Nat. (ed. 10) 2: 933. 1759. *Nicotiana cavanillesii* Dunal, Prodr. 13(1): 572. 1852. *Nicotiana plantaginea* Dunal, Prodr. 13(1): 559. 1852.

Vernacular name: Ban tamak.

Annual herb with 0.7-1 m height. Lamina radical, sessile, obovate or spatulate, obtuse or rounded at apex; upper becoming smaller and passing into bracts, sessile, elliptic, elliptic lanceolate, oblong, acute or acuminate at apex. Flowers in lax racemes. Pedicels 7-9 mm long. Capsule 0.7- 1 cm long, oval, glabrous, 2 or 4 valved. Seeds dark brown.

Flower & Fruits: March to November.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0373*, dated 21.07.2007.

Local Distribution: Agriculture land.

General Distribution: India (Assam, West Bengal); Native to Mexico and West Indies.

PETUNIA Jussieu, Ann. Mus. Natl. Hist. Nat. 2: 214. 1803.

Petunia X hybrida Hortulanorum ex Vilmorin, Fl. Pleine Terre 1: 615-616. 1863. *Petunia violacea* var. *hybrida* Hooker f., Bot. Mag. 64: pl. 3556. 1837. *Petunia hybrida* (Hooker f.) Vilmorin, Fl. Pleine Terre ed. 1. 615. 1863; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1076. 2001. *Petunia violacea* var. *hybrida* Hooker f., Bot. Mag. 64: t. 3556. 1837.

Vernacular name: Petuinia.

Annual, herbs up to 60 cm, glandular hairy. Leaves short petiolate to subsessile; lamina ovate, 3 – 8 x 1.5 – 4 cm, acute, entire, base cuneate. Calyx deeply parted; lobes linear, obtuse. Corolla white and yellow, sometimes fragrant, funnellform, limb spreading. Style slightly exceeding stamens. Capsules conical. Seeds subglobose.

Flowers & Fruits: March to August.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0256*, dated 10. 02. 2007.

Local Distribution: Park and Garden.

General Distribution: Cultivated World wide.

PHYSALIS Linnaeus, Sp. Pl. 1: 182. 1753.

Physalis minima Linnaeus, Sp. Pl. 183-184. 1753; Clarke in Hooker f., Fl. Brit. Ind. 4: 238. 1883; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1045. 2001; Prain, Beng. Pl. 2: 750. 1903; Guha Bakshi, Fl. Mur. Dist. 219. 1984. *Physalis parviflora* Lag, Gen. Sp. Pl. 11. 1816. *Physalis parviflora* Robert Brown, Prodr. 447. 1810. *Physalis lanceifolia* Nees, Linnaea 6(3): 473-474. 1831.

Vernacular name: Tapari.

Erect or decumbent, annual herbs, up to 1m. Lamina ovate to ovate-lanceolate, 2 – 3 x 1 – 1.5 cm, acuminate, base cuneate, often oblique,. Flowers yellow, solitary, on long slender deflexed pedicels. Calyx campanulate. Corolla often with small spot at the base within. Anthers light yellow. Berries completely enclosed within the enlarged membranous 5-10 ribbed calyx; seeds discoid or reniform.

Flower & Fruits: April to January.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0312*, dated 10.0 2. 2007.

Local Distribution: Through out Forest.

General Distribution: Pantropic.

SOLANUM Linnaeus, Sp. Pl. 1: 184. 1753.

Key to the species:

- 1a. Corolla yellow; flowers 5–9-merous *S. pimpinellifolium*
 1b. Corolla usually white, blue, or violet; flowers 4 to 5 merous 2
 2a. Plants with stellate hairs 3
 2b. Plants glabrous, stellate hairs usually absent 5
 3a. Inflorescences mostly 1–3-branched 4
 3b. Inflorescences unbranched *S. melongena*
 4a. Leaves usually pinnate-parted *S. sisymbriifolium*
 4b. Leaves subentire or variously lobed *S. rudepannum*
 5a. Shrubs; leaves borne on woody stems *S. viarum*
 5b. Herbs; leaves borne on herbaceous shoots 6
 6a. Fruit yellowish orange to reddish; plants villous *S. villosum*
 6b. Fruit black; plants glabrescent to puberulent *S. americanum*

Solanum viarum Dunal in A. de Candolle, Prodr. 13(1): 240. 1852; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1058. 2001. *Solanum khasianum* C.B. Clarke in Hooker *f.*, Hooker *f.*, Fl. Brit. Ind. 4: 234. 1833. [PLATE: 8, Figure-82]

Vernacular name: Kantabegun.

Erect, subshrubs, up to 1m, armed. Leaves unequal paired; armed with erect, flat, straight prickles; lamina broadly ovate, 6–15 x 6–12 cm, lobed, lobes blunt at apex, base truncate to short hastate. Inflorescences extra-axillary, subfasciculate, 1–5 flowered racemes. Flowers andromonoecious, only basal ones fertile. Calyx campanulate. Corolla white. Anthers lanceolate, acuminate. Ovary puberulent. Style glabrous. Berry pale yellow, globose. Seeds brown.

Flowers & Fruits: June to October.

Specimen Cited: Bochamari cultivation field, *Rajib & AP Das 0418*, dated 22.07.2007.

Local Distribution: Agriculture land.

General Distribution: widespread in tropical Asia and Africa.

Solanum rudepannum Dunal, Prodr. 13(1): 264-265. 1852. *Solanum torvum* Swartz, Prodr. 47. 1788; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 234. 1883; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1055. 2001. *Solanum torvum* var. *ochraceo-ferrugineum* Dunal, Prodr. 13(1): 260-261. 1852. *Solanum diversifolium* Schldtle, Linnaea 19: 297-298. 1847. *Solanum auctosepalum* Rusby, Descr. S. Amer. Pl. 114. 1920.

Vernacular name: Gotbegun, Titbegun.

Large shrubs, up to 3 m, sparingly armed. Leaves solitary to paired; lamina ovate to elliptic, 6–16 x 4–10 cm, acute, sinuate or usually 5–7-lobed, base cordate to cuneate. Inflorescences extra-axillary, many-flowered racemose panicles. Flowers andromonoecious. Calyx cup-shaped; lobes ovate-lanceolate. Corolla white, rotate; lobes ovate-lanceolate. Fruiting pedicel 1–2 cm. Berry yellow, smooth, glabrous. Seeds discoid.

Flower & Fruits: November to August.

Specimen Cited: Forest margin near gate, *Rajib & AP Das 0552*, dated 24.07.2007.

Local Distribution: Throughout the study area.

General Distribution: Tropical India, China, Malaya, Philippines and Tropical America.

Solanum americanum Miller, Gard. Dict. (ed. 8) no. 5 no. 5. 1768. *Solanum nigrum* Linnaeus, Sp. Pl. 1: 186. 1753; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 229. 1883; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1052. 2001; Guha Bakshi, Fl. Mur. Dist. 221. 1984. *Solanum nodiflorum* Jacquin,

Icon. Pl. Rar. 2: 11, pl. 326, 11. 1786. *Solanum nigrum* var. *minor* Hooker f., Trans. Linn. Soc. London 20: 201. 1847.

Annual herbs, green, mostly erect, up to 100 cm. Lamina ovate, 4–8 x 2–4 cm, membranous, apex acute, entire or sparingly dentate, base truncate to cuneate. Inflorescences extra-axillary. Calyx cup-shaped; lobes ovate, ciliate. Corolla white; lobes ovate-oblong. Filaments short. Berry shiny black, occasionally ripening green, globose. Seeds discoid.

Flower & Fruits: November to March

Specimen Cited: Bochamari cultivation field, *Rajib & AP Das 0643*, dated 12. 02. 2008.

Local Distribution: Throughout the study area.

General Distribution: India, S. E. Asia, Tropical Africa, Australia and America.

Solanum villosum Miller, Gard. Dict. (ed. 8) no. 2. 1768; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1052. 2001. *Solanum miniatum* Bernham *ex* Willdenow, Enum. Pl. 1: 236. 1809. [PLATE: 8, Figure-85]

Annual, erect, herbs up to 100 cm. Lamina ovate, 4–10 3–7 cm, pubescent, obtuse, entire or coarsely dentate, base cuneate, decurrent. Inflorescences extra-axillary umbels. Calyx cup-shaped; lobes subdeltate, pubescent abaxially, ciliate. Corolla white; lobes ovate-oblong, ciliate, spreading. Filaments 1.5 mm; anthers oblong. Style 5 mm. Fruiting pedicel strongly deflexed. Berry dull black, globose. Seeds discoid.

Flower & Fruits: March to November.

Specimen Cited: Bochamari cultivation field, *Rajib & AP Das 0240*, dated 09. 02. 2007.

Local Distribution: Throughout the study area.

General Distribution: India, Japan; SW Asia, Europe.

Solanum sisymbriifolium Lamarke, Tab. Encyl. 2: 25. 1794. *Solanum sisymbriifolium* f. *ililacinum* Kuntze, Revis. Gen. Pl. 3(3): 227. 1898. [PLATE: 5, Figure-41]

Annual herbs, up to 1m, copiously armed. Leaves simple or sometimes pinnate; lamina oblong to ovate, 5–12 x 2.5–5 cm; lobes pinnately lobed or dentate, apex acute. Inflorescences axillary and extra-axillary scorpioid racemes. Calyx cup-shaped; lobes ovate-lanceolate. Corolla white, stellate; lobes ovate. Anthers lanceolate. Ovary puberulent. Fruiting calyx enlarged, longer than fruit, densely prickly, enveloping most berry. Berry bright red, subglobose. Seeds reniform.

Flowers & Fruits: February to August.

Specimen Cited: Conservation sector, *Rajib & AP Das 0703*, dated 14. 02. 2008.

Local Distribution: Forest margin.

General Distribution: India, native to South America; naturalized in Africa, Australia.

Solanum melongena Linnaeus, Sp. Pl. 1: 186. 1753; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1058. 2001.

Vernacular Name: Begun.

Woody, branched shrubs, up to 60 cm, sparingly armed. Lamina ovate to oblong-ovate, 6–18 x 5–11 cm, obtuse, sinuate-lobed, base oblique. Inflorescences mostly solitary flowers. Flowers andromonoecious. Calyx stellate tomentose; lobes lanceolate. Corolla purplish; lobes deltate. Berry purple, pink, with a thick, spongy, whitish mesocarp and septal region. Seeds lenticular, yellowish.

Flowers & Fruits: January to August.

Specimen Cited: Bochamari cultivation field, *Rajib & AP Das 0378*, dated 21.07.2007.

Local Distribution: Cultivated.

General Distribution: Widely cultivated for its edible fruits.

Solanum pimpinellifolium Linnaeus, Cent. Pl. I 1: 8. 1755. *Lycopersicon pimpinellifolium* (Linnaeus) Miller, Gard. Dict. (ed. 8) no. 4. 1768. *Lycopersicon esculentum* Miller, Gard. Dict. (ed.8) n.2. 1768; Hooker f., Fl. Brit. Ind. 4:237.1883; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1063. 2001. *Solanum lycopersicum* Linnaeus, Sp. Pl. 185.1753.

Vernacular name: Chhoto tomato.

Annual, sprawling, herbs up to 1.3 m, odorous. Lamina mostly pinnately compound to divided, 10 – 40 cm, obtuse, base oblique, cuneate; leaflets mostly unequal, ovate to oblong, entire to irregularly dentate. Racemes 3–7 flowered. Calyx rotate-campanulate, lobes lanceolate. Corolla lobes narrowly oblong, yellow. Berry red to orange-yellow, subglobose, fleshy, juicy, shiny. Seeds straw colored.

Flowers & Fruits: May to November.

Specimen Cited: Bochamari cultivation field, *Rajib & AP Das 0275*, dated 10. 02. 2007.

Local Distribution: Agriculture land.

General Distribution: A native to Mexico and South America; cultivated elsewhere; sometime escapes.

Core-Eudicots: Asterids: Euasterids (II)

Order: Asterales Link (1829)

Asteraceae Link, Handb. 1: 731. 1829 ('Asteroideae'); *nom. nov.* vs. Corymbiferae A. L. de Jussieu, 1789; *nom. alt.* vs. Compositae)

Key to the genera:

- | | |
|--|-------------------|
| 1a. Capitula with only male florets or with only female florets | 2 |
| 1b. Capitula all alike, homogamous or heterogamous | 4 |
| 2a. Plants monoecious, with male and female capitula on same plant | 9 |
| 2b. Plants dioecious, with male and female capitula on different plants | 3 |
| 3a. Phyllaries with distinct pale or brownish scarious margin | Artemisia |
| 3b. Phyllaries whitish brown or yellowish especially in distal part | Gnaphalium |
| 4a. Capitula homogamous and all florets ligulate, latex present | 19 |
| 4b. Capitula heterogamous, or if homogamous then corollas
zygomorphic, latex absent | 5 |
| 5a. Capitula homogamous; corollas pseudoligulate, 5-lobed and
zygomorphic | 20 |
| 5b. Capitula heterogamous; corollas 3–5-lobed, actinomorphic | 6 |
| 6a. Leaves opposite or at least below synflorescence opposite | 21 |
| 6b. Leaves all alternate | 7 |
| 7a. Receptacle paleate | 23 |
| 7b. Receptacle epaleate | 8 |
| 8a. Phyllaries uniseriate; involucre cylindric | 9 |

- 8b. Phyllaries 2- to several seriate, involucre saucer-shaped to subglobose 25
- 9a. Capitula small and not showy; all florets unisexual *Xanthium*
- 9b. Capitula colorful and attractive; some or all florets bisexual 10
- 10a. Leaves and phyllaries with obvious oil glands *Tagetes*
- 10b. Leaves and phyllaries lacking oil glands 11
- 11a. Only ray florets fertile, ray achenes much longer than sterile disk florets *Parthenium*
- 11b. Disk florets fertile; ray florets present and fertile or sterile or absent 12
- 12a. Pappus of plumose setae or fimbriate 13
- 12b. Pappus absent, or awned 14
- 13a. Pappus of plumose setae *Tridax*
- 13b. Pappus absent or of fimbriate *Galinsoga*
- 14a. Achenes compressed 15
- 14b. Achenes all plump or 3–5-angled in ray florets 17
- 15a. Pappus of retrorsely barbed awns; leaves opposite or upper alternate *Bidens*
- 15b. Pappus absent, or persistent, of 2 bristly cusps or scales; leaves opposite 16
- 16a. Achenes markedly dimorphic, lacerate winged margin, others wingless *Synedrella*
- 16b. Achenes all alike, wingless, not lacerate *Eleutheranthera*
- 17a. Achenes enclosed by inner phyllaries or outer paleae *Enydra*
- 17b. Achenes not enclosed by inner phyllaries 18
- 18a. Paleae narrow, long, flat; 2 seriate ray florets not enclosed by paleae . . *Eclipta*
- 18b. Paleae concave or folded, enclosing florets *Acmella*
- 19a. Pappus white, fine cottony outer bristles intermixed with thicker inner ones *Sonchus*
- 19b. Pappus grayish and yellowish, equal in diameter and stiffness *Youngia*
- 20a. Capitula densely clustered, subtended by 3 leaflike bracts *Elephantopus*
- 20b. Capitula in lax panicles with more than 4 florets *Vernonia*
- 21a. Phyllaries and florets 4 per capitulum *Mikania*
- 21b. Phyllaries and florets not of equal number 22
- 22a. Phyllaries all deciduous leaving a naked receptacle *Chromolaena*
- 22b. At least some basal phyllaries persistent *Ageratum*
- 23a. All florets with pappus *Blumea*
- 23b. Pappus absent *Sphaeranthus*
- 24a. Involucre not calyculate *Emilia*
- 24b. Involucre calyculate *Crassocephalum*
- 25a. Herbs prostrate; involucre patelliform *Grangea*
- 25b. Herbs erect; involucre hemispheric *Erigeron*

Key to the species:

- 1a. Capitula discoid *A. paniculata*
 1b. Capitula ovoid-conical *A. calva*

Acmella calva (de Candolle) Jansen, Syst. Bot. Monogr. 8: 41. 1985; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1605. 2001. *Spilanthes calva* de Candolle in Wight, Contr. Bot. Ind. 19. 1834; H. Ohashi in Hara, Fl. E. Himal. 2: 141. 1971; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 45. 1982; Fl. Ind. 12: 409. 1995. *Spilanthes acmella* var. *calva* (de Candolle) Clarke, Comp. Ind. 138. 1876; Clarke in Hooker *f.*, Fl. Brit. Ind. 3: 307. 1881. [PLATE: 8, Figure-81]

Perennial, creeping or prostrate herbs. Stems up to 60 cm, rooting at nodes. Petiole 5 – 8 mm; lamina lanceolate, 3 – 8 x 1 – 3 cm, base cuneate, peaked serrate, acuminate or caudate. Capitula ovoid-conical; phyllaries 7 – 9, 2 seriate, subequal, ovate-oblong, ciliate; receptacle columnar-conical. Corollas yellow; ray florets female, lamina short, obovate, shallowly 3-lobed; disk florets bisexual, tubular, 4 to 5 toothed. Achenes brown, oblong; pappus 2.

Flowers & Fruits: July to November.

Specimen Cited: Parks, Rajib & AP Das 0577, dated 25.07.2007.

Local Distribution: Throughout Parks and Garden areas.

General Distribution: India, Bhutan, Nepal, Sri Lanka, China, Myanmar, Indonesia, Malaysia.

Acmella paniculata (Wallich *ex* de Candolle) R.K. Jansen, Syst. Bot. Monogr. 8: 67. 1985; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1605. 2001. *Spilanthes paniculata* Wallich *ex* de Candolle, Prodr. 5: 625. 1836. *Spilanthes acmella* var. *paniculata* (Wallich *ex* de Candolle) C.B. Clarke, Comp. Ind. (1876) 139. 1876.

Annual ascending herbs. Stems branched. Petiole 1–2 cm; lamina ovate to ovate-lanceolate, 2 – 5 x 1 – 3 cm, 3 veined, base cuneate, crenately serrate, acute. Capitula discoid, solitary, terminal; phyllaries 9 – 11, 2 seriate, ovate-lanceolate. Florets 100 – 200; corollas tubular, minute, 4 to 5 lobed. Achenes obovoid, 3 angled; pappus of 2 subequal bristles.

Flowers & Fruits: June to November.

Specimen Cited: Park, Rajib & AP Das 0700, dated 14. 02. 2008.

Local Distribution: Throughout Parks and Garden areas.

General Distribution: India, Bhutan, China, Bangladesh, Nepal, Sri Lanka, Indonesia, Laos, Malaysia, Myanmar, Philippines, Vietnam, Thailand.

AGERATUM Linnaeus, Sp. Pl. 2: 839. 1753.

Key to the species:

- 1a. Leaf base cordate to truncate *A. houstonianum*
 1b. Leaf base obtuse to broadly cuneate *A. conyzoides*

Ageratum houstonianum Miller, Gard. Dict. ed. 8, Ageratum no. 2. 1768; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1627. 2001. *Ageratum mexicanum* Sims, Bot. Mag. T. 2524. 1825. *Ageratum conyzoides* var. *mexicanum* (Sims) de Candolle, Prodr. 5: 108. 1836. *Carelia houstoniana* (Miller) Kuntze, Revis. Gen. Pl. 1: 325. 1891. 325. 1891. *Ageratum cordifolium* Roxburgh, 415. 1832.

Vernacular name: Uchuntijhar.

Annual, erect herbs, purple-red branched from middle or lower part, up to 80 cm. Leaves broadly ovate or triangular-ovate; median stem leaves 2 – 6 x 2 – 4 cm; upper and axillary leaves smaller;

both surfaces sparsely to densely white pubescent, base cordate to truncate, crenateserrate, rounded or acute. Synflorescence corymbose. Capitula 6 – 14 or more; involucre campanulate; phyllaries 2 to 3 seriate, narrowly lanceolate; corollas tubular; limb purplish; lobes pubescent. Achenes black.

Flowers & Fruits: Through out year.

Specimen Cited: Road side, *Rajib & AP Das 0471*, dated 23.07.2007.

Local Distribution: Through out study areas.

General Distribution: India: throughout; Bhutan, China, Nepal, South China Sea islands, Myanmar, Africa; native to tropical America.

Ageratum conyzoides Linnaeus, Sp. Pl. 2: 839. 1753; C.B. Clarke in Hooker *f.*, Fl. Brit. India 3: 243. 1881; H. Ohashi in Hara, Fl. E. Himal. 1: 330. 1966; Hajra *et al.*, Fl. Ind. 12: 348. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1627. 2001. *Ageratum arsenei* B.L. Robinson, Contr. Gray Herb. 64 3. 1922. [PLATE: 9, Figure-99]

Vernacular name: Uchunti jhar.

Annual, erect herbs. Stems robust, simple or branched from middle, stems and branches reddish, or green toward apex, densely spreading long tomentose. Leaves alternate; median leaves ovate, elliptic to oblong, 3 – 7 x 2 – 5 cm; upper leaves gradually smaller, oblong, base obtuse to broadly cuneate, crenate-serrate, acute. Capitula small, 4 – 12, in dense terminal corymbs; involucre campanulate; phyllaries 2 seriate, oblong to lanceolate-oblong; corollas limb purplish, 5 lobed. Achenes black.

Flowers & Fruits: Through out year.

Specimen Cited: Road side, *Rajib & AP Das 0645*, dated 12. 02. 2008.

Local Distribution: Through out.

General Distribution: India though out; Bhutan, China, Bangladesh, widespread weed throughout Africa, Malay Peninsula, Myanmar, Nepal, and the South China Sea islands; native to tropical America.

ARTEMISIA Linnaeus, Sp. Pl. 2: 845. 1753.

Artemisia indica Willdenow, Sp. Pl. ed. 4, 3(3): 1846. 1803; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 12. 1982; Hajra *et al.*, Fl. Ind. 12: 27. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1559. 2001. *Artemisia indica* var. *Indica* Willdenow, Sp. Pl., ed. 4. 3: 1846. 1803.

Vernacular name: Nagnishinda.

Perennial herbs or small subshrubs, up to 180 cm tall, much branched. Leaves shortly petiolate; lamina tomentose. Leaves ovate to oblong-ovate, 6 – 15 x 3 – 7 cm, pinnatipartite; distal lobes larger; segments 3 to 4 pairs; uppermost leaves pinnatipartite; leaflike bracts 3 lobed or entire. Capitula sessile. Involucre oblong-ovoid to broadly ovoid; phyllaries puberulent to glabrous. Florets 16 – 20. Marginal female florets 4 – 10; corolla tubular, 2 toothed. Disk florets 8 – 12, bisexual, basally glandular. Achenes brown, oblong or obovoid.

Flowers & Fruits: August to October.

Specimen Cited: Garden, *Rajib & AP Das 0497*, dated 23.07.2007.

Local Distribution: Planted in Garden.

General Distribution: India: tropical and subtropical; S.E. Asia, North America including Central America, Oceania.

BIDENS Linnaeus, Sp. Pl. 831. 1753

Bidens pilosa Linnaeus, Sp. Pl. ed. 2: 832. 1753; Clarke in Hooker *f.*, Fl. Brit. Ind. 3: 309. 1881; H. Ohashi in Hara, Fl. E. Himal. 1: 333. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 15. 1982; Fl. Ind.

12: 372. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1619. 2001. *Bidens alba* (Linnaeus) de Candolle, Prodr. 5: 605. 1836. *Coreopsis alba* Linnaeus, Sp. Pl. 2: 908. 1753. [PLATE: 5, Figure-34]

Annual erect or suberect herbs, up to 90 cm. Lamina ovate to lanceolate, 30–90 x 12–25 mm, 3–7 lobes, bases truncate to cuneate, serrate or entire, acute to attenuate. Synflorescence of solitary capitula or lax corymbs. Capitula radiate or discoid; calycular bracts spatulate to linear; phyllaries 8 or 10, lanceolate to oblanceolate. Ray florets absent or 5; lamina whitish. Disk florets 20–60; corollas yellowish. Outer achenes red-brown, 2-grooved; inner achenes blackish, 4 angled, 2-grooved.

Flowers & Fruits: June to March.

Specimen Cited: Garden margin, Rajib & AP Das 0588, dated 25.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: Tropical and subtropical regions.

BLUMEA Candolle in Guillemin, Arch. Bot. (Paris) 2: 514. 1833.

Blumea lacera (Burmanf.) de Candolle in Wight, Contr. Bot. India, 14. 1834; Hookerf., Fl. Brit. Ind. 3: 263. 1881; Guha Bakshi, Fl. Mur. Dist. 161. 1984; Hajra *et al.*, Fl. Ind. 13: 128. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1504. 2001. *Conyza lacera* Burmann f., Fl. Ind. 180. t. 59. f. 1. 1768. *Blumea hieraciifolia* Hooker f. & Thomson, Fl. Brit. Ind. 3(8): 267. 1881. *Blumea lacera* var. *cinerascens* (de Candolle) Hooker f., Fl. Brit. Ind. 3(8): 263. 1881. *Blumea hieraciifolia* Hooker f. *et* Thomson in Hookerf., Fl. Brit. Ind. 3(8): 267. 1881. *Blumea villosa* Schultz-Bipontinus *ex* Hookerf., Fl. Brit. Ind. 3(8): 263. 1881. [PLATE: 7, Figure-62]

Vernacular name: Kukur mota.

Annual or biennial, erect, branched, herbs, up to 100 cm. Leaves sessile and petiolate, elliptic to oblong, Fl. Bhut. 10–15 x 4–5 cm, base attenuate, doubly serrate and sometimes slightly lyrate lobed, obtuse. Capitula in axillary and terminal dense panicles. Involucres campanulate; phyllaries in 2 to 3 series. Receptacle convex, glabrous. Marginal florets 2–5 lobed. Central florets yellowish. Achenes oblong. Pappus white.

Flowers & Fruits: March to June.

Specimen Cited: Road side, Rajib & AP Das 0578, dated 25.07.2007.

Local Distribution: Throughout the study areas.

General Distribution: India: pantropical; Bhutan, Japan, Malaysia, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam; Africa, N Australia, Pacific islands.

CRASSOCEPHALUM Moench, Methodus 516. 1794, *nom. cons.*

Crassocephalum crepidioides (Benth) S. Moore in J. Bot. 50: 211. 1912; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 22. 1982; Hajra *et al.*, Fl. Ind. 13: 201. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1597. 2001. *Gynura crepidioides* Benth in Hookerf., Fl. Niger. 438. 1849.

Annual, erect, herbs, up to 120 cm. Lamina elliptic to oblong-elliptic, 8–12 x 4–5 cm, membranous, base cuneate, irregularly serrate or double-serrate, sometimes pinnately lobed at base, acuminate. Capitula numerous in terminal corymbiform cymes. Involucres cylindrical; phyllaries uniseriate, linear-lanceolate. Florets tubular, bisexual; corolla red-brownish. Style papillose. Achenes brownish, narrowly oblong.

Flowers & Fruits: April to December.

Specimen Cited: Rasik Beel, Rajib & AP Das 0369, dated 21.07.2007.

Local Distribution: Throughout forest margin.

General Distribution: India, native to Africa; pantropical weed of Africa, S and SE Asia, Australia, Central and South America, and Pacific islands.

ECLIPTA Linnaeus, Mant. Pl. 157, 286. 1771.

Eclipta prostrata (Linnaeus) Linnaeus, Mant. Pl. 2: 286. 1771; Hajra *et al.*, Fl. Ind. 12: 381. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1623. 2001. *Verbesina prostrata* Linnaeus, Sp. Pl. 2: 902. 1753. *Eclipta alba* (Linnaeus) Hasskarl, Pl. Jav. Rav. 528. 1848; Clarke in Hooker *f.*, Fl. Brit. Ind. 3: 304. 1881. *Verbesina alba* Linnaeus, Sp. Pl. 2: 902. 1753.

Annual erect, ascending or prostrate, herbs, up to 60 cm. Leaves lanceolate, 3 – 10 x 0.5 – 2 cm, papery, base narrowed, sessile to shortly petiolate, serrulate, gradually acuminate. Capitula terminal and axillary; peduncle slender; involucre globose-campanulate; phyllaries 5 to 6, in 2 seriate, oblong, acute. Ray florets 2 seriate. Disk florets many; corolla 4-lobed. Achenes ribbed.

Flowers & Fruits: Throughout the year.

Specimen Cited: Park margin, Rajib & AP Das 0274, dated 10. 02. 2007.

Local Distribution: Throughout the study areas.

General Distribution: Tropical India; native to America; introduced in Europe, Asia, Africa, Pacific islands, Australia.

ELEPHANTOPUS Linnaeus Sp. Pl. 814. 1753 et Gen. Pl. ed. 5. 5355. 1754.

Elephantopus scaber L., Sp. Pl. 2: 814. 1753; C.B. Clarke in Hooker *f.*, Fl. Brit. India 3: 242. 1881; Hajra *et al.*, Fl. Ind. 13: 333. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1489. 2001. *Scabiosa cochinchinensis* Loureiro, Fl. Cochinch. 1: 68. 1790. *Elephantopus scaber* var. *albiflorus* Kuntze, Revis. Gen. Pl. 1 335. 1891.

Perennial, procumbent or ascending herbs, up to 40 cm. Stems erect, dichotomously branched. Basal leaves persistent by anthesis, rosulate, spatulate or oblanceolate, 8 – 16 x 2 – 4 cm, base gradually attenuate, crenate-serrate, shortly acute; cauline leaves few and small. Synflorescence densely aggregated in compound heads, surrounded by leaflike bracts; bracts broadly ovate, acuminate. Capitula many. Phyllaries oblong-lanceolate, acuminate and spinescent. Florets 4, herbaceous, purplish or pink. Achenes oblong-linear.

Flowers & Fruits: June to October.

Specimen Cited: Grassland, Rajib & AP Das 0581, dated 25.07.2007.

Local Distribution: Throughout grass land.

General Distribution: India; widely distributed in tropical Asia, Australia and Africa.

EMILIA Cassini, Bull. Sci. Soc. Philom. Paris 1817: 68. 1817.

Emilia sonchifolia (Linnaeus) de Candolle *ex* de Candolle, "Wight, Contr. Bot. India" 24. 1834; Prain, Beng. Pl. 1: 444. 1903; Hajra *et al.*, Fl. Ind. 13: 212. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1598. 2001; Guha Bakshi, Fl. Mur. Dist. 166. 1984. *Cacalia sonchifolia* Hort *ex* Linnaeus, Sp. Pl.: 835. 1753; Hooker *f.*, Fl. Brit. Ind. 3: 336. 1881.

Annual, erect or ascending herbs, up to 40 cm. Leaves thick, lower leaves crowded, abaxially dark green, often becoming purple, 5 – 12 x 2.5 – 6 cm; terminal lobe large, broadly ovate-triangular, irregularly dentate, obtuse; lateral lobes usually paired, oblong-lanceolate, bluntly dentate, obtuse or acute. Median stem leaves lax, sessile, smaller, ovate-lanceolate; upper leaves few, linear. Capitula pendulous before anthesis, erect later, usually 2 – 5, in terminal lax corymbs. Involucres cylindrical; phyllaries 8 or 9, oblong-linear to linear. Florets pink or purplish. Achenes cylindrical.

Flowers & Fruits: June to October.

Specimen Cited: Garden, *Rajib & AP Das 0655*, dated 13. 02. 2008.

Local Distribution: Through out Park and Garden.

General Distribution: India: eastern states throughout; China, Asia and Africa.

ENYDRA Loureiro, Fl. Cochinch. 2: 510. 1790.

Enydra fluctuans Loureiro, Fl. Cochinch. 511. 1790; C.B. Clarke in Hooker *f.*, Fl. Brit. India 3: 304. 1881; Hajra *et al.*, Fl. Ind. 12: 384. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1614. 2001. [PLATE: 9, Figure-97]

Vernacular name: Helencha.

Annual or biennial, cylindric, slightly fleshy, prostrate herbs, up to 80 cm. Leaves subsessile, oblong to linear-oblong, 3–6 cm x 5–12 mm, both surfaces glabrous, base amplexicaul, sparsely serrate, obtuse or acute. Capitula terminal and axillary; involucre of 4 phyllaries, ovate-oblong. Ray florets 3 to 4 lobed. Disk florets 5 lobed; stamens 5. Achenes obovoid-cylindric.

Flowers & Fruits: November to April.

Specimen Cited: Ververi Beel, *Rajib & AP Das 0520*, dated 23.07.2007.

Local Distribution: Through out Wetlands.

General Distribution: Tropical regions of India; Indonesia, Malaysia, Myanmar, Thailand, Vietnam; Australia, Asia and Africa.

ERIGERON Linnaeus, Sp. Pl. 2: 863. 1753.

Erigeron canadensis Linnaeus, Sp. Pl. 2: 863. 1753; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1546. 2001. *Conyza canadensis* (Linnaeus) Cronquist, Bull. Torrey Bot. Club. 70: 632. 1943.

Annual, semierect, branched herbs, up to 80 cm. Lower leaves petiolate, lamina oblanceolate, 6–10 x 1–1.5 cm, base attenuate, sparsely serrate to entire, acute to shortly acuminate; mid and upper leaves subsessile or sessile, lamina linear-lanceolate to linear, smaller, margin entire. Capitula in terminal, large paniculiform synflorescences; peduncles slender. Involucre subcylindric; phyllaries 2 to 3 seriate. Ray florets 20–40, white; disk florets 8–30, yellowish. Achenes linear-lanceoloid, compressed.

Flowers & Fruits: May to September.

Specimen Cited: Garden, *Rajib & AP Das 0701*, dated 14. 02. 2008.

Local Distribution: Parks and Garden.

General Distribution: Through out tropical India; native to North America.

CHROMOLAENA de Candolle, Prodr. 5: 133. 1836.

Chromolaena odorata (Linnaeus) R.M. King & Harold Robinson, Phytologia 20: 204. 1970; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1628. 2001. *Eupatorium odoratum* Linnaeus, Syst. Nat. ed. 10: 1205. 1759; C.B. Clarke in Hooker *f.*, Fl. Brit. India 3: 244. 1881; Hajra *et al.*, Fl. Ind. 12. 354. 1995.

Perennial, procumbent herbs. Stems erect, up to 2.5 m. Leaves opposite; lamina ovate, triangular, or ovate-triangular, 5–10 x 2–5 cm, basally 3 veined, base truncate to shallowly cordate, coarsely and irregularly crenate to serrate, acute. Synflorescence of numerous capitula in corymbs or compound corymbs. Capitula 20–24 flowered; involucre cylindric; phyllaries 3 to 4 seriate; corollas white. Achenes black-brown.

Flowers & Fruits: April to December.

Specimen Cited: Rasik Beel, *Rajib & AP Das 0595*, dated 25.07.2007.

Local Distribution: Throughout study areas.

General Distribution: Throughout India; Native to America; naturalized in tropical countries.

GALINSOGA Ruiz & Pavon, Fl. Peruv. Prodr. 110. 1794.

Galinsoga parviflora Cavanilles, Icon. 3: 41. 1795; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1610. 2001.

Suberect or erect herbs up to 40 cm. Lamina 10 – 150 x 5 – 70 mm. Peduncles 10 – 20 mm; involucre campanulate; phyllaries persistent; outer paleae persistent, distal inner phyllaries deciduous, elliptic to obovate, 3 lobed, acute. Ray florets 5; corollas usually dull white. Disk florets 20 – 45. Pappus absent or of 5; disk achenes glabrous or strigose; pappus absent or of 16.

Flowers & Fruits: June to October.

Specimen Cited: Garden, *Rajib & AP Das 0302*, dated 10. 02. 2007.

Local Distribution: Parks and Garden.

General Distribution: Tropical India; Bhutan, China, Bangladesh; native to South America.

Laphangium affine (D. Don) Tzvelev, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 98(6): 105. 1994. *Gnaphalium affine* D. Don, Prodr. Fl. Nepal. 173 1825. *Gnaphalium luteo-album* L. var. *multiceps* de Candolle, Prodr. 6: 222.1838; Hooker *f.*, Fl. Brit. Ind 3: 288. 1881. *Gnaphalium luteo-album* Linnaeus, Sp. Pl. 2: 851. 1753; Hooker *f.*, Fl. Brit. Ind 3: 288. 1881. *Pseudognaphalium affine* (D. Don) Anderberg, Opera Bot. 104: 146. 1991; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1522. 2001.

Biennial erect herbs, up to 40 cm. Stems densely white lanate tomentose. Leaves thin; lower leaves smaller than median cauline leaves; cauline leaves spatulate, 2 – 7 x 4 – 10 cm, white lanate on both surfaces, base angular, entire, rounded, mucronulate. Capitula numerous, densely aggregated in terminal corymbs. Involucre globose-campanulate; phyllaries 3 seriate, pale yellow, broadly ovate, obtuse. Outer florets many. Central florets 5 – 10. Achenes oblong, compressed. Pappus white.

Flowers & Fruits: December to April.

Specimen Cited: Garden, *Rajib & AP Das 0499*, dated 23.07.2007.

Local Distribution: Garden.

General Distribution: India: tropical states; Bhutan, Nepal, Afghanistan, Pakistan, Indonesia, Japan, Korea, Myanmar, Philippines, Vietnam, Mauritius, Indo-Chin, New Guinea, Australia, Africa and Europe.

GNAPHALIUM Linnaeus, Sp. Pl. 2: 850. 1753.

Key to the species:

- 1a. Corollas of all florets usually purplish *G. luteo-album ssp. affine*
- 1b. Corollas of all florets usually purplish *G. purpureum*

Gnaphalium luteo-album L. *ssp. affine* (D. Don) Koster in Blumea 4(3): 484.1941; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1522. 2001. *Gnaphalium affine* D. Don, Prodr. Fl. Nep. 173. 1825. *Gnaphalium luteo-album* var. *multiceps* de Candolle, Prodr. 6: 222. 1838; Hooker *f.*, Fl. Brit. Ind. 3: 288. 1881.

Biennial herbs; stems up to 40 cm, densely white woolly tomentose. Leaves thin; lower leaves smaller than median cauline leaves; cauline leaves spatulate, 2 – 5 x 4 - 10 cm, apex rounded, mucronulate, base angular, narrowed, sessile, decurrent, margins entire, white woolly on surfaces. Heads numerous, densely aggregated in terminal corymbs. Involucre globose-campanulate, bracts 3-seriate, pale yellow, outer ones shorter, broadly ovate, inner ones oblong, apex obtuse. Outer florets many. Achenes oblong, compressed, papillose. Pappus white, bristles deciduous separately.

Flowers & Fruits: December to May.

Specimen Cited: Park, *Rajib & AP Das 0416*, dated 22.07.2007.

Local Distribution: Parks.

General Distribution: Tropical India; Bhutan, China, Myanmar, Thailand, Indo-China, Java, China and Japan.

Gnaphalium purpureum Linnaeus, Sp. Pl. 2: 854. 1753; Hooker *f.*, Fl. Brit. Ind 3: 289. 1881; Hajra *et. al.*, Fl. Ind. 13: 92. 1995. *Gamochaeta purpurea* (Linnaeus) Cabrera, Bol. Soc. Argent. Bot. 9: 377. 1961; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1523. 2001. *Gnaphalium littorale* Banks & Solander *ex* Hooker *f.*, 310. 1846. *Gamochaeta rosacea* (I.M. Johnston) Anderberg, Opera Bot. 104: 157. 1991.

Annual or biennial, erect to decumbent-ascending, unbranched or rarely branched herbs. Leaves basal and cauline, basal and proximal cauline in rosettes, withered but persistent at anthesis; lamina oblanceolate to spatulate, 1.5 – 6 cm x 5 – 15 mm, upper ones smaller. Capitula continuous and interrupted arrays, bracteate. Involucre turbinate-cylindric; phyllaries 4 to 5 seriate. Bisexual florets 3 or 4. Corollas of all florets usually purplish. Achenes oblong. Pappus connate.

Flowers & Fruits: February to July.

Specimen Cited: Forest margin near Gate, *Rajib & AP Das 0300*, dated 10. 02. 2007.

Local Distribution: Through out the forest margin.

General Distribution: India: Himalayas, W. Ghats, Jammu and Kashmir, West Bengal, Tamil Nadir, Maharashtra; Pakistan, N. and S. America; native to North America; introduced in Asia, Europe, and South America.

GRANGEA Adanson, Fam. 2: 121. 1763.

Grangea maderaspatana (Linnaeus) Poiret in Lamarck, Encycl. Suppl. 2: 825. 1812; Hooker *f.*, Fl. Brit. Ind 3: 247. 1881; Prain, Beng. Pl. 1: 442. 1903; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1529. 2001. *Artemisia maderaspatana* Linnaeus, Sp. Pl. 2: 849. 1753. [PLATE: 8, Figure-78]

Annual, slender, procumbent, branched, herbs, up to 30 cm. Leaves usually obovate to oblanceolate, 3 – 8 1.5 – 3 cm; basal sessile, lamina dissected-lobed, 6 – 10 x 2 – 5 cm, base usually auriculate, terminal lobe obovate to suborbicular, coarsely dentate, lateral lobes 2 – 5 paired; upper gradually smaller. Capitula terminal, solitary. Involucre hemispheric; phyllaries 2 to 3 seriate. Receptacles hemispheric. Marginal female florets yellow, 2 to 6 seriate, corolla filiform; disk florets shortly cylindric campanulate. Achenes compressed.

Flowers & Fruits: March to August.

Specimen Cited: Barajan Beel, *Rajib & AP Das 0413*, dated 22.07.2007.

Local Distribution: Through out Beel Margin.

General Distribution: India: pantropical; Bhutan, China, Bangladesh, Nepal, Pakistan, Sri Lanka, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam; tropical Africa.

MIKANIA Willdenow, Sp. Pl. ed. 4, 3: 1742. 1803, *nom. cons.*

Mikania micrantha Kunth in Humboldt, Bonpland & Kunth, Nov. Gen. Sp. 4: 134. 1820; Hajra *et al.*, Fl. Ind. 12: 357. 1995; Grierson *et Springate* in Grierson *et Long*, Fl. Bhutan 2(3): 1625. 2001.

Branched, slender, large vines. Leaves opposite; petiole 1–6 cm; lamina ovate, 5 – 15 x 4 – 9 cm, both surfaces glabrate, base cordate, entire to coarsely dentate, shortly acuminate. Synflorescence a corymbose panicle, capitula clustered on subcymose branches; phyllaries oblong; corollas white, tube narrow, limb broadly campanulate, inside papillate. Achenes 4 ribbed, with many scattered glands; pappus setae pale white.

Flowers & Fruits: June to December.

Specimen Cited: Syzygium forest, *Rajib & AP Das 0694*, dated 14. 02. 2008.

Local Distribution: Throughout the study areas.

General Distribution: Tropical India; Bhutan, China, Nepal, Myanmar, Malaysia, Philippines; native to the Caribbean, Central and South America, and Mexico; widely introduced in Asia and the Pacific islands.

PARTHENIUM Linnaeus, Sp. Pl. 988. 1753; Gen. Pl. ed. 5, 426. 1754.

Parthenium hysterophorus Linnaeus, Sp. Pl. 2: 988. 1753; Hajra *et al.*, Fl. Ind. 12: 403. 1995; Grierson *et Springate* in Grierson *et Long*, Fl. Bhutan 2(3): 1622. 2001.

Annual erect herbs, much branched, up to 120 cm. Lamina ovate to elliptic, 3 – 15 x 1 – 5 cm, pinnately 2 lobed, ultimate lobes lanceolate to linear, both surfaces with gland-dotted. Synflorescences of open panicles. Capitula obscurely radiate; outer phyllaries 5, elliptic – lanceolate, inner 5, ovate to orbicular. Female florets 5; corolla limbs reniform or orbicular to oblong. Disk florets 15 – 40. Achenes obovoid; pappuslike enations erect, deltate to ovate.

Flowers & Fruits: April to December.

Specimen Cited: Road side, *Rajib & AP Das 0405*, dated 22.07.2007.

Local Distribution: Through out Road side of study areas.

General Distribution: Through out India; native to tropical America; a widely introduced weed in the tropics.

SPHAERANTHUS Linnaeus, Sp. Pl. 927. 1753.

Sphaeranthus indicus Linnaeus, Sp. Pl. 2: 927. 1753; Hooker *f.*, Fl. Brit. Ind. 3: 275. 1881; Prain, Beng. Pl. 1: 441. 1903; Guha Bakshi, Fl. Mur. Dist. 174. 1984; Grierson *et Springate* in Grierson *et Long*, Fl. Bhutan 2(3): 1508. 2001.

Local name: Bhuikadam.

Annual herbs, up to 25 cm; stems with 4 sharply toothed wings. Leaves oblanceolate to spatulate, 2 – 7 x 1 – 3 cm, obtuse to acute, irregularly biserrate-dentate, strong decurrent at base. Glomerules ovoid-globose; capitulum bracts linear-lanceolate, acuminate, ciliate and stipitate-glandular; phyllaries 10 – 12, linear-oblong to linear-spatulate, more scarious and less glandular than bracts. Female flowers 8 to 14, male flowers 2 to 3. Corollas purplish. Achenes puberulent.

Flowers & Fruits: January to April.

Specimen Cited: Grass land, *Rajib & AP Das 0400*, dated 22.07.2007.

Local Distribution: Grassland near Conservation sector.

General Distribution: Tropical India; Nepal, Bangladesh, Myanmar, Sri Lanka, Africa, Malay Islands and Australia.

SONCHUS Linnaeus, Sp. Pl. 2: 793. 1753.

Sonchus asper (Linnaeus) Hill, Herb. Brit. 1: 47. 1769; Hooker *f.*, Fl. Brit. Ind. 3: 414. 1881; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1479. 2001. *Sonchus oleraceus* Linnaeus var. *asper* Linnaeus, Sp. Pl. 2: 794. 1753.

Annual semi erect or procumbent herbs, up to 50 cm. Stem usually unbranched below synflorescence. Leaves extremely variable, Lamina obovate, spatulate to elliptic, 7 – 12 x 2 – 5 cm, undivided or irregularly pinnatisect, base attenuate, densely spinulose dentate, acute to acuminate. Capitula with many florets; peduncle slender. Involucre campanulate. Phyllaries abaxially glabrous, acute; outer phyllaries narrowly lanceolate. Corolla 1 cm. Achene strongly compressed.

Flowers & Fruits: June to November.

Specimen Cited: Backside of Forest office, *Rajib & AP Das 0737*, dated 14. 02. 2008.

Local Distribution: Forest Office campus.

General Distribution: Tropical India; Pakistan, Afghanistan, C. Asia, Europe, Africa, N and S America; originating from Europe and Mediterranean region.

ELEUTHERANTHERA Poiteau, Bull. Sci. Soc. Philom. Paris 3(no. 66): 137. 1802.

Eleutheranthera ruderalis (Swartz) Schultz Bipontinus, Bot. Zeitung (Berlin) 24: 165. 1866; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1606. 2001. *Melampodium ruderalis* Swartz, Fl. Ind. Occid. 3: 1372. 1806. *Gymnopsis microcephala* Gardner, London J. Bot. 7 292. 1848. [PLATE: 6, Figure-59]

Annual, erect herbs, up to 30 cm. Petiole 1– 2 cm; lamina ovate, 3 – 7 x 2 – 3 cm, entire, or crenulate-dentate, acute to acuminate, base obtuse, 3 veined from near base, both surfaces pubescent-glandular,. Synflorescence terminal. Capitula discoid; phyllaries 2 seriate. Florets 2 – 6; anthers black; style branches lanceolate. Achenes brown, 3 angled; pappus an apical peg.

Flowers & Fruits: July to December.

Specimen Cited: Road side near forest Office, *Rajib & AP Das 0757*, dated 23. 05. 2008.

Local Distribution: Rodaside throughout study area.

General Distribution: Tropical India; widespread in Central and South America but also found in W Africa and Australia.

SYNEDRELLA Gaertner, Fruct. Sem. Pl. 2: 456, plate 171, fig. 7. 1791.

Synedrella nodiflora (Linnaeus) Gaertner, Fruct. Sem. Pl. 2: 456. 1791; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1607. 2001. *Verbesina nodiflora* Linnaeus, Cent. Pl. 1: 28. 1755. *Blainvillea latifolia* (Linnaeus *f.*) de Candolle, Contributions to the Botany of India 17. 1834. *Eclipta latifolia* Linnaeus *f.*, 378. 1782.

Annuals, suberect to ascending, branched herbs, up to 70 cm. Leaves cauline, opposite, petiolate; lamina ovate to elliptic, 3 – 9 x 2 – 4 cm, both surfaces scabrid, usually 3 veined, base cuneate to rounded, toothed. Capitula radiate, sessile in axillary glomerules or capitula solitary; involucre cylindrical to campanulate; phyllaries persistent; receptacle convex. Ray florets 2 – 9, 1 to 2 seriate, female, fertile; corollas yellowish. Disk florets 4 – 15, bisexual, fertile; corollas yellowish, 4-lobed.

Flowers & Fruits: throughout the year.

Specimen Cited: Road side near gate, *Rajib & AP Das 0743*, dated 22. 05. 2008.

Local Distribution: Roadside forest.

General Distribution: India, pantropical weed of American origin.

TAGETES Linnaeus, Sp. Pl. 2: 887. 1753.

Tagetes patula Linnaeus, Sp. Pl. 887. 1753; Hajra *et al.*, Fl. Ind. 13: 329. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1602. 2001.

Vernacular Name: Gandha.

Annual shrubs, up to 1m. Leaves 3 – 8 cm; leaflets 3 – 6 pairs. Peduncles slender with leaves obsolete. Capitula solitary; involucre 7 – 12 mm in diameter; phyllaries 5–8. Ray corolla tube 8 – 9 mm; lamina yellow to orange, red-brown; ligule orange or yellow; flabellate to ovate-quadrangle. Disk florets 40–100. Achenes 6–11 mm; pappus linear-oblong.

Flowers & Fruits: September to March.

Specimen Cited: Bochamari, *Rajib & AP Das 0753*, dated 22. 05. 2008.

Local Distribution: Cultivated in gardens and villages.

General Distribution: Native of Mexico; widely cultivated in many parts of the world.

TRIDAX Linnaeus, Sp. Pl. 900. 1753; Gen. Pl. ed. 5, 382. 1754.

Tridax procumbens (Linnaeus) Linnaeus, Sp. Pl. 2: 900. 1753; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1611. 2001. *Balbisia elongate* Willdenow, Sp. Pl. 3: 2214. 1803. *Balbisia canescens* Richard, Syn. Pl. 2: 470. 1807.

Annual to perennial, caulescent, decumbent herbs up to 40 cm. Stems procumbent, branched at base. Leaves few, shortly petiolate; lamina ovate to ovate-lanceolate, 3 – 5 cm, base cuneate, deeply irregularly serrate, pinnatisect, acute to acuminate. Capitula solitary; involucre subcampanulate; phyllaries few seriate. Ray florets 4, white. Disk florets yellow, limb 5 lobed, lobes reflexed. Achenes brown, oblong.

Flowers & Fruits: November to March.

Specimen Cited: Backside of Forest office, *Rajib & AP Das 0738*, dated 14. 02. 2008.

Local Distribution: Forest office campus.

General Distribution: native to tropical America; now a pantropical weed.

CYANTHILLIUM Blume, Bijdr. Fl. Ned. Ind. 15: 889. 1826.

Cyanthillium cinereum (Linnaeus) Harold Robinson, Proc. Biol. Soc. Wash. 103: 252. 1990; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1488. 2001. *Vernonia cinerea* (Linnaeus) Less in Linnaea 4:291. 1829; Hooker *f.*, Fl. Brit. Ind 3: 233. 1881; Guha Bakshi, Fl. Mur. Dist. 175. 1984. Hajra *et al.*, Fl. Ind. 13: 367. 1995. *Conyza cinerea* Linnaeus, Sp. Pl. 2: 862. 1753.

Annual or perennial, erect, branched above, herbs, up to 100 cm. Lower and middle leaves petiole, lamina rhombic-ovate, rhombic-oblong, 3 – 6 x 1.5 – 3 cm, base cuneately attenuate into winged petiole, remotely mucronate-serrate to repand, acute; upper leaves progressively smaller. Synflorescences terminal. Capitula many. Involucre campanulate; phyllaries 4 seriate. Receptacle flat. Florets 19 – 28; corolla reddish purple, tubular; lobes linear-lanceolate. Achenes cylindrical. Pappus white.

Flowers & Fruits: Round the year.

Specimen Cited: Garden, *Rajib & AP Das 0739*, dated 14. 02. 2008.

Local Distribution: Throughout.

General Distribution: India to Indochina Island. Japan, Indonesia and Africa.

XANTHIUM Linnaeus, Sp. Pl. 987. 1753.

Xanthium strumarium Linnaeus, Sp. Pl. 2: 987. 1753; *Xanthium indicum* Koen. ex Roxburgh, Fl. Ind. 3: 601. 1832; Guha Bakshi, Fl. Mur. Dist. 176. 1984. Hajra *et al.*, Fl. Ind 12: 427. 1995, Grierson *et Springate* in Grierson *et Long*, Fl. Bhutan 2(3): 1620. 2001. *Xanthium strumarium* Linnaeus, Sp. Pl. 2: 987. 1753, *p. p.*; Hooker *f.* in Hooker *f.*, Fl. Brit. Ind 3: 303. 1881; Haines, Bot. Bihar & Orissa pt. IV: 478. 1922. [PLATE: 5, Figure-42]

Vernacular name: Okra.

Annual, erect, much branched herbs, up to 100 cm. Median cauline leaves ovate-deltate, 9 – 25 cm, papery, densely scabrid on both surfaces, base shallowly cordate to broadly cuneate, irregularly dentate, 3-lobed, apex acute. Capitula monoecious. Male capitula in terminal umbels; phyllaries 1 seriate; outer paleae oblong-lanceolate, inner paleae lanceolate; corolla white, tubular. Female capitula axillary. Fruits sessile, oblong, ellipsoid.

Flowers & Fruits: August to April.

Specimen Cited: Batikata Beel, Rajib & AP Das 0780, dated 12. 09. 2008.

Local Distribution: Beel margin forest.

General Distribution: India: through out; Bhutan, China, Iran, Japan, Korea, Mongolia, Russia; North America; originating in the New World.

YOUNGIA Cassini, Ann. Sci. Nat. (Paris) 23: 88. 1831.

Youngia japonica (Linnaeus) de Candolle, Prodr. 7: 194. 1838; Grierson *et Springate* in Grierson *et Long*, Fl. Bhutan 2(3): 1457. 2001. *Prenanthes japonica* Linnaeus, Mant. Pl. 1: 107. 1767. *Youngia formosana* (Hayata) H. Hara, 53. 1938. *Youngia ambigua* de Candolle, Prodr. (de Candolle) 7(1): 193. 1838.

Annual, erect, branched herbs, up to 120 cm. Leaves oblanceolate, lamina 15 – 25 x 4 – 6 cm; base attenuate, sinuate-dentate; lateral lobes few to many, ovate to rhombic-elliptic, gradually smaller toward leaf base; terminal lobe ovate to ovate-lanceolate, rounded to acute. Synflorescence corymbiform, usually with many to numerous capitula. Capitula with 15 – 20 florets. Involucre cylindric. Phyllaries ovate to triangular, apex acute. Anther tube dark green. Style branches yellow. Achene purplish brown. Pappus white.

Flowers & Fruits: April to October.

Specimen Cited: Garden, Rajib & AP Das 0736, dated 14. 02. 2008.

Local Distribution: Throughout study area.

General Distribution: India: tropical; Bhutan, China, Japan, Korea, Malaysia, Philippines; originating probably from China and introduced pantropically, extending into adjacent subtropical regions.

Menyanthaceae (Dumortier) Dumortier, Anal. Fam. Pl. 20. 1829 ('Menyanthideae'); *nom. cons.*

NYMPHOIDES S guier, Pl. Veron. 3: 121. 1754.

Key to the species:

- 1a. Leaves densely glandular; corolla white with a yellow center. *N. indica*
- 1b. Leaves glabrous; corolla pure white *N. hydrophylla*

Nymphoides hydrophylla (Loureiro) Kuntze, Revis. Gen. Pl. 2: 429. 1891; Aitken in Grierson *et Long*, Fl. Bhut. 2(2): 258. 1999. *Menyanthes hydrophylla* Loureiro, Fl. Cochinch. 1: 129. 1790. *Limnanthemum cristatum* (Roxburgh) Grisebach, Gen. Sp. Gent. 342. 1839; Clarke in Hooker *f.*, Fl. Brit. Ind. 4: 131. 1883; Prain, Beng. Pl. 2: 527. 1903. *Limnanthemum hydrophyllum* (Loureiro) Grisebach, Gen. Sp. Gent. 348. 1839. [PLATE: 10, Figure-110]

Floating herbs; rooting from nodes. Leaves few per node; petiole 4–10 cm, slender; lamina cordate, 1 – 6 x 1 – 4 cm, submembranous, glabrous, veins indistinct. Flowers 2–10 per node, 5 merous. Pedicel slender. Calyx lobed to near base; lobes narrowly oblong, acute. Corolla white, campanulate. Filaments absent; anthers triangular. Style very short. Capsules globose, 6–10 seeded. Seeds brown, globose.

Flowers & Fruits: August to December.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0183*, dated 09. 02. 2007.

Local Distribution: Through out the Beel Complex.

General Distribution: Tropical India; Bhutan, China, Myanmar, Java and Malasia. Laos, Thailand, Vietnam.

Nymphoides indica (Linnaeus) O. Kuntze, Revis. Gen. Pl. 2: 429. 1891. *Menyanthes indica* Linnaeus, Sp. Pl. 1: 145. 1753. *Limnanthemum indicum* (Linnaeus) Thwaites, Enum. 205. 1850; Clarke in Fl. Brit. Ind. 4: 131. 1883; Prain, Beng. Pl. 2: 527. 1903. *Villarsia indica* (Linnaeus) Ventanat, Choix Pl. t. 9. 1803. *Nymphoides thunbergiana* (Grisebach) Kuntze, Revis. Gen. Pl. 2: 429. 1891. [PLATE: 10, Figure-109]

Rhizomes horizontal. Stems cylindric. Petiole cylindric, 1–3 cm; Lamina broadly ovate to subcordate, 3–20 cm, subcoriaceous, abaxially densely glandular, base cordate, margin entire; veins indistinct, palmate. Flowers many, 5 merous, distylous. Pedicel cylindric. Calyx 2.5 – 5 mm, lobed to near base; lobes lanceolate to narrowly elliptic, apex obtuse. Corolla white with a yellow center; lobes ovate elliptic, outside densely fimbriate pilose, apex obtuse. Filaments flattened, linear; anthers sagittate. Style cylindric; stigma lobes triangular. Capsules elliptic, few seeded. Seeds brown, globose; seed coat smooth.

Flowers & Fruits: January to December.

Specimen Cited: Bochamari Beel, *Rajib & AP Das 0097*, dated 07. 02. 2007.

Local Distribution: Through out the Beel Complex.

General Distribution: Tropical India; Bhutan, Kabul, S. E. Asia, Malaya, Australia to Fiji.

Order: Apiales Nakai (1930).

Apiaceae Lindley, Nat. Syst. ed. 2. 21. 1836 (*nom. alt.* vs. **Umbelliferae**); *nom. cons.*

Key to the Genera:

- 1a. Stem creeping or ascending; lamina reniform or rounded-cordate;
endocarp woody *Centella*
- 1b. Stem usually erect, not creeping; leaves compound or simple;
endocarp not woody 2
- 2a. Leaves simple, usually palmately divide to shallowly lobed *Eryngium*
- 2b. Leaves compound 3
- 3a. Calyx teeth minute; fruit ellipsoid, furrowed *Oenanthe*
- 3b. Calyx teeth obsolete; fruit sub-globose, furrow absent, ridges thick *Seseli*

CENTELLA Linnaeus, Sp. Pl., ed. 2, 2. 1393. 1763.

Centella asiatica (Linnaeus) Urban, Martius Fl. Brass. 11: 287. 1879; Datta & Majumder, Bull. Bot. Soc. Beng. 20(2): 93. 1966; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 446. 1999; Guha Bakshi, Fl. Mur. Dist. 149. 1984. *Hydrocotyle asiatica* Linnaeus Sp. Pl. 1: 234. 1753; Clarke in Hooker *f.*, Fl. Brit. Ind. 2: 669. 1879; Prain, Beng. Pl. 1: 391. 1903. [PLATE: 6, Figure-56]

Vernacular name: Manimuni.

Fleshy, weak, creeping herbs with numerous roots from lower nodes. Lamina orbicular, reniform, peduncle short. Erect small, ovate embracing the flower. Umbel simple, 3-6 pink flowered, axillary. Fruit not vittate, pericarps not thickened. Seeds compressed laterally.

Flowers & Fruits: July to February.

Specimen Cited: Park, *Rajib & AP Das 0573*, dated 24.07.2007.

Local Distribution: Throughout the study area.

General Distribution: Throughout India, Bhutan, China, Nepal, Pakistan, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Thailand, Vietnam.

ERYNGIUM Linnaeus, Sp. Pl. 1: 232. 1753.

Eryngium foetidum Linnaeus, Sp. Pl. 1: 232. 1753; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 447. 1999.

Vernacular name: Bilati dhoniya.

Herbs, up to 30 cm from a basal rosette. Stem green. Basal leaves numerous; petiole short or obsolete; lamina lanceolate to oblanceolate, 5 – 30 x 2 – 4 cm, obtuse, crenate to finely spinulose-serrate, base cuneate to decurrent. Upper leaves sessile. Inflorescence divaricately trifurcate; heads numerous. Flower heads cylindrical; margin 1–3 spinulose-serrate. Calyx teeth ovate-lanceolate, acute, equaling petals. Petals white to pale yellow. Styles erect, exceeding calyx teeth. Fruit ovoid-globose.

Flowers & Fruits: April to December.

Specimen Cited: Rasik Beel village, *Rajib & AP Das 0686*, dated 14. 02. 2008.

Local Distribution: Cultivate in Villages.

General Distribution: Tropical India; native to Central America; now a widespread weed in tropical and subtropical regions.

OENANTHE Linnaeus, Sp. Pl. 1: 254. 1753.

Oenanthe javanica (Blume) de Candolle, Prodr. 4: 138. 1830; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 486. 1999. *Sium javanicum* Blume, Bijdr. 15: 881. 1826. *Oenanthe bengalensis* Benth & Hooker, Gen. Pl. 1: 906: 1862; Clarke in Hooker *f.*, Fl. Brit. Ind. 2: 696. 1879; Prain, Beng. Pl. 1: 394. 1903. [PLATE: 8, Figure-87]

Herbs, growing in wet places, especially on the shade of other plants. Lamina 1-3 pinnate, secondary, pinnae-lanceolate ovate, deeply pinnatifid, pale green. Flowers often polygamous. Calyx teeth minute. Fruit ellipsoid, nearly terete, furrowed, forrow 1-vittate, carpophore 0.

Flowers & Fruits: January to April.

Specimen Cited: Ververi Beel, *Rajib & AP Das 0479*, dated 23.07.2007.

Local Distribution: Throughout the Beel Complex.

General Distribution: India throughout; China, Nepal, Pakistan, Malaysia, Myanmar, Japan, Thailand, Vietnam and Java.

SESELI Linnaeus, Sp. Pl. 1: 259. 1753.

Seseli diffusum (Roxburgh *ex* Smith) Santapou & Wagh, Bull. Bot. Surv. Ind. 5(2): 108. 1963. *Ligusticum diffusum* Roxburgh *ex* Smith, Rees Cyclop 21: 11. 1812. *Cnidium diffusum* de

Candolle, Prodr. 4: 153. 1830. *Seseli indicum* Wight & Arnott, Prodr. 371. 1874; Clarke in Hooker f., Fl. Brit. Ind. 2: 693. 1879; Prain, Beng. Plants 1: 393. 1903.

Local name: Ban Jowan.

Erect or diffuse, annual herb with pubescent branches from the root. Lamina oblong, lanceolate, petiolate, 2-pinnate or pinnae, pinnatisect 2-3 pairs; cauline similar but smaller and more crisped, all hairy, especially beneath with short white hairs. Flowers pink or white in compound umbles. Calyx teeth obsolete. Fruit sub-globose, glabrous or hispid; ridges thick.

Flowers & Fruits: January to April.

Specimen Cited: Batikata Beel, *Rajib & AP Das 0385*, dated 21.07.2007.

Local Distribution: Beel margin.

General Distribution: India (Throughout the plains) and Bangladesh.

Araliaceae A. L. de Jussieu, Gen. Pl. 217. 1789 ('Araliae').

HYDROCOTYLE Linnaeus, Sp. Pl. 1: 234. 1753.

Hydrocotyle sibthorpioides Lamarck, Encycl. Meith. 3:153. 1789; H. Ohashi in Hara, Fl. E. Himal. 1:230.1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2:187. 1979; Watson in Grierson *et Long*, Fl. Bhut. 2(2): 444. 1999. *Hydrocotyle rotundifolia* Roxburgh *ex de Candolle*, Prodr. 4:64. 1830; Hooker f., Fl. Brit. Ind. 2:668. 1879.

Vernacular name: Chhotomanimuni.

Strongly aromatic herbs. Stem weak, slender, filiform, creeping. Lamina reniform-rounded, 0.5 – 1.5 x 0.8 – 2 cm; membranous, entire or shallowly 5–7-lobed, lobes rounded, base cordate. Umbel solitary at the nodes, each umbel 5–8 flowered. Petals greenish white. Styles spreading. Fruit broadly globose, greenish yellow when young, covered with purplish stains when mature.

Flowers & Fruits: April to September.

Specimen Cited: Park, *Rajib & AP Das 0496*, dated 23.07.2007.

Local Distribution: Throughout the study area.

General Distribution: India throughout; Bhutan, Nepal, China, Indonesia, Japan, Korea, Philippines, Thailand, Vietnam; tropical Africa.