

Chapter 6

ENUMERATION

ENUMERATION

The spermatophytic plants with their accepted names as per *The Plant List* [<http://www.theplantlist.org/>], through proper taxonomic treatments of recorded species and infra-specific taxa, collected from Gorumara National Park has been arranged in compliance with the presently accepted APG-III (Chase & Reveal, 2009) system of classification. Further, for better convenience the presentation of each species in the enumeration the genera and species under the families are arranged in alphabetical order. In case of Gymnosperms, four families with their genera and species also arranged in alphabetical order.

The following sequence of enumeration is taken into consideration while enumerating each identified plants.

(a) Accepted name, (b) Basionym if any, (c) Synonyms if any, (d) Homonym if any, (e) Vernacular name if any, (f) Description, (g) Flowering and fruiting periods, (h) Specimen cited, (i) Local distribution, and (j) General distribution.

Each individual taxon is being treated here with the protologue at first along with the author citation and then referring the available important references for overall and/or adjacent floras and taxonomic treatments. Mentioned below is the list of important books, selected scientific journals, papers, newsletters and periodicals those have been referred during the citation of references.

Chronicles of literature of reference:

Names of the important books referred:

Beng. Pl.	: Bengal Plants
En. Fl .Pl. Nepal	: An Enumeration of the Flowering Plants of Nepal
Fasc.Fl.India	: Fascicles of Flora of India
Fl.Brit.India	: The Flora of British India
Fl.Bhutan	: Flora of Bhutan
Fl.E.Him.	: Flora of Eastern Himalaya
Fl.India	: Flora of India
Fl Indi.	: Flora Indica
Fl. West Bengal	: Flora of West Bengal
Prodr.Fl.Nepal	: Prodrumus florae Nepalensis
Pl.As.Rar.	: Plantae Asiaticae Rariores
Pl. Wilson	: Plantae Wilsonianae
Tr. Nor. Bengal	: The Trees of Northern Bengal

FOC : e-Flora of China

Nam. Change. Flr. Pl. : Name changes in flowering plants by S. S. R. Bennett.

Names of the journal referred:

Bull.As.Soc.Beng. : Bulletin of Asiatic Society of Bengal

Bull.Bot.Sur.Ind. : Bulletin of Botanical Survey of India

Jour.Arn.Arb. : Journal of Arnold Arboretum

Jour.Beng.Nat.Hist.Soc. : Journal of Bengal Natural History Society

Jour.Bomb.Nat.Hist.Soc. : Journal of Bombay Natural History Society

Jour.Econ.Tax.Bot. : Journal of Economic and Taxonomic Botany

Jour.Jap.Bot : Journal of Japanese Botany

Jour. R.A.S. Beng. Sci : Journal of Royal Asiatic Society of Bengal

Kew.Bull. : Kew Bulletin

Jour. Ind. For. : Indian forester, Dehradun.

Pleione : Pleione

Abbreviation used in Enumeration:

agg. : aggregated species

auct. : of various authors (*auctorum*)

Cf. : compare (*Confer*)

f. : form (*forma*)

nom.illeg. : Illegitimate name (*Nomen illegitimum*)

nom.nud. : *Nomen nudum*

p.p. : In Part (*pro parte*)

Sensu. : In the sense of author indicated and not as originally intended

ssp. : Sub-species

Var. : Variety

Var. nov. : New variety

Other abbreviations commonly used in enumeration:

Acad. : Academy J. : Journal

Bull. : Bulletin no. : Number

Cat. : Catalogue Pl. : Plant

Contr. : Contribution Rep. : Report

Faun. : Fauna Repert. : Repertorium

Fl. : Flora Soc. : Society

Ic. : Icones

Ill. : Illustration

Authorities of botanical names:

Throughout this work authors of Botanical names were used following Brumitt and Powell's (1992) *Authors of Plant Names* and as provided in the Kew list (www.theplantlist.org).

Local (Common) names:

Bengali, Nepali and Local tribal common name of plants used as vernacular names.

Description:

cm : Centemeter

mm : Millimiter

Fig. : Figure

Distributions:

C. : Central

E. : Eastern

S. : Southern

W. : Western

N. : North

NE. : North-eastern

Measurements:

The measurement of the specimens during the study was made through metric unit system (m, cm & mm) for e.g. the dimensions of leaves are given as 2 – 3 x 1 – 1.5 cm, the first figure indicating the length and the second breadth.

6.1. GYMNOSPERMS

The Gymnospermic plants family, genera and species with the accepted name as per the Plant List [<http://www.theplantlist.org/1.1/browse/G/>], through proper taxonomic treatments of species, collected from the Gorumara National Park has been arranged in alphabetic order. The following sequence of enumeration is taken into consideration while enumerating each identified plants- (a) Accepted names, (b) Basionyms, (c) Synonyms if any, (d) Vernacular name, (e) Description, (f) Cone formation time, (g) Specimen cited, (h) Local distribution, and (i) General distribution.

Family Key of Gymnosperm:

- 1a. Lianas with hanging branch Gnetaceae
- 1b. Trees 2
- 2a. Palm-like, generally monopodial or dichotomously branch Cycadaceae
- 2b. Pyramidal with numerous branch 3
- 3a. Leaves rhomboid; boat-shaped, ridged Cupressaceae
- 3b. Leaves needlelike; slightly curved, base wide Araucariaceae

Araucariaceae Henkelet W. Hochstetter, Syn. Nadelholz. xvii, 1. 1865; *nom. cons.*

ARAUCARIA Juss., Gen. Pl. 413. 1789.

Araucaria columnaris (G. Forst.) Hook. f., Bot. Mag. 78: t. 4635 1852. *Araucaria cookii* R.Br. ex Endl., Syn. Conif. 188. 1847.

Vernacular name: Jhau.

Large trees, up to 20 m high; crown conical tower-shaped, becoming flat topped; lateral branches in whorls, dense, final branchlets drooping, pinnately arranged. Leaves dimorphic loosely arranged in lateral branchlets, needlelike, slightly curved, acute or acuminate, base x 0.4 – 0.55 cm, branches few, stalks up to 3 cm; female catkins much branched cymose panicles, up to 25 cm, branches up to 13 cm with stalks up to 3 cm, internodes up to 6 cm long; ovules \pm 7, up to 0.4 cm, green, glabrous, shiny; mature seeds not seen here.

Flowers & Fruits: Throughout the year.

Specimen Cited: Gorumara, Goutam & AP Das 0921, dated 19. 02. 2009.

Local Distribution: Extremely rare but found in different corners of Gorumara National Park

General Distribution: Pantropical.

Note: Preferred fodder for elephants; local people use paste of inflorescence in skin diseases and seeds against fever.

Cupressaceae Gray, Nat. Arr. Brit. Pl. 2: 222, 225. 1822; *nom. cons.*

PLATYCLADUS Spach, Hist. Nat. Vég. Phan. 11: 333. 1841.

Platycladus orientalis (L.) Franc., Portugaliae Acta Biol., ser. B, Sist. Vol. “Jílio Henriques”: 33. 1949. *Thuja orientalis* L., Sp. Pl. 2: 1002. 1753; Grierson *et* Long, Fl. Bhutan 1(1): 54. 1983. *Thuja decora* Salisb., Prodr. Stirp. Chap. Allerton 398. 1796.

Vernacular name: Jhau.

Small trees, up to 5 m high; crown ovoid-pyramidal, broadly rounded, branches flattened. Leaves 1–2 mm; facial leaves rhomboid; lateral leaves overlapping facial ones, boat-shaped, ridged. Male strobili yellowish-green, ovoid, nodding. Seed cones bluish green, subglobose.

Cone formation: March to October.

Specimen Cited: Gorumara, Goutam & AP Das 0828, dated 09. 07. 2009.

Local Distribution: Planted in Gorumara, Dhupjhora and Murti Beat Office ground.

General Distribution: Cultivated in Tropical and Pantropical Asia.

Note: Common fascinating garden plant.

Cycadaceae Pers., Syn. Pl. 2: 630. 1807; *nom. cons.*

CYCAS L., Sp. Pl. 2: 1188. 1753.

Cycas pectinata Buch.-Ham., Mem. Wern. Nat. Hist. Soc. 5: 322. 1826; Grierson *et* Long in Fl. Bhutan 1(1): 44. 1983; Prain, Beng. Pl. 2: 993. 1903. *Cycas jenkinsiana* Griff., Not. Pl. Asiat. 4: 9. 1854.

Vernacular name: Cycas.

Small dioecious trees, palm-like, generally monopodial or dichotomously branched when old, up to 6 m high. Leaves 50 – 90 crowning the top, pinnate; petiole 10–30 cm, with few blunt spines; leaflets in 50 – 100 pairs, narrowly oblong-lanceolate, entire, acute, thickly leathery, slightly recurved, base decurrent. Cataphylls brown tomentose, triangular. Male cones large fusiform; microsporophylls cuneate, densely tomentose, pale brown. Megasporophylls more than 30 – numerous, tightly grouped to form a large oblet cone. Seeds 2 to 4, orange, becoming dark brown after ripening.

Cone formation: June to March.

Specimen Cited: Gorumara, Goutam & AP Das 0719, dated 30. 09. 2008.

Local Distribution: Planted in Lataguri Tourist Resort complex.

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

Note: Common fascinating garden plant.

Gnetaceae Blume, Nov. Pl. Expos. 23. 1833 [Aug-Dec 1833]; *nom. cons.*

GNETUM L., Syst. Nat., ed. 12, 2: 612, 637; Mant. Pl. 1: 18, 125. 1767.

Gnetum montanum Markgraf, Bull. Jard. Bot. Buitenz. ser. 3, 10: 466, tab. 8. 1930. Hara in Fl. E. Himal. 2: 13. 1971. Grierson *et* Long in Fl. Bhutan 1(1): 57. 1983; Das *et* Yadav in *Pleione* 5(1): 205 – 207. 2011. *Gnetum scandens sensu* Hook. f., Fl. Brit. India 5. 643. 1888; Prain, Beng. Pl. 2: 991. 1903.

Vernacular name: Pagrhi Lata

Large liana, weakly twining up to the top of tall trees with numerous hanging branches; old nodes swollen; petiole short, 1 – 3 cm; lamina elliptic-ovate, up to 22 x 8 cm, sometimes larger in sterile plants; catkins from old nodes or terminal on new shoots; male catkins 3 – 5 x 0.4 – 0.55 cm, branches few, stalks up to 3 cm; female catkins much branched cymose panicles, up to 25 cm, branches up to 13 cm with stalks up to 3 cm, internodes up to 6 cm long; ovules \pm 7, up to 0.4 cm, green, glabrous, shiny; mature seeds not seen here.

Flowers & Fruits: Throughout the year.

Specimen Cited: Gorumara, Goutam & AP Das 0921, dated 19. 02. 2009.

Local Distribution: Extremely rare but found in different corners of Gorumara National Park

General Distribution: Pantropical.

Note: Preferred fodder for elephants; local people use paste of inflorescence in skin diseases and seeds against fever.

6.2. ANGIOSPERMS

Basal Angiosperms

The Botanical Classification of Angiospermae by APG III, 2009

[The Angiosperm Phylogeny Group, <http://www.theplantlist.org/>]

Orders and families of flowering plants are arranged according to APG III system of classification

Order 2: Nymphaeales Salisb. ex Bercht. & J.Presl (1820)

Nymphaeaceae Salisb., Ann. Bot. 2: 70. 1805; *nom. cons.*

NYMPHAEA L., Sp. Pl. 1: 510. 1753, *nom. cons.*

Key to the Species:

- 1a. Lamina entire Anther with appendages 2
- 1b. Lamina margin toothed; anther without appendages 3
- 2a. Flowers not submerged, appendages yellow, stigma rays 8 – 30 *N. nouchali*
- 2b. Flowers slightly submerged, appendages blue, stigma rays 7 *N. abhayana*
- 3a. Flowers white *N. pubescens*
- 3b. Flowers red *N. rubra*

Nymphaea abhayana A. Chowdhury & M. Chowdhury, sp. nov.

Annual submerged. Lamina round-ovate; base peltate, notch not reached to petiole, margin entire; lamina; shape & size: Round-Ovate & 13 x 16 (18) cm. base deeply cordate and basal lobes parallel to contiguous. Texture: Thin, delicate, abaxially glabrous, spongy scarcely peltate. Colour: Bluish-purple. Flowers floating, 5 – 6 cm in diam. Sepals 4; 3.7 – 4 cm, x 0.8 – 1.2 cm, prominently veined. Petals 7; transition to stamens regular, Bluish-purple, broadly lanceolate, oblong, or obovate, 2.9 (3.5) x 0.5(0.7) cm. Stamens; filament of inner & outer stamens slightly wider than anther, 13 (5+4+4), 0.5 cm large, outer stamen, 0.8 cm inner stamen. Appendage; anthers connective apically appendaged, elongated, deep blue, 0.01 – 0.6cm. Carpels completely united, walls between locules of ovary single. Stigma rays 7.

Flowers & Fruits: October to December.

Specimen Cited: Indong Beel, Goutam & AP Das 01409, dated 21.07.2009.

Local Distribution: Indong Beel.

General Distribution: India.

Nymphaea nouchali Burm. f., Fl. Ind. 120. 1768; Van Royen in Nova Guinea 8: 110. f. 1962 *p p*; Sharma *et al*, Fl. Ind. 430. 1993. *Nymphaea stellata* Willd., Sp. Pl. 2: 1153. 1799; Hook. f. *et* Thomson in Hook. f., Fl. Brit. Ind. 1: 114. 1872. *Nymphaea madagascariensis* DC., Syst. Nat. 2: 50 50 1821. *Nymphaea emirnensis* Planch., Rev. Hort. 2: 65 65 1853.

Rhizomes erect, unbranched. Lamina elliptic-orbicular to orbicular, 8 – 20 cm, papery, abaxially glabrous, peltate a few mm from base of sinus, subentire to deeply crenate, base cordate, basal lobes parallel. Flowers slightly emergent, 3–10 cm in diam. Calyx inserted on receptacle; sepals lanceolate to oblong-lanceolate, slightly veined, persistent; petals 15 – 25, white. Carpels only partially united, walls between locules of ovary double. Fruits globose. Seeds ellipsoid-globose.

Flowers & Fruits: June to November.

Specimen Cited: Garati Beel, *Goutam & AP Das 0336*, dated 21.07.2009.

Local Distribution: In most of the beels.

General Distribution: India, Bangladesh, Nepal, Afghanistan, Indonesia, Myanmar, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam, Australia, New Guinea.

Nymphaea pubescens Willd., Sp. Pl. 2: 1154. 1799; Sharma *et al*, Fl. Ind., 431. 1993. *Nymphaea lotus* var. *pubescens* (Willd.) Hook. *f. et* Thom., Fl. Indica. 1: 241. 1855. Hook. *f. et* Thom. in Hook. *f.*, Fl. Brit. Ind. 1:114. 1872.

Rhizomes erect, producing slender stolons. Lamina ovate – elliptic to suborbicular, 15 – 20 cm, papery, abaxially densely pubescent, peltate more than 5 mm from base of sinus, base deeply cordate and basal lobes subparallel, margin dentate and teeth acute to subspinose. Flowers emergent, 5 – 8 cm in diam. Calyx inserted on receptacle; sepals oblong, conspicuously veined, caducous or decaying after anthesis. Petals 12 – 16, white, red, or pink, oblong. Filament of inner stamens only slightly wider than anther; connective apically unappendaged. Carpels completely united, walls between locules of ovary single. Fruits ovoid to subglobose. Seeds ellipsoid to globose.

Flowers & Fruits: July to November.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0402*, dated 22. 07. 2009.

Local Distribution: In most of the beels.

General Distribution: India: throughout the plains; Bangladesh, Malaysia, Africa, Java, Philippines and Hungary.

Nymphaea rubra Roxb. *ex* Andr., Bot. Rep. 8 (104): t. 503.1808; Prain, Beng. Pl. 1: 213. 1903; Sharma *et al*, Fl. Ind., 431. 1993. *Nymphaea lotus auct. non. L.*, Hook. *f. et* Thom. in Hook. *f.*, Fl. Brit. Ind.1: 114. 1872; Grierson *et* Long, Fl. Bhut. 1(2): 341. 1984.

Rhizomes erect. Lamina ovate to suborbicular, 15 – 30 cm, papery, abaxially densely pubescent, peltate more than 5 mm from base of sinus, margin dentate and teeth acute, base deeply cordate. Flowers emergent, 5 – 9 cm in diameter. Calyx inserted on receptacle, circular; sepals oblong, conspicuously veined, caducous or decaying after anthesis; petals 12–18, red, oblong. Filaments of inner stamens only slightly wider than anther; connective apically unappendaged. Carpels completely united, walls between locules of ovary single. Fruits ovoid to subglobose. Seeds ellipsoid to globose.

Flowers & Fruits: July to December.

Specimen Cited: Medlajhora, *Goutam & AP Das 0251*, dated 10. 02. 2009.

Local Distribution: In most of the beels.

General Distribution: India: throughout the plains; Sri Lanka, Myanmar, Taiwan, Thailand, Laos, Cambodia, Vietnam, Malaysia, Indonesia and Philippines.

Order 4: Chloranthales R. Br. (1835)

Chloranthaceae R. Br. *ex* Sims, Bot. Mag. 48: ad t. 2190. 1820; *nom. cons.*

CHLORANTHUS Sw., Philos. Trans. 77: 359. 1787.

Chloranthus erectus Sweet, Hort. Suburb. London 28. 1818. *Chloranthus elatior* Link, Enum. Hort. Berol. Alt. 1: 140. 1821; H. Hara in Hara, Fl. E. Himal. 2: 14. 1971; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(2): 351. 1984. *Chloranthus erectus* (Buch.-Ham.) Verdcourt, Kew Bull. 40: 217. 1985. *Cryphaea erecta* Buch.-Ham., Edinburgh Jour. Sci. 2: 11. 1825. *Chloranthus officinalis* Bl., Enum. Pl. Javae 79. 1827.

Subshrubs up to 2 m. Stems terete, glabrous. Leaves opposite; leaf blade broadly elliptic or obovate to oblanceolate, 10–18 × 4–7 cm, serrate, caudate, base cuneate, rigidly papery, glandular, glabrous; lateral veins 5–9 pairs. Spikes terminal, dichotomously or racemosely branched; bracts triangular to ovate. Flowers white, small. Stamens 3; 2-loculed; lateral lobes smaller, with a 1-loculed anther each. Ovary ovoid. Young fruits green, white at maturity.

Flowers & Fruits: April to September.

Specimen Cited: Gorumara, Goutam & AP Das 0188, dated 09. 02. 2009.

Local Distribution: Forest areas.

General Distribution: India: West Bengal, Sikkim, Assam, Nagaland, Arunachal Pradesh; Bhutan, Nepal, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

Magnoliids (fr.: Magnoliidées)

Order: Laurales Perleb (1826)

Lauraceae Juss., Gen. Pl. 80. 1789; *nom. cons.*

Key to the Genera:

- 1a. Leaves crowded at apex of each branchlet ***Actinodaphne***
- 1b. Leaves not clustered at the branch end 2
- 2a. Perianth segments rigid, erect ***Phoebe***
- 2b. Perianth segments soft, often spreading 3
- 3a. Flowers unisexual, rarely bisexual, in pseudoumbels or racemes; bracts large, forming an involucre ***Litsea***
- 3b. Flowers bisexual, rarely unisexual, in panicles or clusters, rarely in pseudoumbels; bracts small, not forming an involucre ***Cinnamomum***

ACTINODAPHNE Nees in Wallich, Pl. Asiat. Rar. 2: 61, 68. 1831

Key to the species:

- 1a. Lamina obovate-oblong to elliptic-oblong *A. obovata*
- 1b. Lamina oblanceolate to obovate-lanceolate *A. sikkimensis*

Actinodaphne obovata (Nees) Bl., Mus. Bot. 1: 342. 1851; Grierson *et* Long, Fl. Bhut. 1(2): 280. 1984.

Tetradenia obovata Nees in Wallich, Pl. Asiat. Rar. 2: 64. 1831.

Trees, up to 18m. Branchlets densely ferruginous pubescent. Leaves clustered, 3–5 at apex of branchlet; petiole 3–6cm; leaf blade obovate-oblong to elliptic-oblong, 12–52 × 6–22 cm, glabrous adaxially, triplinerved, base cuneate or rotund, entire, acute to acuminate, tip obtuse. Racemes umbels type, 5 flowered. Perianth segments 6, ovate. In male flowers fertile stamens 9; rudimentary ovary pilose. In female flowers, ovary subglobose. Fruit oblong or ellipsoid.

Flowers & Fruits: April to May.

Specimen Cited: Gorumara, Goutam & AP Das 1036, dated 21.07.2010.

Local Distribution: Gorumara, Murti, Dhupjhora, Bichhbhanga.

General Distribution: India, Nepal, Bhutan.

Actinodaphne sikkimensis Meisn., Prodr. 15(1): 213 1864; Grierson *et* Long, Fl. Bhut. 1(2): 281. 1984. *Jozoste sikkimensis* Kuntze, Revis. Gen. Pl. 2: 570 1891.

Trees, up to 20 m. 4–7 leaves crowded at apex of each branchlet; leaf blade oblanceolate to obovate-lanceolate, 8–14 × 2–3.5 cm, gray-brown pubescent abaxially, glabrous adaxially, pinninerved, base acute, entire, acuminate. Umbels in leaf axils, 6–8-flowered, sessile. Perianth segments 6, elliptic. In male flowers, fertile stamens 9; rudimentary pistil glabrous; style slender. Immature fruit oblong.

Flowers & Fruits: March to July.

Specimen Cited: Gorumara, Goutam & AP Das 1031, dated 21.07.2010.

Local Distribution: Gorumara, Murti, Dhupjhora, Bichhbhanga.

General Distribution: India, Nepal, Bhutan.

CINNAMOMUM Schaeff., Bot. Exped. 74. 1760, *nom. cons.*

Key to the Species:

- 1a. Leaves alternate, fruiting cup broad *C. glaucescens*
- 1b. Leaves opposite; fruiting cup smaller 2
- 2a. Terminal branchlet of panicle bearing a 3–5-flowered cymes *C. tamala*
- 2b. Terminal branchlet of panicle bearing a 1–3-flowered cymes 2
- 3a. Lamina elliptic-oblong, 12–30 × 4–9 cm, thickly leathery, base subrounded or attenuate
..... *C. bejolghota*
- 3b. Lamina ovate to oblong-ovate or ovate-lanceolate, smaller, leathery or subleathery to papery,
base acute *C. verum*

Cinnamomum bejolghota (Buch.–Ham.) Sweet, Hort. Brit. 344. 1826. Long in Grierson *et* Long, Fl. Bhut. 1(2): 258. 1984. *Laurus bejolghota* Buch.-Ham., Trans. Linn. Soc. London 13(2): 559–560. 1822. *Laurus obtusifolia* Roxb., Fl. Ind., 2: 302–303. 1832.

Evergreen tree, up to 20m. Leaves coriaceous, opposite, elliptic, 25 – 40 x 6 – 12 cm, obtuse, base cuneate, glossy above, strongly 3 – veined from base; petioles 2 – 3cm. Flowers usually bisexual in axillary panicles. Panicles 12 – 20 cm, panicle bearing a 1–3-flower; perianth segments ovate, 2 – 3 mm, pubescent. Fruits ellipsoid.

Flowers & Fruits: March to May.

Specimen Cited: Gorumara, Goutam & AP Das 0469, dated 23. 07. 2009.

Local Distribution: All over the forest areas.

General Distribution: India: Tropical and subtropical forests in West Bengal, Assam, Sikkim, Bihar, Orissa, Uttar Pradesh; Nepal, Bhutan, Bangladesh, Laos, Myanmar, Thailand, Vietnam

Cinnamomum glaucescens (Nees) Hand.-Mazz. Oesterr. Bot. Z. 85: 214 1936; Grierson *et* Long, Fl. Bhut. 1(2): 259. 1984. *Cinnamomum cecidodaphne* Meisn. Prodr. 15(1): 25 1864.

Local name: Malagiri.

Small tree, up to 12 m. Young branches glabrous. Leaves alternate, ovate elliptic, base broadly cuneate to rounded. Panicle brownish tomentose; 4 – 9 densely clustered on young shoots. Perianth segments ovate, caduceous. Fruiting cup much broader, fruits globose.

Flowers & Fruits: January to February.

Specimen Cited: Gorumara, Goutam & AP Das 1032, dated 21.07.2010.

Local Distribution: Gorumara, Murti, Dhupjhora, Bichhbhanga.

General Distribution: India, Nepal, Bhutan.

Cinnamomum tamala (Buch.-Ham.) T. Nees *et* Ebermaier, Handb. Med.-Pharm. Bot. 2: 426 1831; Yasuiti Momiyama in Hara, Fl. E. Himal. 1: 99. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 355. 1984; Prain, Beng. Pl. 2: 899. 1903. *Laurus tamala* Buch.-Ham., Trans. Linn. Soc. London 13(2): 555 – 558. 1822. *Cinnamomum reinwardtii* Nees, Syst. Laur. 70. 1836.

Local name: Tejpataa

Evergreen trees, up to 20 m. Leaves coriaceous, opposite, lanceolate, 10 – 12 x 3 – 5 cm, shortly acuminate, base cuneate, glossy above, strongly 3 – veined from base; petioles 2 – 3cm. Flowers usually bisexual in axillary panicles. Panicles shorter, 5 – 10 cm, bearing 3–5-flowered units; perianth segments ovate, pubescent. Fruits ellipsoid, 1 – 1.4 cm, borne on enlarged perianth cup with lower part of segments persisting as short lobes 1 – 2 mm.

Flowers & Fruits: April to May.

Specimen Cited: Murti village, Goutam & AP Das 0540, dated 23.07.2009.

Local Distribution: Cultivated in village areas.

General Distribution: India: West Bengal, Assam, Sikkim, Bihar, Orissa; Bhutan, Nepal, Bangladesh.

Note: Leaves used as flavouring agent in food and have great market demand.

Cinnamomum verum Presl, Priir. Rostlin 2: 36. 1823. *Cinnamomum zeylanicum* Breyne, Eph. Nat. Cur. Dec. 4: 139. 1677; Prain, Beng. Pl. 2: 899. 1903. *Cinnamomum bengalense* Lukman., Nomencl. Icon. Cannel. 5. 1889.

Local name: Darchini.

Evergreen, up to 10 m. Young branchlets gray. Buds sericeous puberulent. Leaves usually opposite; petiole 1.5 – 2 cm, glabrous; leaf blade greenish white abaxially, green and shiny adaxially, ovate to ovate-lanceolate, 10 – 15 × 4 – 5 cm, leathery, glabrous on both surfaces, triplinerved, midrib and lateral veins elevated on both surfaces, base acute, margin entire, acuminate. Terminal branchlet of panicle bearing a 3–5 flowered cyme. Flowers yellow. Perianth tube obconical; perianth lobes 6, oblong. Fertile stamens 9. Ovary ovoid, glabrous; style short; stigma discoid. Fruit ovoid, black when mature

Flowers & Fruits: April to May.

Specimen Cited: Murti village, Goutam & AP Das 1537, dated 23. 05. 2009.

Local Distribution: Cultivated in village areas.

General Distribution: India: all over country; Bhutan, Nepal, Bangladesh, native to Sri Lanka; also cultivated in many Asian countries.

LITSEA Lam., Encycl. 3: 574. 1792, *nom. cons.*

Key to the Species:

- 1a. Branchlets densely brown tomentose 2
- 1b. Branchlets pubescent or glabrous 4

- 2a. Umbels clustered on shortest branchlets 3
- 2b. Umbels solitary *L. elongata*
- 3a. Fruits ellipsoid *L. hookeri*
- 3b. Fruits subglobose *L. monopetala*
- 4a. Branchlets glabrous; lamina long elliptic *L. salicifolia*
- 4b. Branchlets pubescent and becoming glabrous; lamina oblong to lanceolate 5
- 5a. Fruits broadly obovoid to subglobose on enlarged fleshy cup-shaped perianth ... *L. laeta*
- 5b. Fruit compressed globose, seated on thin cup-shaped perianth tube *L. panamanja*
- 6a. Leaf blade papery or membranous and deciduous *L. cubeba*
- 6b. Leaf blade leathery or thinly leathery and evergreen *L. glutinosa*

Litsea cubeba (Lour.) Pers., Syn. Pl. 2(1): 44. 1807; Y. Momiyama in Hara, Fl. E. Him. 1: 101. 1966; Hara *et al.* Enum. Fl. Pl. Nep. 3: 185. 1982; Long in Grierson *et Long*, Fl. Bhut. 1(2): 274. 1984. *Laurus cubeba* Lour., Fl. Cochinch. 1: 252. 1790; Hook. *f.* in Hook. *f.*, Fl. Brit. Ind. 5: 155. 1885.

Shrubs up to 5 m high. Stem usually glabrous, blackened when dry. Leaf blade papery or membranous and deciduous; lower leaves opposite, upper alternate; petioles to 0.13 cm, slender; lamina lanceolate, entire-half lanceolate, entire-half contortate 5.5 – 13 x 1.8 – 2.5 cm, acuminate, cuneate, upper surface green above, lower surface glaucous, glabrous both sides, nerves distinct, lateral veins obliquely ascending, 10 - 17 pairs. Inflorescence usually umbels in clusters of 3 - 4, 4 - 10 flowered, in short peduncled; pedicels white, pubescent. Flowers hairy; perianth toothed, tube slightly reduced at base. Fruits subglobose.

Flowers & Fruits: December to June.

Specimen Cited: Budhram, Goutam & AP Das 0118, dated 07. 02. 2009.

Local Distribution: All over the forest areas.

General Distribution: India, E. Himalaya, Nepal, Bhutan, Myanmar, Java, W. & C. China.

Litsea elongata (Nees) Hook. *f.*, Fl. Brit. Ind. 5: 165. 1886; Momiyama in Hara, Fl. E. Him. 1: 101. 1966; Matthew, Pl. Kurs. 90. 1981; Cowan *et Cowan*, Trs. N. Beng. 110. 1929; Long in Grierson *et Long*, Fl. Bhut. 1(2): 275. 1984; Kanjilal *et al.*, Fl. Ass. 4: 86. 1940. *Daphnidium elongatum* Nees, Pl. Asiat. Rar. 2: 63. 1831.

Local name: Thulo pahenlay

Evergreen trees, up to 12m. Branchlets densely brown tomentose. Leaves alternate; leaf blade oblong-lanceolate to narrowly lanceolate, 5–22 × 1.2–6 cm, pubescent abaxially and glabrous adaxially, base cuneate or rounded, entire, obtuse to shortly acuminate. Umbels solitary, 4–5 flowered. Male flowers: perianth segments 6, ovate; fertile stamens 9–12; rudimentary pistil glabrous. Fruit oblong.

Flowers: August to March.

Specimen Cited: Dhupjhora, Goutam & AP Das 0794, dated 19. 02. 2009.

Local distribution: Dhupjhora, Murti, Gorumara.

General distribution: India, Nepal, Bhutan, Myanmar, Tibet, China.

Note: The species is a good fodder for cattle and wood is used for construction works, making furniture, etc.

Litsea glutinosa (Lour.) Rob., Philipp. J. Sci. 6(5): 321. 1911; Long in Grierson *et* Long, Fl. Bhut. 1(2): 277. 1984. *Sebifera glutinosa* Lour., Fl. Cochinch. 638. 1790. *Litsea sebifera* Pers., Syn. Pl. 2: 4. 1807; Prain, Beng. Pl. 2: 902. 1903.

Tree, up to 15 m, young shoots whitish pubescent. Leaves coriaceous, ovate – lanceolate, 10–16 x 4–8 cm, acute, base cuneate, glabrous or pale pubescent beneath; lateral veins 7–10 pairs; petioles slender, 2.5–3.5 cm. Umbels large, 7–10 mm in bud, whitish pubescent, pedicels 3–5 mm, white – pubescent. Fruits globose.

Flowers & Fruits: May to June.

Specimen Cited: Dhupjhora, Goutam & AP Das 0618, dated 11. 02. 2008.

Local Distribution: All over the forest areas.

General Distribution: Tropical and subtropical parts of India, Bhutan, Nepal, Myanmar, Philippines, Thailand, Vietnam.

Litsea hookeri (Meisn.) Long, Notes Roy. Bot. Gard. Edinburgh. 41: 510. 1984; Long in Grierson *et* Long, Fl. Bhut. 1(2): 276. 1984. *Cylicodaphne hookeri* Meisn., Prodr. 15(1): 209. 1864.

Local name: Dude Lampate

Evergreen trees, up to 12 m; branchlets brownish tomentose. Leaves alternate; lamina elliptic-obovate, 12–26 x 6–10 cm, base cuneate, entire, shortly acuminate; lateral veins 9–15 pairs; petioles 8–15 mm. Umbels densely pubescent, clustered on shortest branchlets; peduncle 4–8 mm. Fruits ellipsoid, 11–17 mm long.

Flowers: May to September.

Specimen Cited: Dhupjhora, Goutam & AP Das 1081, dated 11. 02. 20010.

Local distribution: Dhupjhora, Murti, Gorumara.

General distribution: India, Bhutan, Thailand.

Note: Timber is used for constructing houses and for making furniture.

Litsea laeta (Nees) Hook. *f.*, Fl. Brit. Ind. 5: 169. 1886; Matthew, Pl. Kurs. 90. 1981; Cowan *et* Cowan, Trs. N. Beng. 111. 1929; Long in Grierson *et* Long, Fl. Bhut. 1 (2): 275. 1984. *Tetranthera laeta* Nees, Pl. Asiat. Rar. 2: 67. 1831.

Small trees up to 9 m. Leaves coriaceous, oblong-elliptic, 11–22 x 3–6 cm, base cuneate, entire, acute, glabrous, pale white beneath when dry. Umbels with 3–6 flowered cluster. Fruits broadly obovoid to subglobose on enlarged fleshy cup-shaped perianth.

Flowers:; *Fruits:* February – April *Local distribution:* Found in Mahananda Wildlife Sanctuary and University of North Bengal campus. *General distribution:*

Flowers & Fruits: November to April.

Specimen Cited: Murti, Goutam & AP Das 1037, dated 23. 02. 2009.

Local Distribution: Gorumara, Dhupjhora, Murti, Budhuram.

General Distribution:. India, Bhutan, Bangladesh.

Litsea monopetala (Roxb.) Pers., Syn. Pl. 2: 4. 1807; Y. Momiyama in Hara, Fl. E. Him. 1: 102. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 185. 1982; Long in Grierson *et* Long, Fl. Bhut. 1(2): 276. 1984.

Tetranthera monopetala Roxb., Pl. Corom. 2: 26.t. 1798. *Litsea polyantha* Juss., Ann. Mus. Natl. Hist. Nat. 6: 211. 1805; Prain, Beng. Pl. 2: 903. 1903.

Trees to 10 m, branchlets brownish tomentose. Leaves broadly elliptic, 8 – 20 x 4.5 – 10 cm, obtuse or apiculate, base rounded, greenish beneath when dry, softly tomentose and prominently reticulate beneath, lateral veins 7 – 11 pairs; petioles 1 – 2.2 cm. Umbels densely pubescent, bud 4 mm, on tomentose peduncles 2.5 – 9 mm, forming dense clusters, peduncles sessile or borne on a short stout stalk 2 – 3.5 mm. Fruit subglobose, 7 x 5 mm, apiculate, borne on perianth cup 4 – 4.5 mm across, on slender pedicels 8 – 10 mm.

Flowers & Fruits: November to July.

Specimen Cited: Khunia, Goutam & AP Das 0685, dated 14. 02. 2008.

Local Distribution: Forest areas.

General Distribution: Tropical and subtropical parts of India, Himalayas, Bhutan, Cambodia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Thailand, Vietnam.

Litsea panamanja (Buch.–Ham. ex Nees) Hook. f., Fl. Brit. Ind. 5: 175. 1886; Prain, Beng. Pl. 2: 903. 1903; Long in Gierson *et* Long, Fl. Bhut. 1(2): 277. 1984. *Tetranthera panamanja* Buch.–Ham. ex Nees, Pl. Asiat. Rar. 2: 67. 1831.

Tetranthera panamanja Buchanan-Hamilton ex Nees in Wallich, Pl. Asiat. Rar. 2: 67. 1831.

Local name: Painle champ.

Evergreen trees, up to 20 m. Branchlets pubescent and becoming glabrous. Leaves alternate; glabrous; leaf blade oblong to lanceolate, 10–17 × 3–7.5 cm, glabrous on both surfaces, pinninerved, base cuneate, entire, acuminate. Umbels in 5-flowered racemes. Male flowers pubescent; perianth segments 6, oblong; fertile stamens 9; filaments glabrous; rudimentary pistil glabrous. Fruit compressed globose, seated on cup-shaped perianth tube.

Flowers: August to March.

Specimen Cited: Dhupjhora, Goutam & AP Das 1084, dated 11. 02. 20010.

Local distribution: Dhupjhora, Murti, Gorumara.

General distribution: India, Bhutan, Nepal, Vietnam.

Litsea salicifolia (Roxb. ex Nees) Hook. f., Fl. Brit. Ind. 5: 167. 1886; Prain, Beng. Pl. 2: 903. 1903; Cowan *et* Cowan, Trs. N. Beng. 110. 1929; Momiyama in Hara, Fl. E. Him. 2: 39. 1971; Long in Gierson *et* Long, Fl. Bhut. 1 (2): 275. 1984; Banerjee, Pl. Res. Jal. Rhi. Sanc. 52. 1993. *Tetranthera salicifolia* Roxb. ex Nees, Pl. Asiat. Rar. 2: 66. 1831.

Local name: Sanu pahenle

Evergreen trees, up to 10 m. Branchlets glabrous. Leaves alternate; lamina long elliptic, 9–18 × 2.5–5 cm, glaucous and yellow-brown puberulent when young abaxially, glabrous adaxially, pinninerved, base acute, entire, acuminate. Umbels axillary cluster of 2–6 flowers; male umbel 4–6 flowered. Male flowers pubescent; perianth segments 6, ovate or lanceolate; fertile stamens 9; rudimentary pistil lacking.

Flowers: April to September.

Specimen Cited: Gorumara, Goutam & AP Das 0831, dated 17. 02. 20008.

Local distribution: Murti, Dhupjhora, Gorumara.

General distribution: Bangladesh, Bhutan, India, Myanmar, Nepal, Vietnam.

PHOEBE Nees, Syst. Laur. 98. 1836.

Phoebe attenuata (Nees) Nees, Syst. Laur. 104 1836; Grierson *et* Long, Fl. Bhut. 1(2): 261. 1984.

Ocotea attenuata Nees, Pl. Asiat. Rar. 2: 71 1831.

Trees up to 20m; bud scale scars loosely arranged. Leaves clustered at the branch tip, oblanceolate to obovate, 10–18x3–6cm, rounded, base attenuate; pubescent and brown beneath when dry. Perianth densely pubescent. Fruits ellipsoid, enclosed by hardened pubescent perianth segments.

Flowers & Fruits: March to April.

Specimen Cited: Khunia, Goutam & AP Das 0689, dated 14. 02. 2008.

Local Distribution: Khunia, Murti, Gorumara.

General Distribution: Tropical and subtropical parts of India, Himalayas, Bhutan, Cambodia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Thailand, Vietnam.

Order 7: Magnoliales Bromhead (1838)

Annonaceae Juss., Gen. Pl. 283. 1789; *nom. cons.*

Key to the Genera:

- 1a. Fruits with completely united carpels and seeds embedded in pulp ***Annona***
- 1b. Fruits with carpels forming free, often stipitate 2
- 2a. Sepals or inner petals and sometimes also outer petals clearly imbricate ***Uvaria***
- 2b. Sepals and petal whorls all valvate or rarely very narrowly imbricate at tip ... 3
- 3a. Climbing shrubs. Peduncles and fruiting pedicels hooklike ***Artabotrys***
- 3b. Trees or erect shrubs. Peduncles and fruiting pedicels not hooked 4
- 4a. Sepals and outer petals equal ***Milliusa***
- 4b. Sepals much shorter than petals ***Polyalthia***

ANNONA L., Sp. Pl. 1: 536. 1753.

Key to the Species:

- 1a. Outer petals outside surface and carpels hairy; areoles flattened and separated by ridges; fruit pulp yellowish *A. reticulata*
- 1b. Outer petals and carpels glabrous; areoles convex and separated by deep grooves; fruit pulp whitish *A. squamosa*

Annona reticulata L., Sp. Pl. 1: 573. 1753; Hook. *f. et* Thom. in Hook. *f.*, Fl. Brit. Ind. 1: 78. 1872; Sharma *et al.*, Fl. Ind. 1: 207. 1993; Panda *et al.*, Fl. Samb. 35. 2004; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 355. 1984; Prain, Beng. Pl. 1: 206. 1903. *Annona excelsa* Kunth, Nov. Gen. Sp. 5: 59. 1821. *Annona lutescens* Saff., Contr. U. S. Natl. Herb. 18: 41. 1914.

Local name: Nona.

Trees, 4 – 10 m; glabrous. Leaves oblong – lanceolate, 9 – 20 x 3 – 5cm, entire, acuminate, base rounded; petiole 1 – 1.5 cm long, glabrous. Flowers in axillary or terminal cymes, 2 – 3; pedicels 1 – 2 cm long. Sepals 3, broadly ovate, shortly acuminate, 2 – 3 x 2 – 3mm, pubescent outside. Petals 6, 3 in inner whorl; outer ones narrowly oblong, triquetrous, acute apex, pubescent outside. Stamens

numerous, 1mm long. Carpels many, ovoid to linear, 1mm, 1 ovuled; style oblong; stigma entire. Fruits ovoid, reticulate, many loculed. Seeds black, arillate.

Flowers & Fruits: May to November.

Specimen Cited: Dhupjhora village, *Goutam & AP Das 0253*, dated 10. 02. 2009.

Local Distribution: Khunia, Murti, Dhupjhora, Budhram.

General Distribution: India: West Bengal, Delhi, Uttar Pradesh, Bihar; West Himalayas, Myanmar, Indo –China.

Note: Cultivated in the forests villages.

Annona squamosa L., Sp. Pl. 1: 537. 1753; Panda *et al.*, Fl. Samb. 35. 2004; Sharma *et al.*, Fl. Ind. 1: 207. 1993; Grierson in Grierson *et Long*, Fl. Bhut. 1(2): 244. 1984 ; Prain, Beng. Pl. 1: 206. 1903. *Annona asiatica* L., Sp. Pl. 537. 1753. *Annona forskahlii* DC., Syst. Nat. 1: 472. 1817. *Guanabanus squamosus* Gómez, Fl. Haban. 114. 1897.

Local name: Ata

Small tree, up to 6 m. Leaves elliptic, 6 –10 x 2 –5cm, acute, base cuneate, pubescent at first, soon glabrous; petioles 6 – 10mm; flowers solitary or few, leaf – opposed; outer petals yellow, oblong; fruits ovoid – globose, 8 – 9 cm diameter, surface covered with the rounded tips of incompletely fused carpels, glaucous.

Flowers & Fruits: May to October.

Specimen Cited: Dhupjhora village, *Goutam & AP Das 0229*, dated 09. 02. 2009.

Local Distribution: Dhupjhora, Murti.

General Distribution: India: Widely cultivated; Nepal, Bhutan, Myanmar, Indo –China, S. China.

Note: Cultivated in the forests villages.

ARTABOTRYS R. Br. *ex Ker Gawl.*, Bot. Reg. 5: t. 423. 1820.

Artabotrys hexapetalus (L. f.) Bhandari, Bailey 12: 147. 1964; Sharma *et al.*, Fl. Ind. 1: 251. 1993; Grierson in Grierson *et Long*, Fl. Bhut. 1(2): 243. 1984. *Annona hexapetala* L. f., Sp. Pl. suppl. 270. 1781; *Artabotrys odoratissimus* R. Br., Bot. Reg. 5, t. 423. 1819; Prain, Beng. Pl. 1: 202. 1903. *Annona uncinata* Lam., Encycl. 2(1): 127. 1786. *Artabotrys uncinata* (Lour.) Baill., Hist. Pl. 1: 232. 1867. *Uvaria uncinata* Lour., Fl. Cochinch. 1: 349. 1790. *Uvaria odoratissima* Roxb., Fl. Ind. 2: 666. 1832.

Local name: Kathchampa.

Climbing shrubs, up to 10 m. Branchlets glabrous. Petiole 4 – 8 mm; leaf blade oblong to broadly lanceolate, 6 – 20 x 3 – 6 cm, papery, adaxially glabrous, base cuneate to acute, apex acuminate to acute, lateral veins 8 – 16 pairs and elevated on both surfaces. Inflorescences 1 – 2 flowered. Flowers fragrant. Sepals green, ovate, sparsely puberulous. Petals greenish to yellowish, oblong lanceolate, outside basally densely pubescent. Stamens oblong; connective apex 3 angular. Carpels oblong, glabrous. Fruiting carpels ovoid, glabrous, apex conspicuously apiculate. Seeds pale Br., smooth.

Flowers & Fruits: May to December.

Specimen Cited: Gorumara, *Goutam & AP Das 0704*. dated 11. 09. 2007.

Local Distribution: Gorumara, Dhupjhora.

General Distribution: India: West Bengal, Assam, Bihar, Uttar Pradesh; Himalayas, Myanmar, Indo – China, S. China.

Note: Cultivated in the forests villages.

MILIUSA Lesch. ex A.DC., Mém. Soc. Phys. Genève 5: 213. 1832.

Miliusa roxburghiana Hook.f. & Thomson, Fl. Ind. 1: 150 1855. Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 243. 1984; Prain, Beng. Pl. 1: 201. 1903.

Local name: Kali lahara.

Dioecious shrubs, up to 4 m. Leaves oblong elliptic, 4-12x2-4 cm, acuminate, base rounded, pubescent on midrib beneath and other parts glabrous. Pedicels with elliptic bract. Sepals and outer petals narrowly ovate, spreading. Inner petals ovate. Fruiting carpels obovoid to subglobose.

Flowers & Fruits: March to May.

Specimen Cited: Dhupjhora village, Goutam & AP Das 0229, dated 09. 02. 2009.

Local Distribution: Murti, Dhupjhora, Gorumara.

General Distribution: India, Nepal, Bhutan, Myanmar.

POLYALTHIA Blume, Fl. Javae, Annonaceae 68. 1829.

Key to the species:

1a. Leaves pendulous, narrowly lanceolate, gradually acuminate, margin undulate ... *P. longifolia*

1b. Leaves not pendulous, Ovate-oblong, Shortly acuminate, margin not undulate *P. simiarum*

Polyalthia simiarum (Buch.-Ham. ex Hook.f. et Thom.) Benth. ex Hook.f. et Thom. in Hook.f., Fl. Brit. India 1: 63. 1872. Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 243. 1984; Prain, Beng. Pl. 1: 204. 1903.

Gutteria simiarum Buchanan-Hamilton ex J. D. Hooker & Thomson, Fl. Ind. 1: 142. 1855.

Local name: Lapche

Trees, up to 25m. Branches puberulent when young, glabrous and sparsely lenticellate with age. Petiole robust; lamina ovate-oblong to oblanceolate, 10–30 × 3.5–12 cm, membranous to papery, base rounded to broadly cuneate, entire, acuminate to shortly acuminate. Inflorescences axillary, 1- to several flowered; bracts ovate, tomentulose. Pedicel tomentulose. Sepals ovate-triangular. Petals yellowish green; outer petals longer than inner petals. Stamens oblong. Carpels oblong; ovule 1 per carpel, basal; stigmas capitate. Fruit ovoid to ovoid-ellipsoid.

Flowers & Fruits: April to September.

Specimen Cited: Murti, Goutam & AP Das 0447, dated 22. 07. 2009.

Local Distribution: At Beat Office of Dhupjhora.

General Distribution: Bhutan, India, Laos, Myanmar, C and N Thailand, Cambodia, Vietnam.

Polyalthia longifolia (Sonn.) Thwait., Enum. Pl. Zeyl. 398. 1864; Hook.f. et Thom. in Hook.f., Fl. Brit. Ind. 1: 62. 1872; Sharma *et al.*, Fl. Ind. 1: 274. 1993; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 244. 1984; Prain, Beng. Pl. 1: 204. 1903. *Uvaria longifolia* Sonn., Voyage aux Indes 2: 233. t.131. 1782. *Unona longifolia* (Sonn.) Dunal, Monogr. Fam. Anonac. 109.1817.

Local name: Debdaru

Trees, up to 30 m. Leaves pendulous, narrowly lanceolate, 10 – 18 x 2 – 3 cm, gradually acuminate, base rounded, margin undulate; petioles 5 – 8 mm. Flowers 5 – 10 in subumbellate clusters, pedicels 1.5 – 2.5 cm. Sepals and petal whorls all valvate or rarely very narrowly imbricate at tip. Fruit apocarpous, with carpels forming free, ellipsoid, often stipitate.

Flowers & Fruits: March to September.

Specimen Cited: Dhupjhora, Goutam & AP Das 0440, dated 22. 07. 2009.

Local Distribution: At Beat Office of Dhupjhora.

General Distribution: India: grown as ornamental in all warmer parts of the country; Native of Sri Lanka; Bhutan, Bangladesh, Myanmar, China.

Note: Cultivated widely.

UVARIA L., Sp. Pl. 1: 536. 1753.

Uvaria hamiltonii Hook. f. et Thom., Fl. Brit. Ind. 1: 96. 1855; H. Ohashi in Hara, Fl. E. Himal. 1: 97. 1966; Hajra et al., Fl. W. Beng. 1: 153. 1997; Prain, Beng. Pl. 1: 199. 1903; Grierson in Grierson et Long, Fl. Bhut. 1(2): 238. 1984. *Uvaria hamiltonii* var. *kurzii* King, Mat. Fl. Malay. Penins. 1(4): 263. 1892.

Scrambling shrubs, stems densely brownish pubescent. Leaves elliptic – obovate, 12 – 18 x 5 – 9 cm, shortly acuminate, baserounded, brownish pubescent specially beneath; petioles 5 mm. Flowers 6 cm across, pedicels 2 – 3.5 cm. Sepals broadly ovate, Br. tomentose. Petals red, obovate – spatulate, finely tomentose. Fruiting carpels obovoid – ellipsoid, reddish – Br., tomentose.

Flowers & Fruits: May to June.

Specimen Cited: Gorumara, Goutam & AP Das 0707. dated 11. 09. 2007; Murti, Goutam & AP Das 0398. dated 17. 12. 2006.

Local Distribution: Roadside forests.

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

Magnoliaceae Juss., Gen. Pl. 280. 1789; *nom. cons.*

MAGNOLIA L., Sp. Pl. 1: 535. 1753.

Key to the Species:

- 1a. Staminal connective exserted 2
- 1b. Staminal connective not exserted *M. hodgsonii*
- Fruits cylindrical or terete, flowers terminal on axillary branches *M. champaca*
- 1b. Fruits globose to ovoid, flowers terminal in position *M. grandiflora*

Magnolia champaca (L.) Baill. ex Pierre, Fl. Forest. Cochinch. t. 3. 1880. *Michelia champaca* L., Sp. Pl. 1: 536. 1753; Hook. f. et Thom. in Hook. f., Fl. Brit. Ind. 1: 42. 1872; Hara in Fl. East. Himal. 2: 36. 1971; Grierson in Grierson et Long, Fl. Bhut. 1(2): 236. 1984; Sharma et al., Fl. Ind. 1: 175. 1993; Prain, Beng. Pl. 1: 197. 1903. *Michelia rufinervis* Bl., Bijdr. Fl. Ned. Ind. 1: 8. 1825.

Local name: Swarna Champa

Trees up to 50 m. Twigs ascending and forming a narrow umbelliform crown. Petiole 2 – 4 cm; lamina elliptic or elliptic–ovate, 12 – 25 × 4 – 8 cm, abaxially slightly puberulous, base broadly cuneate to rounded, entire, long acuminate to subcaudate. Flowers fragrant, terminal on axillary brachyblasts. Tepals 15 – 20, yellow, oblanceolate. Staminal connective exerted and forming a long tip. Gynophore 2.5 – 3 mm; gynoecium with trichomes. Fruit 6 – 12 cm; mature carpels cylindrical or terete, tuberculate. Seeds 2 – 4 per carpel, rugose.

Flowers & Fruits: July to October.

Specimen Cited: Dhupjhora Beat Office, *Goutam & AP Das 0187*, dated 09. 02. 2009.

Local Distribution: All over the forests.

General Distribution: India: Tropical and subtropical forest, West Bengal, Assam, Sikkim, Nagaland, Arunachal Pradesh, Bihar, Orrisa, Delhi, Uttar Pradesh, West Himalayas; native to India, Indonesia, Malaysia, Myanmar, Nepal, Thailand, Vietnam.

Note: Cultivated widely.

Magnolia grandiflora L., Syst. Nat., ed. 10, 2: 1802. 1759. *Magnolia longifolia* Sweet, Hort. Brit. 11. 1826. *Magnolia angustifolia* Mill., Magnolias 55, 83. 1927.

Local name: Magnolia

Trees, up to 30 m. Bark pale Brown to gray. Petiole 2 – 4 cm, deeply furrowed; lamina elliptic to obovate–oblong, 11–21 × 4–8 cm, thickly leathery, adaxially deep green and glossy, secondary veins 8–10 on each side of midvein, base cuneate, entire, shortly mucronate. Flowers 12–18 cm in diam., fragrant, terminal in position. Tepals 9–12, white, obovate, thickly fleshy. Stamens 1.8–2 cm; filaments purple, flat; connective exerted and forming a mucro; anthers introrse. Gynoecium ellipsoid, densely long tomentose; carpels ovoid; styles reclinate. Fruit ovoid, densely Br. to pale grayish yellow tomentose; mature carpels abaxially rounded, dehiscing along dorsal sutures, apex long beaked. Seeds ovoid; testa red.

Flowers & Fruits: June to October.

Specimen Cited: Dhupjhora Beat Office, *Goutam & AP Das 0123*, dated 07. 02. 2009.

Local Distribution: Planted at Ofest offices and Tourist Lodges areas.

General Distribution: India: widely cultivated; Himalayas, Myanmar, China, native to North America.

Note: Cultivated widely.

Magnolia hodgsonii (Hook.f. & Thom.) Keng, Gard. Bull. Singapore 31: 129 1978.

Talauma hodgsonii J. D. Hooker et Thomson, Fl. Ind. 1: 74. 1855. Grierson in Grierson et Long, Fl. Bhut. 1(2): 236. 1984.

Trees, up to 15 m. Twigs glabrous. Stipular scar up to apex of petiole. Petiole 5–6 cm; lamina obovate–oblong, 20–46 × 10–12 cm, leathery, base cuneate, entire, obtuse to acuminate. Peduncle thick and strong, with 1 to 2 bract scars; spathaceous bracts purple. Tepals 9, thickly fleshy; outer 3 tepals ovate; inner tepals smallest. Fruit ovoid.

Flowers & Fruits: April to July.

Specimen Cited: Dhupjhora Beat Office, *Goutam & AP Das 0824*, dated 01. 02. 2008.

Local Distribution: Planted at the offices and Tourist Lodges areas.

General Distribution: Bhutan, NE India, N Myanmar, Nepal, Thailand.

Note: Cultivated widely.

Order 8: Piperales Dumort. (1829)

Aristolochiaceae Juss., Gen. Pl. 72. 1789; *nom. cons.*

ARISTOLOCHIA L., Sp. Pl. 2: 960. 1753.

Key to the species:

1a. Leaves leathery; racemes 5 – 8 flowered; capsules dehiscent basipetally *A. indica*

1b. Leaves papery; racemes 2 – 3 flowered; capsules dehiscent acropetally *A. tagala*

Aristolochia indica L., Sp. Pl. (1): 960. 1753; Prain, Beng. Pl. 2: 891. 1903. *Aristolochia lanceolata* Wight, Icon. Pl. Ind. Orient. 5: t. 1858 1852. *Aristolochia indica* var. *lanceolata* (Wight) Duch. in DC., Prodr. 15(1): 479. 1864.

Local name: Iswarmul

Shrubby climber. Stem terete, with elongate internodes. Petiole 3 cm; lamina ovate, 5 – 10 × 4 – 8 cm, acute, base deeply cordate, leathery, glabrescent, veins palmate, 3 – 5 pairs from base. 5 – 8-flowered short racemes axillary. Pedicels pendulous, 3 – 6 cm; bracts ovate. Perianth tube geniculate curved, abaxially villous to glabrous; limb subcylindric, 3-lobed; lobes slightly unequal, subrounded. Anthers oblong. Gynostemium 3-lobed. Capsules oval, dehiscent basipetally.

Flowers & Fruits: April to July.

Specimen Cited: Murti, Goutam & AP Das 0086, dated 06. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara.

General Distribution: India; Nepal, Bhutan.

Note: Medicinally very important plants and decreasing its presence throughout.

Aristolochia tagala Cham. in Linnaea 7: 207. 1832; Hara in Fl. E. Himal. 3: 29. 1971; Grierson *et al.* Long, Fl. Bhut. 1(2): 354. 1984; Prain, Beng. Pl. 2: 891. 1903. *Aristolochia roxburghiana* Klotz., Monatsber. Königl. Preuss. Akad. Wiss. Berlin 596. 1859. *Aristolochia acuminata* Lam., Encycl. 1: 254. 1783.

Shrubby twinners. Stems terete, slightly furrowed, glabrous. Petiole glabrous; lamina ovate-cordate to oblong-ovate, 8 – 12 × 4 – 10 cm, acute to acuminate, base deeply cordate, lateral lobes subrounded, papery, both surfaces glabrous, veins palmate. Racemes in axils of leafy shoots, 2 to 3 flowered. Pedicels sparsely hairy, glabrescent; bractlets ovate-lanceolate. Perianth pale yellowish to greenish; tube slightly curved; utricle globose; limb ligulate, oblong, apex obtuse. Anthers ovoid. Capsules obovoid-globose to ovoid-cylindric, dehiscent acropetally. Seeds triangular.

Flowers & Fruits: May to August.

Specimen Cited: Murti, Goutam & AP Das 0298, dated 10. 02. 2009.

Local Distribution: Forest areas.

General Distribution: India: West Bengal, Sikkim, Assam, Arunachal Pradesh; Nepal, Bhutan, Bangladesh, Cambodia, Indonesia, Japan, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

Piperaceae C. Agardh, Aphor. Bot. 201. 1824; *nom. cons.*

Key to the Genera:

- 1a. Prophylls present, leaving conspicuous scars around stem nodes *Piper*
 1b. Prophylls absent, without or scars at nodes *Peperomia*

PIPER L., Sp. Pl. 1: 28. 1753.

Key to the Species:

- 1a. Bracts oblong or obovate-oblong, adnate to rachis with only sides and apex free ... *P. nigrum*
 1b. Bracts orbicular, peltate with free margin all round 2
 2a. Fruits apically tomentose, completely fused to each other to form a nearly smooth, fleshy
 *P. betle*
 2b. Fruit glabrous, distinct, sometimes very soft when fully ripe and then difficult to separate when
 pressed and dried 3
 3a. Leaves with veins all basal or nearly basal and all arising less than 3 mm from base of blade.
 Leaves very finely powdery pubescent abaxially *P. longum*
 3b. Leaves with 2 or more lateral veins arising more than 1 cm from base of blade. Leaf blade and
 petiole glabrous or very finely powdery pubescent along veins 4
 4a. Ovaries and fruit partly fused to rachis *P. hamiltonii*
 4b. Ovaries and fruit free from rachis *P. sylvaticum*

Piper betle L., Sp. Pl. 1: 28. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 85. 1886; Long in Grierson *et* Long, Fl. Bhut. 1(2): 349. 1984, *sensu Piper betleoides* C.DC.; Prain, Beng. Pl. 2: 893. 1903. *Chavica betle* (L.) Miq., Syst. Piperac. 228. 1843. *Chavica densa* Miq., Syst. Piperac. 252. 1843.

Local name: Jangli paan

Dioecious climbers. Stems rooted at nodes, slightly woody. Petiole very finely powdery pubescent; leaf-blade ovate to ovate-oblong, acuminate, cordate to rounded, symmetric, veins 7, usually opposite, others basal; reticulate veins conspicuous. Bracts orbicular, peltate with free margin all round. Spikes leaf-opposed. Fruits apically tomentose, completely fused to each other to form a nearly smooth. Drupes fused to form terete, fleshy, reddish infructescence.

Flowers & Fruits: May to July.

Specimen Cited: Murti, Goutam & AP Das 0175, dated 08. 02. 2009.

Local Distribution: All over the forests.

General Distribution: India: Tropical and subtropical forests; S.E. to S.W. China, Indonesia, Malaysia, Philippines, Sri Lanka, Vietnam, Africa.

Note: Leaves are eaten as like as betle piper.

Piper hamiltonii C. DC., Prodr. 16(1): 360. 1869; Hook. *f.* in Hook. *f.*, Fl. Brit. Ind. 5: 88. 1885; Long in Grierson *et* Long, Fl. Bhut. 1(2): 351. 1984; Prain, Beng. Pl. 2: 893. 1903.

Climber. Stem deeply striate, when dry. petiole to 2.4 cm; Lamina elliptic or elliptic obovate, 6 – 13 x 3.5 – 7 cm, obtuse, base rounded, 5 – veined, in lower most, 4.5 mm, without lateral veins, glabrous or very finely powdery pubescent along veins, coriaceous, pale in dry. Bracts orbicular, peltate with

free margin all round. Fruiting spike interrupted, 10 – 16 cm, on peduncle 1- 2.5 cm. Ovaries and fruit partly fused to rachis. Drupes ovoid-subglobose, to 2.8 mm.

Flowers & Fruits: February to May.

Specimen Cited: Dhupjhora, *Goutam & AP Das 0120*, dated 07. 02. 2009.

Local Distribution: All over the forests.

General Distribution: India: Tropical and subtropical forests; Nepal, Bhutan.

Piper longum L., Sp. Pl. 1: 29. 1753; Hook. *f.* in Hook. *f.*, Fl. Brit. Ind. 5: 83. 1886; Hara, Fl. E. Himal. 1: 43. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 183. 1982; Long in Grierson *et* Long, Fl. Bhut. 1(2): 348. 1984; Prain, Beng. Pl. 2: 893. 1903.

Local name: Pipul

Climbing shrub. Lamina symmetric, subacute or bluntly acuminate, base deeply cordate-auriculate, membranous, veins all basal or nearly basal and all arising less than 3 mm from base, very finely powdery pubescent abaxially. Bracts orbicular, peltate with free margin all round. Male spikes slender and female spikes cylindric. Fruits glabrous, distinct, sometimes very soft when fully ripe and then difficult to separate when pressed and dried.

Flowers & Fruits: September to January.

Specimen Cited: Murti, *Goutam & AP Das 0206*, dated 09. 02. 2009.

Local Distribution: In all sectors, abundant.

General Distribution: India: tropical and subtropical forest, West Bengal, Assam, Sikkim, Arunachal Pradesh, Nagaland; Bangladesh, Bhutan, Nepal, Malaysia, Sri Lanka.

Note: Fruits are medicinally important.

Piper nigrum L., Sp. Pl. 28. 1753; Hook. *f.* in Hook. *f.*, Fl. Brit. Ind. 5: 90. 1887; Prain, Beng. Pl. 2: 893. 1903.

Local name: Golmorich

Slender climbers, rooting at nodes. Lamina broadly ovate oblong, oblique, base rounded, coriaceous. Bracts oblong or obovate-oblong, adnate to rachis with only sides and apex free. Spikes robust, Flowers dioecious. Fruits globose, sessile, black when ripe.

Flowers & Fruits: January to April.

Specimen Cited: Dhupjhora; *Goutam & AP Das 0262*, dated 10. 02. 2009.

Local Distribution: Commonly planted in Forest villages.

General Distribution: India: widely cultivated in warmer regions; Nepal, Bhutan, Bangladesh, China.

Note: Cultivated widely.

Piper sylvaticum Roxb., Fl. Ind. 1: 156. 1832; Hook. *f.*, Fl. Brit. Ind. 5: 84. 1886; Long in Grierson *et* Long, Fl. Bhut. 1(2): 348. 1984; Prain, Beng. Pl. 2: 893. 1903.

Stoloniferous shrubby climbers. Lamina usually ovate, acuminate, base cordate, 2 or more lateral veins arising more than 1 cm above from base, glabrous or very finely powdery pubescent along veins. Spikes leaf-opposed. Bracts orbicular, peltate with free margin all round. Male spikes slender. Female spikes erect, very finely powdery pubescent. Ovary globose, distinct. Ovaries and fruits free

from rachis. Fruits glabrous, distinct, sometimes very soft when fully ripe and then difficult to separate when pressed and dried. Drupes globose.

Flowers & Fruits: August to September.

Specimen Cited: Murti, Goutam & AP Das 0314, dated 10. 02. 2009.

Local Distribution: All over the Forests.

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

PEPEROMIA Ruiz *et* Pav., Fl. Peruv. Prodr. 8: 8. 1794.

Peperomia pellucida (L.) Kunth, Nov. Gen. [H.B.K.] 1: 64. 1816 ; Hara, Fl. E. Himal. 1: 42. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 345. 1984; Prain, Beng. Pl. 2: 894. 1903. *Piper pellucidum* L., Sp. Pl. 1. 30. 1753; *Micropiper pellucidum* (L.) Miq., Comm. Phytogr. 54. 1840. *Peperomia ephemera* Ekman, Ark. Bot. 22 A(9): 20. 1929. *Peper exigua* (Bl.) Miq., Syst. Pip. 77. 1843; Hook. f., Fl. Brit. Ind. 5: 97. 1886.

Local name: Luchipata

Annual herbs, fleshy, up to 30 cm, glabrous. Stems ascending, much branched. Petiole 1–2 cm; lamina broadly ovate to ovate-triangular, acute, base cordate, length equal to width, membranous, both surfaces glabrous, translucent. Spikes terminal or leaf-opposed, slender, glabrous, flowers lax, slightly embedded in rachis; bracts shield-shaped, suborbicular, stalk short. Anthers subglobose. Ovary ellipsoid. Nuts globose.

Flowers & Fruits: April to July.

Specimen Cited: Dhupjhora Beat Office, Goutam & AP Das 0168, dated 08. 02. 2009.

Local Distribution: Riverine forests and Beat office areas.

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

Monocots - Monocotyledon (Einkeimblättrige)

Non Commelinids - Nicht-Commelinide

Order 9: Acorales Reveal (1996)

Acoraceae Agardh, Aphor. Bot. 133. 1822 ('Acoroideae').

ACORUS L., Sp. Pl. 1: 324. 1753

Acorus calamus L., Sp. Pl. 324. 1753; Hook. f., Fl. Brit. Ind. 6: 555. 1893; Noltie, Fl. Bhut. 3(1): 158. 1994; Cook, Aqua. Wetl. Pl. Ind. 51, 1996.

Acorus angustatus Rafinesque, Autik. Bot. 196. 1840.

Local Name:Boch/ Bojo

Erect with creeping rhizomes, perennial, marshland herbs. Leaves unifacial, ensiform, erect with a prominent midrib, with acute apex. Spadix appears laterally on foliage leaf. Flowers bisexual, trimerous; perianth segments 6. Stamens 6 with linear filament. Ovary hexagonal-cylindrical with 2 – 3 locules.

Flowers & Fruits: May to August.

Specimen Cited: Dhupjhora Beat Office, Goutam & AP Das 0868, dated 08. 02. 2010.

Local Distribution: Dhupjhora.

General Distribution: India, Asia, Europe, North America.

Note: Sometimes grown as a medicinal plant.

Order: Alismatales Dumort. (1829)

Alismataceae Vent., Tabl. Regn. Vég. 2: 157. 1799; *nom. cons.*

Key to the Genera

- 1a. Plants with specialized tuber *Butomopsis*
- 1b. Plants with simple tuber *Sagittaria*

BUTOMOPSIS Kunth, Enum. Pl. 3: 164. 1841.

Butomopsis latifolia (Don) Kunth, Enum. Pl. 3: 165. 1841; Noltie, Fl. Bhutan 3(1): 163. 1994; Cook, Aqua. Wetl. Pl. Ind. 247. 1996. *Butomus latifolius* Don, Prodr. Fl. Nepal. 22. 1825. *Butomus lanceolatus* Roxb., Fl. Ind. 2: 315. 1832. *Butomopsis lanceolata* (Roxb.) Kunth, Enum. Pl. 3: 165. 1841; Prain, Beng. Pl. 2: 1120. 1903.

Annual herbs with specialized tuber. Leaves radical, erect; petiole up to 18 cm; lamina 5 – 16 cm, 3 – 7 veined, acute, base attenuate. Scapes up to 30 cm; umbels 3 – 14 flowered. Sepals broadly elliptic, margin membranous, apex rounded to retuse.

Flowers & Fruits: May to September.

Specimen Cited: Gorati Beel, Goutam & AP Das 0007, dated 05. 02. 2009.

Local Distribution: Found only in Gorati Beel.

General Distribution: India, Nepal, throughout S.E. Asia, N. Africa, N. Australia.

SAGITTARIA L., Sp. Pl. 2: 993. 1753.

Key to the species:

1a. Plants with floating leaf; lamina cordate, obtuse *S. guayanensis*

1b. Plants erect; stoloniferous; lamina hastate, acute *S. sagittifolia*

Sagittaria guayanensis H. B.K. Gen. Sp.1: 250. 1815; Hook. *f.*, Fl. Brit. Ind. 6: 561.1893; Prain, Beng. Pl. 2: 1120. 1903; Cook, Aqua. Wetl. Pl. Ind. 39, 1996; Rao *et* Verma in Bull. Bot. Surv. Ind. 18 (1-4): 39. 1976. *Sagittaria guayanensis* ssp. *lappula* (Don) Bogin, Mem. N. Y. Bot. Gard. 9: 192. t. 5. 1955. *Sagittaria guyanensis* Kunth, Syn. Pl. 1: 261. 1822. *Lophiocarpus guayanensis* (Kunth) Micheli, Monogr. Phan. 3: 62. 1881. *Echinodorus guayanensis* (Kunth) Griseb., Fl. Brit. W. I. 505. 1862.

Fleshy, aquatic or marshy immersed herbs. Leaves radical; lamina floating, broadly ovate, obtuse or rounded, cordate at base; petiole long. Flowers white, in close whirls on stout pedicels; upper and lower few bisexual; petals ovate. Achenes several, surrounded by a toothed wing.

Flowers & Fruits: August to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0009, dated 05. 02. 2009.

Local Distribution: Margins of water bodies through out the Beel.

General Distribution: Throughout India; China, Malaysia, Australia.

Sagittaria sagittifolia L., Sp. Pl. 2: 993. 1753; Hook. *f.*, Fl. Brit. Ind. 6: 561. 1893; Cook, Aqua. Wetl. Pl. Ind. 39, 1996; Rao *et* Verma in Bull. Bot. Surv. Ind. 18(1-4): 39. 1976; Noltie, Fl. Bhut. 3(1): 164. 1994; Prain, Beng. Pl. 2: 1120. 1903; Bora *et* Kumar, Fl. Div. Ass. 314. 2003. *Sagittaria sagittaria* Thunb., Fl. Jap. 242. 1784. *Alisma sagittaria* Stokes, Bot. Mat. Med. 2: 335. 1812. *Sagittaria aquatica* Lam., Fl. Franç. 2:197. 1779. *Sagittaria heterophylla* Schreber, Fl. Erlang. 2:119. 1811.

Local name: Chhoto kut.

Erect, fleshy aquatic or marshland stoloniferous herbs. Leaves radical; lamina hastate or sagittate, acute; petioles trigonous, spongy. 1-3 flowered whorls of panicles; flowers whitish purple. Achenes in a globose head, compressed, winged.

Flowers & Fruits: February to August.

Specimen Cited: Medlajhora, Goutam & AP Das 0033, dated 05. 02. 2009.

Local Distribution: All over the lowlands.

General Distribution: Plains of India; N. Asia, N. America and Europe.

Aponogetonaceae Planch., Bot. Mag. 82: ad. t. 4894. 1856; *nom. cons.*

APONOGETON L. *f.*, Suppl. Pl. 32, 214. 1782, *nom. cons.*

Key to the species:

1a. Leaves floating 2

1b. Leaves submerged *A. crispum*

2a. Flowers pink or purple *A. natans*

2b. Flowers white *A. lakhonensis*

Aponogeton crispum Thunb., Nov. Gen. 4: 73. 1784; Hook. f., Fl. Brit. Ind. 6: 564. 1893; Prain, Beng. Pl. 2: 1122. 1903; Cook, Aqua. Wetl. Pl. Ind. 48, 1996; Datta *et* Majumdar, Bull. Bot. Soc. Beng. 20 (2): 22. 1966. *Aponogeton echinatus* Roxb., Fl. Ind. 2: 210. 1832. *Spathium crispum* (Thunb.) Voigt, Hort. Suburb. Calcutt. 694. 1845. *Spathium echinatum* (Roxb.) Voigt, Hort. Suburb. Calcutt. 694. 1845.

Perennial, submerged, stoloniferous aquatic herbs. Leaves submerged, translucent. Flowers white, bisexual on long scapes; perianth segments longer than mature carpel. Follicles 1-2 seeded.

Flowers & Fruits: September to February.

Specimen Cited: Gorati Beel, Goutam & AP Das 0012, dated 05. 02. 2009.

Local Distribution: In most of the Beels.

General Distribution: India: Andhra Pradesh, Kerala, Karnataka, Maharastra, Punjab, West Bengal; Sri Lanka.

Aponogeton natans (L.) Engl. *et* Krause, Engler Pfreich. 24: 11. 1906; Majumdar, Bull. Bot. Soc. Beng. 19 (1): 15. 1955; Cook, Aqua. Wetl. Pl. Ind. 48, 1996. *Saururus natans* L., Mantissa 2: 227. 1767. *Aponogeton monostachyus* L. f., Suppl. 214. 1781 (ut *monostachon*); Hook. f., Fl. Brit. Ind. 6: 564. 1893; Prain, Beng. Pl. 2: 1122. 1903. *Spathium monostachyum* (L. f.) Edgew, J. Asiat. Soc. Bengal 11: 148. 1842. *Aponogeton lucens* Hook. f., Fl. Brit. India 6: 564. 1893.

Aquatic, perennial, stoloniferous herbs; scapigerous. Leaves floating with scapes sticking out. Flowers differently coloured, pink or purple, bisexual; perianth segments longer than mature carpels. Follicles smooth, 4 – 8 seeded.

Flowers & Fruits: October to March.

Specimen Cited: Gorati Beel, Goutam & AP Das 0015, dated 05. 02. 2009.

Local Distribution: Throughout Beel.

General Distribution: India: Andhra Pradesh, Jharkhand, Hariyana, Kerala, Karnataka, Madhya Pradesh, Orissa, Punjab, Rajsthan, Tripura, West Bengal; Sri Lanka, Tropical Asia and Africa.

Aponogeton lakhonensis Camus, Notul. Syst. 1: 273. 1910; Cook, Aqu. Wet. Pl. Ind. 48. 1996. *Aponogeton luteus* Camus, Notul. Syst. (Paris) 2: 204. 1912. *Aponogeton pygmaeus* Krause, Bot. Jahrb. Syst. 44(101): 8. 1910. *Aponogeton taiwanensis* Masam., Kudoa 2(1): 1. 1941.

Rhizome elongated, up to 2 cm. Petiole 8 – 13 cm in submerged leaves and 30 – 55 cm in floating leaves; lamina narrowly ovate to linear, entire, rounded, base rounded, herbaceous, with primary veins 7–9 at base. Inflorescence 4–5.5 cm, pedunculate. Flowers white, bisexual. Perianth segments 2, slightly obovate. Stamens 6. Carpels slightly united near base. Fruits ovoid.

Flowers & Fruits: September to February.

Specimen Cited: Gorati Beel, Goutam & AP Das 0006, dated 05. 02. 2009.

Local Distribution: Throughout Beel.

General Distribution: India: West Bengal, Assam; Cambodia, Indonesia, Laos, Malaysia, Thailand, Vietnam.

Araceae Juss., Gen. Pl. 23. 1789. *nom. cons.*

Key to the Genera:

1a. Spadix with many flowers 2

- 1b. Spadix with 1 – 2 male and 1 – 2 female flowers 11
- 2a. Plants aquatic or semi-aquatic 3
- 2b. Plants terrestrial 6
- 3a. Plants free-floating *Pistia*
- 3b. Plants rooted at the bottom 4
- 4a. Plants much spiny; flowers bisexual *Lasia*
- 4b. Plants without spines; flowers unisexual or sterile 5
- 5a. Lamina peltate *Colocasia*
- 5b. Lamina not peltate, ovate to linear-lanceolate *Cryptocoryne*
- 6a. Plants erect 7
- 6b. Plants climbing 10
- 7a. Rhizome underground, short 8
- 7b. Rhizome arial, large *Alocasia*
- 8a. Plants stemless *Xanthosoma*
- 8b. Plants with globose tuber 9
- 9a. Leaves usually deeply 3-lobed *Typhonium*
- 9b. Leaves much divided, twice or more *Amorphophallus*
- 10a. Lamina oblong-elliptic or ovate-elliptic *Scindapsus*
- 10b. Lamina lanceolate to linear-lanceolate with an articulation near base ... *Pothos*
- 11a. Fronds rootless; inflorescences not enclosed in a membranous sheath ... *Wolffia*
- 11b. Fronds bearing roots; inflorescences enclosed in a membranous sheath ... 12
- 12a. Roots solitary on each frond segment *Lemna*
- 12b. Roots several from each frond segment *Spirodella*

LEMNA Linnaeus, Sp. Pl. 2: 970. 1753

Key to the species:

- 1a. Frond 1.5 – 2 mm long, ovate-oblong, seeds ribbed *L. perpusilla*
- 1b. Frond 1 – 8 mm long, flattened, seeds not ribbed *L. minor*

Lemna perpusilla Torrey, Fl. N.Y. 2: 245. 1843; Cook, Aqua. Wetl. Pl. Ind. 65, 1996. *Lemna paucicostata* Hegelm., Lemnac 139. t. 8. 141. 1868; Hook. f., Fl. Brit. Ind. 6: 556. 1893.

Small, free floating herbs. Frond, 1.5 –2 mm. long, ovate or ovate-oblong, asymmetric, nearly flat. Roots solitary with winged root-sheath and acute root cap is called root pocket. Female flowers with solitary orthotropous ovule. Seed ovoid, prominently ribbed.

Flowers & Fruits: June to October.

Specimen Cited: Gorati Beel, Goutam & AP Das 0728, dated 05. 02. 2010.

Local Distribution: Gorati Beel.

General Distribution: Throughout the India; Cosmopolitan in tropics and subtropics.

Lemna minor L., Sp. Pl. 2: 970. 1753; Noltie, Fl. Bhut. 3(1): 160. 1994; Cook, Aqua. Wetl. Pl. Ind. 228, 1996. *Lemna paucicostata* Hegelm., Lemnac. 139. t. 8. 141. 1868; Hook. f., Fl. Brit. Ind. 6: 556. 1893; Prain, Beng. Pl. 2: 1117. 1903.

Fronds free floating, flattened, 1 – 8 mm long, without green stalk at base, margin entire, base rounded; veins 3(-5), nearly reaching apex, sheath not winged, apex mostly rounded. Ovary with 1 ovule; utricular scale with narrow opening at apex. Fruit winged laterally toward apex. Seeds not ribbed.

Flowers & Fruits: May to October.

Specimen Cited: Gorati Beel, Goutam & AP Das 0028, dated 05. 02. 2009.

Local Distribution: Gorati Beel.

General Distribution: India, Nepal, China, Afghanistan, Kazakhstan, N Pakistan, W Russia, Turkmenistan; Africa, SW Asia, Europe, North America; introduced in Australia, Japan, Pacific islands.

SPIRODELA Schleid. in Linnaea 13: 391. 1839

Spirodela polyrrhiza (L.) Schl. in Linnaea 13: 392. 1829; Cook, Aqua. Wetl. Pl. Ind. 229, 1996. *Lemna polyrrhiza* L., Sp. Pl. 2: 970. 1753; Hook. f., Fl. Brit. Ind. 6: 557. 1893; Prain, Beng. Pl. 2: 1117. 1903. *Lemna orbiculata* Roxb., Fl. Ind. 3: 565. 1832. *Lemna maxima* Blatt. et Hallb., J. India Bot. 2: 49. 1921. *Spirodela maxima* (Blatt. et Hallb.) McCann, J. Bombay Nat. Hist. Soc. 43: 158. 1942. *Lemna major* Griff., Not. Pl. Asiat. 3: 216. 1851.

Free floating tufted herbs with ovate fronds; each fronds with 5 – 10 minute roots. Upper leaf orbicular to obovate, 7 – 13 nerved, dark green above, purplish beneath. Spathe open only at the top. Seeds smooth or faintly reticulate.

Flowers & Fruits: January to April.

Specimen Cited: Gorati Beel, Goutam & AP Das 0037, dated 05. 02. 2009.

Local Distribution: In all the Beels.

General Distribution: India; tropical and temperate parts of the world.

WOLFFIA Horkel ex Schleid., Beitr. Bot. 233. 1844.

Wolffia arrhiza (L.) Horkel ex Wimm., Fl. Schiiles. 3: 140. 1857; Hook. f., Fl. Brit. Ind. 6: 557. 1893. Prain, Beng. Pl. 2: 1117. 1903; Cook, Aqua. Wetl. Pl. Ind. 230, 1996. *Lemna arrhiza* L., Mantiss. 2: 294. 1771. *Wolffia michelii* Schleid. in Beitr. Bot. 233. 1844 (*nom. Illeg.*). *Wolffia delilii* Miq., Ned. Kruidk. Arch. 3: 429. 1855.

Minute, 1 – 5 mm, free floating annual herbs. Fronds sub-globose, minute, ellipsoid, upper surface convex, rootless. Inflorescence 2-flowered, with one male and one female spathe; anther 1-celled; ovary 1 ovuled.

Flowers & Fruits: July to October.

Specimen Cited: Gorati Beel, Goutam & AP Das 0027, dated 05. 02. 2009.

Local Distribution: In most of the Beels.

General Distribution: India, Bhutan, Bangladesh, Nepal, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam; introduced to America.

RHAPHIDOPHORA Hassk., Flora 25 (Beibl. 2): 11. 1842.

Key to the species:

- 1a. Leaves scattered, with 1 foliage leaf of a branch *R. glauca*
 1b. Leaves clustered at shoot tips *R. grandis*

Rhaphidophora grandis Schott in Oester. Bot. Wochenbl. 349.1858; Noltie, Fl. Bhutan 3(1): 128. 1994; Hajra *et* Verma. Fl. Sikkim 1:194. 1996.

Lianas, up to 15 m. Stem cylindrical, internodes short. Leaves clustered at shoot tips; petiole channeled, margins sharp; lamina obliquely oblong, thinly leathery, base rounded, apex with an acumen. Inflorescences solitary at tips of free lateral shoots; peduncle pendent; cataphylls caducous, ovate or ovate-lanceolate. Spathe oblong-ovate. Spadix sessile, yellow, obovoid. Filaments 1 - 2 mm; anthers oblong; staminodes 4. Ovary hexagonal-cylindrical; stigma subsessile.

Flowers & Fruits: July to October.

Specimen Cited: Murti, Goutam & AP Das 1017, dated 15. 03. 2010.

Local Distribution: Murti, Gorumara.

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

Rhaphidophora glauca (Wall.) Schott in Blonplandia 5: 45.1875; Hook. *f.*, Fl. Brit. India 6: 547. 1894; Noltie, Fl. Bhutan 3(1): 126. 1994. *Pothos glaucus* Wall., Pl. Asiatic. Rar. 2: 45t.156. 1832.

Lianas, up to 10 m. Stems terete in cross section; climbing stems and rooting at the nodes. Leaves scattered, with 1 foliage leaf of a branch; petiole shallowly channeled; petiolar sheath reaching base of lamina; lamina base truncate, oblique to shallowly cordate, apex acuminate. Inflorescences erect, solitary, arising from tips of free lateral branches. Spadix sessile, dull cream-colored, cylindrical. Stamens 4 per flower; filaments flat; pollen simply expelled from between pistils. Pistils truncate, smooth; stigma flat.

Flowers & Fruits: August to October.

Specimen Cited: Gorumara, Goutam & AP Das 1127, dated 25. 06. 2012.

Local Distribution: Gorumara, Murti.

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

COLOCASIA Schott in Schott *et* Endl., Melet. Bot. 18. 1832, *nom. cons.*, not Link (1795).

Key to the Species:

- 1a. Leaf sheaths yellowish green *C. esculenta*
 1b. Leaf sheaths reddish Br. *C. fallax*

Colocasia esculenta (L.) Schott in Schott *et* Endl., Melet. Bot. 18. 1832; Hara *et al*, En. Flower. Pl. Nepal 1: 91. 1978; Noltie, Fl. Bhut. 3(1): 136. 1994; Cook, Aqua. Wetl. Pl. Ind. 51, 1996. Hajra *et al.*, Fl. Sikkim 1: 191. 1996. *Arum esculentum* L., Sp. Pl. 2: 965. 1753. *Colocasia antiquorum* Schott in Schott *et* Endl., Melet. Bot. 18. 1832; Hook. *f.*, Fl. Brit. Ind. 6: 523. 1893. *Arum chinense* L., Amoen. Acad. 4: 234. 1754. *Arum colocasia* L., Sp. Pl. 985. 1753. *Caladium nymphaeifolium* Vent., Descr. Pl. Nov. t. 30. 1801. *Colocasia esculenta* var. *antiquorum* (Schott) Hubb. *et* Rehder, Bot. Mus. Leafl. 1(1): 5. 1932. *Colocasia nymphaefolia* Kunth, Enum. 3: 37. 1850; Hook. *f.*, Fl. Brit. Ind. 6: 523. 1893; Prain, Beng Pl. 2: 1112. 1903. *Arum nymphaeifolia* Roxb., Fl. Ind. 3: 495. 1832.

Local name: Kachu, Sar Kachu, Shola Kachu

Erect, marshland herbs; rhizomes variable, leaves from the rhizome, dark-green above and glabrous, yellowish, convolute. Spadix long. Female flowers at the base, fertile ovaries intermixed with sterile ones; neuter above the female; male portion above the neuter synandrium lobed.

Flowers & Fruits: May to September.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0036*, dated 05. 02. 2009; Forest, *Goutam & AP Das 0091*, dated 07. 02. 2009.

Local Distribution: In most of the low marshland areas.

General Distribution: India: West Bengal, Sikkim, Mizoram, Manipur, Maharastra, Rajsthan, Delhi, Kerala, Karnatak, Goa; Himalaya, Tropical Asia, Bangladesh, Sri Lanka and South America.

Note: There are many cultivars which are cultivated in forest villages.

Colocasia fallax Schott in *Bonplandia* 7: 28. 1859 ; Noltie, *Fl. Bhutan* 3(1): 137. 1994; Hajra *et al.*, *Fl. Sikkim* 1: 192. 1996; *Colocasia kerrii* Gagnep., *Notul. Syst. (Paris)* 9: 130. 1941.

Local name: Ban Kachu

Rhizome erect, globose, 2 cm in diameter; stolons creeping. Petioles 15 – 25 cm, sheathing for almost half of length; sheaths reddish Br.; lamina narrowly oblong-ovate, 8 – 17 x 4 – 9 cm, apiculate, base shallowly cordate, slightly glaucous abaxially, intramarginal veins several. Peduncle slender. Spathe tube green; limb orange-yellow, narrowly lanceolate, finely acuminate. Female part of spadix 1 – 2 cm, with 4 – 5 rows of whitish sterile ovaries at base; male part scaly-rough, with several rows of sterile male flowers at base, apex acute. Ovaries green, speckled with white, subglobose; stigmas discoid at base.

Flowers & Fruits: August to September.

Specimen Cited: Dhupjhora, *Goutam & AP Das 0025*, dated 05. 02. 2009.

Local Distribution: Forest village of Dhupjhora.

General Distribution: India: West Bengal, Sikkim, Manipur, Maharastra; Himalayas, Tropical Asia, Bangladesh, Sri Lanka.

Note: Rhizome edible.

CRYPTOCORYNE Fisch. *ex* Wydler, *Linnaea* 5: 428. 1830.

Key to the species:

- 1a. Limb of spathe ciliate along the margin *C. ciliata*
- 1b. Limb of spathe smooth *C. retrospiralis*

Cryptocoryne ciliata (Roxb.) Fisch. *ex* Wydler in *Linnaea* 5: 428. 1830; Hook. *f.*, *Fl. Brit. Ind.* 6: 492. 1893; Blatt. in *J. Bomb. Nat. Hist. Soc.* 17: 27. 1911; Prain, *Beng. Pl.* 2: 1106. 1903; Cook, *Aqua. Wetl. Pl. Ind.* 54, 1996. *Ambrosinia ciliata* Roxb., *Corm. Pl.* 7. 90, t. 294. 1819. *Ambrosina ciliaris* Spreng., *Syst. Veg.* 3: 771. 1826. *Cryptocoryne elata* Griff., *Not. Pl. Asiat.* 3: 134. 1851.

Erect, unarmed aquatic herbs with stolons. Leaves linear-oblong or linear-lanceolate; limb of spathe ciliate along the margin. Spathe axillary, cuspidate with purple fimbriate margins. Carpels 5 – 7, fruit syncarpous, 5 – 7 loculed with 6 – 8 seeds in each, peduncle stout.

Flowers & Fruits: May to September.

Specimen Cited: Medlajhora, Goutam & AP Das 0043, dated 05. 02. 2009; Goutam & AP Das 0059, dated 07. 02. 2009.

Local Distribution: Lowlands along the forest margin

General Distribution: India and Malaysian Islands.

Cryptocoryne retrospiralis Fisch. ex Wydler in Linnaea 5: 428. 1830; Kunth, Enum. 3: 12. 1841; Engler in DC, Monog, Phan. 2: 625.1879; Hook. f., Fl. Brit. Ind. 6: 493. 1893; Noltie, Fl. Bhutan 3(1): 155. 1994; Prain, Beng. Pl. 2: 1106. 1903; Cook, Aqua. Wetl. Pl. Ind. 57, 1996.

Aquatic, submerged herbs with fibrous root. Leaves numerous, radical, narrowly linear, lanceolate, acute. Spathes as long as the leaves, dull green, entire. Carpels 5 – 6, ovules 3 or more; stigma orbicular.

Flowers & Fruits: May to September.

Specimen Cited: Gorati Beel, Goutam & AP Das 0045, dated 05. 02. 2009.

Local Distribution: Found only in Gorati Beel.

General Distribution: India, S.E. Asia.

LASIA Lour., Fl. Cochinch. 1: 64, 81. 1790.

Lasia spinosa (L.) Thwait., Enum. 336. 1864; Hajra *et al.*, Fl. Sikkim 1: 192. 1996; Noltie, Fl. Bhut. 3(1): 129. 1994; Cook, Aqua. Wetl. Pl. Ind. 64, 1996. *Dracontium spinosum* L., Sp. Pl. 967. 1753. *Lasia heterophylla* (Roxb.) Schott, Melet. Bot. 1: 21. 1832; Hook. f., Fl. Brit. Ind. 6: 550. 1893; Prain, Beng. Pl. 2: 1116. 1903. *Pothos heterophyllus* Roxb., Fl. Ind. 1: 457. 1820. *Pothos lasia* Roxb., Fl. Ind. 1: 458. 1820.

Local name: Knata Kachu.

Perennial, stout, prickly, aquatic herbs; rhizomes branched. Leaves coriaceous, glabrous, hastate or sagittate, pinnatifid; lobes narrow or broadly acuminate. Spathe greenish purple, axis spongy. Perianth pink, lobes hooked over the stamens. Stigma orange.

Flowers & Fruits: November to February.

Specimen Cited: Gorati Beel, Goutam & AP Das 0038, dated 05. 02. 2009.

Local Distribution: Lowland areas along the forests margin

General Distribution: India (Tropical Himalaya), Bangladesh, China, Malaysia, Myanmar and Sri Lanka.

TYPHONIUM Schott in Wiener Zeitschr. Kunst 1829: 732. 1829.

Key to the species:

- 1a. Lamina variously shaped, triangular-hastate to triangular-sagittate *T. roxburghii*
- 1b. Lamina cordate-ovate *T. trilobatum*

Typhonium roxburghii Schott, Aroideae, 1: 12. 1855; Hook. f., Fl. Brit. Ind. 6: 510. 1893; Beng. Pl. 2: 1108. 1903. *Arum diversifolium* Bl., Catalogus 102. 1823; Fl. E. Himal. 2. 156. 1966. *Arum roxburghii* Thwait. Enum. Pl. Zeyl. 432. 1864. *Typhonium schottii* Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 67: 303. 1898; Beng. Pl. 2: 1108. 1903.

A small herb. Rhizome sub-globose. Leaves 3 – 7; lamina variously shaped, simple entire-hastate, triangular-hastate, triangular-sagittate, shallowly or deeply 3-lobed or completely trifoliate. Inflorescence appearing after leaves. Spathe oblong ovoid; blade triangular to ovate-lanceolate, apex acute. Spadix subequaling spathe; staminodes sub-cylindric, slightly flat, yellow; anthers opening with an apical pore; appendix long conic-cylindric. Berries ovoid.

Flowers & Fruits: April to June.

Specimen Cited: Gorumara, Goutam & AP Das 1154, dated 17. 09. 2011.

Local Distribution: Gorumara.

General Distribution: India, Bangladesh, China, Sri Lanka, Japan, Thailand, Indonesia, Malaysia, Philippines, New Guinea; E Africa, W Australia, S America.

Note: Rarely found.

Typhonium trilobatum (L.) Schott in Wiener, Zeitschr. Kunst. 3: 72. 1829; Hook. f., Fl. Brit. Ind. 6: 509. 1893; Hajra *et al.*, Fl. Sikkim 1: 195. 1996; Noltie, Fl. Bhut. 3(1): 139. 1994. *Arum trilobatum* L., Sp. Pl. 965. 1753. *Typhonium triste* Griff., Not. Pl. Asiat. 3: 145. 1851. *Arum orixense* Roxb., Fl. Ind., 3: 503-505. 1832.

Local name: Kharkon

Rhizome short, tuberous, subglobose. Petiole green to purple; lamina cordate-ovate, usually deeply 3-lobed, 10 – 15 x 5 – 10 cm, acuminate to mucronate; lateral lobes 8 – 11 cm. Inflorescence appearing after the leaves. Spathe with dark purplish-red line, limb ovate-lanceolate, acuminate. Spadix shorter than spathe; female zone slightly conical; sterile zone densely covered with staminodes, upper half naked; male zone ± 2 cm. Stamens pink. Ovaries yellowish green; stigma sessile.

Flowers & Fruits: April to September.

Specimen Cited: Murti, Goutam & AP Das 0054, dated 07. 02. 2009.

Local Distribution: Murti Beat Office side forest area.

General Distribution: India: West Bengal, Sikkim, Bihar, Odisha; China, Myanmar, Sri Lanka, Nepal, Thailand, Malaysia.

Note: Abundantly distributed.

PISTIA L., Sp. Pl. 2: 963. 1753.

Pistia stratiotes L., Sp. Pl. 2: 963. 1763; Hook. f., Fl. Brit. Ind. 6: 497. 1893; Noltie, Fl. Bhut. 3(1): 156. 1994; Prain, Beng. Pl. 2: 1105. 1903; Cook, Aqua. Wetl. Pl. Ind. 65, 1996. *Zala asiatica* Lour., Fl. Cochinch. 405. 1790. *Pistia minor* Bl., Rumphia 1: 78. 1836. *Pistia africana* Presl, Epimel. Bot. 240. 1851.

Local name: Topa pana

Small, free floating fleshy stoloniferous herbs. Leaves several in a rosette, densely pubescent. Lamina sessile, obovate-cuneate. Spathe much shorter than leaves, shortly peduncled, open above. Spadix adnate to the back of the tube of spathe, very small, free above. Fruits membranous, few seeded. Seeds oblong or obovoid albuminous.

Flowers & Fruits: May to October.

Specimen Cited: Indong jhora, Goutam & AP Das 0024, dated 05. 02. 2009.

Local Distribution: In most of the wetlands of GNP

General Distribution: Throughout India, Sri Lanka, tropical and subtropical regions worldwide.

ALOCASIA (Schott) G. Don in Sweet, Hort. Brit., ed. 3, 631. 1839, *nom. cons.*

Alocasia macrorrhizos (L.) G. Don, Sweet, Hort. Brit. 3: 631. 1839; Hajra *et al.*, Fl. Sikkim 1: 186. 1996; Noltie, Fl. Bhut. 3(1): 139. 1994. *Arum macrorrhizon* L., Sp. Pl. 965. 1753. *Alocasia indica* (Lour.) Spach, Hist. Nat. Vég. 12: 47. 1846; Prain, Beng. Pl. 2: 1111. 1903. *Arum indicum* Lour., Fl. Cochinch. 536. 1790. *Colocasia indica* (Lour.) Kunth, Enum. Pl. 3: 39. 1841.

Local name: Mann, Maan Kachu

Rootstock stout, almost erect. Leaves large; lamina ovate, undulate, obtuse-rounded, bright green. Spathes yellowish green. Fertile male inflorescence white; females yellow.

Flowers & Fruits: April to September.

Specimen Cited: Lataguri, Goutam & AP Das 0044, dated 05. 02. 2009.

Local Distribution: Dhupjhora forest village and road-side areas.

General Distribution: India, Bangladesh, Nepal, Sri Lanka, S.E. Asia to Pacific.

Note: Rhizome edible.

AMORPHOPHALLUS Blume *ex* Decne, Nouv. Ann. Mus. Hist. Nat. 3: 366. 1834, *nom. cons.*

Key to the species:

- 1a. Bulbils developed on the lamina – petiole junction *A. bulbifer*
 1b. Bulbils never formed on leaves *A. napalensis*

Amorphophallus napalensis (Wall.) Bogner *et* Mayo, Avoideva 8(1): 19. 1985; Fl. Bhutan 3(1): 133. 1994; Fl. Sikkim 1: 186. 1996. *Thomsonia napalensis* Wallich Pl. Asiat. Rar. 1: 83. 1830.

Local Name: Buno ol.

Monoecious, perennial, herb. Tuber sub-globose, dorsiventrally slightly compressed. Leaf single, cataphylls brownish; petiole smooth, whitish, dark green mottled; lamina 3 segmented; base of leaflets winged petiole-like; leaflets lanceolate, acuminate. Bulbils never formed on leaves. Flowering before leaf. Peduncle stout and mottled like petiole, 25 – 50 cm. Spathe 15 – 25 cm, widely open, erect, not constricted so not divided into tube and blade, hence tube not formed at base, overlapping to right or left, pale green, apex obtuse, slightly hooded; Spadix: $\frac{3}{4}$ to sub-equaling spathe, to 10 – 20 cm; female portion at bottom to 3 cm, green; male portion central 4 – 6 cm, anthers creamy yellow, tinged with dark-purple; appendix yellow-cream, equal to shorter than male portion. Fruits ovate.

Flowers & Fruits: May to June.

Specimen Cited: Murti, Goutam & AP Das 1105, dated 17. 06. 2012.

Local Distribution: Murti and Gorumara.

General Distribution: Endemic to Himalayas.

Amorphophallus bulbifer (Roxb.) Bl. in Rumphia 1: 148. 1837; Hook. *f.*, Fl. Brit. Ind. 6: 515. 1893; Hara, Fl. East. Himal. 1: 394. 1966; Hajra *et al.*, Fl. Sikkim 1: 186. 1996; Noltie, Fl. Bhut. 3(1): 133. 1994; Prain, Beng. Pl. 2: 1110. 1903. *Arum bulbiferum* Roxb., Fl. Ind. 3: 516. 1832. *Amorphophallus aculatum* Hook. *f.*, Fl. Brit. India 6: 515. 1893.

Local name: Buno Ol

Tuber subglobose. Cataphylls Br., membranous. Leaf divided into numerous leaflets; bulbils developed at primary or secondary divisions; leaflets acuminate. Spathe ovate, subacute, margins overlapping basally. Spadix subacute, pink, sometimes whitish.

Flowers & Fruits: April to July.

Specimen Cited: Budhram, Goutam & AP Das 0105, dated 07. 02. 2009.

Local Distribution: Throughout the Forest.

General Distribution: South East Asia, Australia.

POTHOS L., Sp. Pl. 2: 968. 1753.

Pothos scandens L., Sp. Pl. 2: 968. 1753; Noltie, Fl. Bhut. 3(1): 125. 1994; Prain, Beng. Pl. 2: 1115. 1903. *Pothos longifolius* Presl, Epimel. Bot. 242. 1851. *Pothos scandens* f. *angustior* Engl. in, Bot. Tidsskr. 24: 272. 1902. *Pothos fallax* Schott, Prodr. Syst. Aroid. 560. 1860. *Pothos angustifolius* (Raf.) Presl, Epimel. Bot. 243. 1851.

Shrubby root-climber. Profusely branched; branches terete. Petiole cuneate, truncate at apex, many veined, upper part winged; lamina lanceolate to linear-lanceolate, 4 – 8 x 1 – 3 cm, acuminate, base obtuse. Inflorescence solitary, axillary, small; peduncle short; cataphylls imbricate, green, ovate, small. Spathe greenish to maroon, ovate, concave. Spadix stipitate; stipe erect, greenish; fertile zone yellow-green to off-white, globose or ovoid to subclavate. Fruit mid-green, ripening to deep scarlet, obclavate.

Flowers & Fruits: October to November.

Specimen Cited: Murti, Goutam & AP Das 0133, dated 07. 02. 2009.

Local Distribution: All over the forest in semi-open areas; abundant.

General Distribution: Bangladesh, Cambodia, India, Indonesia, Laos, Malaysia, Philippines, Singapore, Sri Lanka, Thailand, Vietnam, Madagascar.

SCINDAPSUS Schott in Schott & Endl., Melet. Bot. 21. 1832.

Scindapsus officinalis (Roxb.) Schott, Melet. Bot. 21. 1832; Noltie, Fl. Bhut. 3(1): 129. 1994; Prain, Beng. Pl. 2: 1114. 1903. *Pothos officinalis* Roxb., Fl. Ind. 1: 452. 1820. *Monstera officinalis* (Roxb.) Schott, Wiener Z. Kunst 4: 1028. 1830. *Scindapsus annamicus* Gagnep., Notul. Syst. (Paris) 9: 139. 1941.

Local name: Gajpipul.

Robust liana, root-climber. Petiole 26 – 32 cm, base imbricate, sheath reaching pulvinus; lamina pale green abaxially, green adaxially, oblong-elliptic or ovate-elliptic, 23 – 36 x 12 – 24 cm, entire, acute to shortly acuminate, base subcordate, leathery; lateral veins numerous, diverging from midrib. Spathe yellow, involute-tubular, acuminate. Spadix sessile, cylindric.

Flowers & Fruits: November to December

Specimen Cited: Murti, Goutam & AP Das 0124, dated 07. 02. 2009.

Local Distribution: Gorumara, Murti, Bichhabhanga, Budhram, Khunia.

General Distribution: India, Bangladesh, Bhutan, China, Thailand, Vietnam.

XANTHOSOMA Schott, Melet. Bot. 19. 1832.

Xanthosoma brasiliense (Desf.) Engler, Engler Pflanzenr. Arac. Colocas. 58. 1920; Noltie, Fl. Bhut. 3(1): 139. 1994; *Caladium brasiliense* Desf., Tabl. Ecole Bot., ed. 3: 386. 1829. *Xanthosoma hastatum* Eggers, Fl. St. Croix 99. 1879. *Xanthosoma hastifolium sensu* Duss, Fl. Phan. Antill. Franç. 481. 1897. *Philodendron fontanesii* Kunth, Enum. Pl. 3: 48. 1841. *Acontias hastifolius* Schott, Melet. Bot. 19. 1832.

Local name: Dudh Kachu

Stem small. Petiole 15 – 25 cm, sheathing for almost half of length; lamina large, ovate-hastate, undulate, obtuse-rounded, bright green, veins conspicuous; petiole to 40 cm.

Flowers & Fruits: September to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0697, dated 14. 02. 2008.

Local Distribution: All over the forest areas.

General Distribution: Native of tropical America; widely cultivated; often naturalized.

Hydrocharitaceae Juss., Gen. Pl. 67. 1789; *nom. cons.*

Key to the genera:

- 1a. Flowers enclosed in a bifid spathe or within 2 opposite spathal bracts 2
- 1b. Flower solitary or few in leaf axil *Najas*
- 2a. Perianth 3 in single whorls *Vallisneria*
- 2b. Perianth 3+3 in two whorls 3
- 3a. Leaves whorled sometime opposite 4
- 3b. Leaves scattered 5
- 4a. Leaves whorls arranged in regular and repeating patterns along
 elongated stems *Hydrilla*
- 4b. Leaves whorls in two rows even if sometimes spirally wound, arranged
 somewhat irregularly along the stem *Nechamandra*
- 5a. Leaves sessile, linear *Blyxa*
- 5b. Leaves petiolate, ovate-oblong *Ottelia*

BLYXA Noronha *ex* Thouars, Gen. Nov. Madagasc. 4. 1806.

Blyxa octandra (Roxb.) Planch. *ex* Thwaites, Enum. 332. 1864; Cook, Aqua. Wetl. Pl. Ind. 218, 1996. *Vallisneria octandra* Roxb., Pl. Corom. 2: 34. t. 165. 1802. *Blyxa roxburghii* Rich., Mem. Inst. Paris 12(2): 23.1812 (*nom. illeg.*); Hook. *f.*, Fl. Brit. Ind. 5: 660. 1888; Prain, Beng. Pl. 2: 996. 1903.

Local name: Pata Seola.

Tufted, annual, submerged, delicate, aquatic herbs. Leaves radical, linear, entire, acuminate, base broad, membranous. Spathe linear, cylindrical with white flowers; peduncle slender, terete. Fruits linear; seeds many, small oblong- elliptic.

Flowers & Fruits: November to February.

Specimen Cited: Murti Jaldhaka junction, Goutam & AP Das 0052, dated 05. 02. 2009.

Local Distribution: In most of the Beels

General Distribution: India: West Bengal, Andrapradesh, Maharastra, Madhyapradesh, Orrisa, Kerala; Bangladesh, Myanmar, New Guinea, Sri Lanka, Vietnam, Australia.

HYDRILLA Rich., Mém. Cl. Sci. Math. Inst. Natl. France 1811(2): 9, 61, 76. 1814.

Hydrilla verticillata (L. f.) Royle, Ill. Bot. Himal. t. 376. 1839; Hook. f., Fl. Brit. Ind. 5: 659. 1888; Noltie, Fl. Bhut. 3(1): 165. 1994; Prain, Beng. Pl. 2: 995. 1903; Cook, Aqua. Wetl. Pl. Ind. 218, 1996. *Serpicula verticillata* L. f., Suppl. 416. 1781; Roxb., Cor. Pl. 2: 33. t. 164. 1798; Fl. Ind. 3: 578. 1832. *Hydrilla polysperma* Blatt. in J. Proc. Asiat. Soc. Beng. (N.s.) 26: 356. 1931. *Elodea verticillata* (L. f.) F. Muell., Key Vict. Pl. 1: 423. 1888. *Hydrilla angustifolia* Hassk., Pl. Jav. Rar. 117. 1848. *Hydrilla najadifolia* Zoll. et Moritzi, Syst. Verz. 91. 1846.

Local name: Kureli.

Submerged, leafy, dioecious herbs. Stem slender, branched. Leaves whorled, rarely opposite, oblong to linear, rarely lanceolate, serrate or sub-entire, acute. Flowers unisexual, perianth 3+3, male spathe solitary, axillary, globose; female spathe bifid, axillary, cylindrical, 1-2 flowered. Fruits subulate, smooth to muriccate; seeds oblong.

Flowers & Fruits: November to January.

Specimen Cited: Medlajhora, Goutam & AP Das 0029, dated 05. 02. 2009.

Local Distribution: Abundant in Beels.

General Distribution: India: throughout country; Japan, Malaysia, Philippines; S. & E. Europe, Africa, S. & E. Asia, Australia.

NECHAMANDRA Planch., Ann. Sci. Nat., Bot., sér. 3, 11: 78. 1849.

Nechamandra alternifolia (Roxb. ex Wight) Thwait., Enum. Pl. Zeyl. 332. 1864; Subramanyam et Balakrishnan, Bull. Bot. Surv. Ind. 3: 23. 1961; Cook, Aqua. Wetl. Pl. Ind. 219, 1996; Datta et Majumdar, Bull. Bot. Soc. Beng 20 (20): 23. 1966. *Vallisneria alternifolia* Roxb. ex Wight, Bot. Misc. 2: 344. 1831; Naskar, Aqu. Semiaquat. Pl. Low. Ganget. plain, 229. 1990.

Submerged, fresh water herb. Leaves 1 to 2, opposite below and crowded, scattered at the branches, linear or linear lanceolate, serrulate, acuminate to acute; sessile, amplexicaul, usually 3 – nerved. Male spathe sessile, axillary, ovoid, 2- fid. Female spathe sessile, narrow oblong. Flowers many, densely arranged.

Flowers & Fruits: December to June.

Specimen Cited: Medlajhora, Goutam & AP Das 0010, dated 05. 02. 2009.

Local Distribution: In all the beels, common.

General Distribution: India: Assam, West Bengal, Bihar, Karnataka, Maharastra; Nepal, Bangladesh, Myanmar, Sri Lanka, Vietnam.

OTTELIA Pers., Syn. Pl. 1: 400. 1805.

Ottelia alismoides (L.) Pers., Sys. Pl. 1: 400. 1805; Hook. f., Fl. Brit. Ind. 5: 662. 1888; Noltie, Fl. Bhut. 3(1): 166. 1994; Prain, Beng. Pl. 2: 997. 1903; Cook, Aqua. Wetl. Pl. Ind. 220, 1996. *Strtiotes alismoides* L., Sp. Pl. 1: 535. 1753. *Ottelia lanceolata* (Gagnep.) Dandy, J. Bot. 72: 138. 1934. *Boottia lanceolata* Gagnep., Bull. Soc. Bot. France 54: 540. 1907.

Local Name: Pani Kolla

Submerged herbs. Leaves crowded, submerged; petioles long, variable in shape; lamina ovate-lanceolate, oblong or cordate, entire, acute. Spathe solitary, axillary, 1-flowered; flowers bisexual, sessile, yellowish white; ovary of 6 united carpels covered by spathe with 3 - 6 wavy-wings. Fruits oblong, ellipsoid, crowded with the sepals. Seeds numerous, oblong.

Flowers & Fruits: October to February.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0001*, dated 05. 02. 2009.

Local Distribution: Throughout Beel.

General Distribution: India, Nepal, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Cambodia, Philippines, Thailand, Sri Lanka, Vietnam, New Guinea, Africa, Australia; introduced in North America.

VALLISNERIA L., Sp. Pl. 2: 1015. 1753.

Vallisneria natans (Lour.) Hara, J. Jap. Bot. 49: 136. 1974; Cook, Aqua. Wetl. Pl. Ind. 221, 1996. *Physkium natants* Lour., Fl. Cochinch. 663. 1790. *Vallisneria asiatica* Miki, Bot. Mag. (Tokyo) 48: 329. 1934. *Vallisneria minor* Ito, Nippon Shokubutsumeii 1: 23. ver. 1874. *Vallisneria spiralis* L. var. *denseserrulata* Mikino, Bot. Mag. Tokyo 28: 27. 1914; Lowden, Aquat. Bot. 13: 288. 1982. *Vallisneria physcium* Juss. ex Spreng., Syst. 3: 900. 1826. *Vallisneria spiralooides* Roxb., Fl. Ind. 3: 75. 1832; Naskar, Aqu. Semiaqut. Pl. Low. Ganget. plain, 231. 1990.

Submerged, stoloniferous, tufted herbs. Leaves linear, serrulate or entire, acute or obtuse, translucent green; male spathe 5 to 10 mm long; female spathe on long coiled peduncle which at maturity uncoils and helps fertilization after getting floating pollens from water surface. Fruits linear. Seeds numerous, oblong.

Flowers & Fruits: January to May.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0005*, dated 05. 02. 2009.

Local Distribution: Throughout Beel.

General Distribution: India, Nepal, China, Japan, Malaysia, Sri Lanka, Korea, Vietnam and Australia.

NAJAS L., Sp. Pl. 2: 1015. 1753.

Key to the species:

- 1a. Male and female flowers alike without sheath; anthers 4 locular *N. graminea*
 1b. Male flowers only in a sheath; anthers 1 locular *N. indica*

Najas graminea Delile, Descr. Egypt. Hist. Nat. 2: 282, t. 50, f. 3. 1813; Hook. f., Fl. Brit. Ind. 6: 569. 1893; Prain, Beng. Pl. 2: 1125. 1903; Cook, Aqua. Wetl. Pl. Ind. 268, 1996. *Caulinia graminea* (Delile) Tzvelev, Novosti Sist. Vyssh. Rast. 13: 20. 1976.

Local name: Seola.

Stems up to 20 cm. Leaves narrowly linear to linear; sheath 1 – 3 mm, deeply auriculate; auricles lanceolate, serrulate with several teeth on each side, apex acute; lamina minutely and densely serrulate, acuminate. Monoecious; male flowers usually more toward upper axils with elliptic perianth; spathe absent; female flowers 1 – 2 mm; stigmas 2 – 4 lobed. Fruits oblong.

Flower & Fruits: October to July.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0013*, dated 05. 02. 2009.

Local Distribution: Throughout Beel.

General Distribution: India, Bhutan, Bangladesh, Nepal, Indonesia, Japan including Ryukyus, Korea, Malaysia, Myanmar, Phillipines, Sri Lanka, Thailand; throughout Old World, Africa, Australia, introduced into North America.

Najas indica (Willd.) Cham. in Linnaea 4: 501. 1829; Prain, Beng. Pl. 2: 1125. 1903; Cook, Aqua. Wetl. Pl. Ind. 269, 1996. *Cauline indica* Willd., Mem. Ac. R. Sc. Berl. 89, f. 3. 1801. *Najas falciculata* R. Br., J. Bot. 2: 278, f. 4. 1864. *Najas minor sensu* Hook. f., Fl. Brit. Ind. 6: 569. 1893. *Najas lacerata* Rendle, Trans. Linn. Soc. 2, Bot. 5: 416, t. 41, f. 132-138. 1899. *Najas tenuis* Braun ex Magnus, Beitr. Kenntn. Najas 7. 1870 non *Zostera tenuis* Reuter, 1854.

Local name: Seola.

Submerged much branched, herbs. Leaves slightly recurved. Staminate flower solitary, enclosed in a spathe, perianth linear, anthers 4-celled; pistillate flower with no spathe or perianth. Seeds ellipsoid.

Flower & Fruits: November to February.

Specimen Cited: Gorati Beel, Goutam & AP Das 0003, dated 05. 02. 2009.

Local Distribution: Throughout, in water bodies.

General Distribution: India, China, Japan and Taiwan.

Potamogetonaceae Dumort., Anal. Fam. Pl. 59. 1829 ('Potamogetoneae'); *nom. cons.*

POTAMOGETON L., Sp. Pl. 1: 126. 1753.

Key to the species:

1a. Lamina of submerged leaves clasping the stem at base, sessile; floating

leaves absent *P. crispus*

1b. Lamina of submerged leaves never clasping the stem, petiolate; floating

leaves present 2

2a. Lamina of submerged leaves lanceolate; petiole longer than lamina in

floating leaves *P. nodosus*

2b. Lamina of submerged leaves linear; petiole shorter than lamina in

floating leaves *P. octandrus*

Potamogeton octandrus Poir. in Lam., Encycl. M. Bot., Suppl. 4: 534. 1816; Noltie, Fl. Bhut. 3(1): 170. 1994; Hajra *et al.*, Fl. Sikkim 1: 196, 1996; Cook, Aqua. Wet. Pl. Ind. 333. 1996. *Potamogeton octandrus* var. *minduhikimo* (Makino) Hara, J. Jap. Bot. 20(6-7): 331. 1944. *Hydrogeton heterophyllus* Lour., Fl. Cochinch. 244. 1790. *Potamogeton huillensis* Welw. ex Schinz, Ber. Schweiz. Bot. Ges. 1: 61. 1891.

Plants annual. Stems few to densely branched, filiform, terete; nodal glands absent; dormant buds axillary, narrowly fusiform. Leaves dimorphic; stipules axillary, convolute, membranous, free from leaf base, decaying early, green to greenish Br. when dry. Submerged leaves sessile, alternate, linear to filiform, acuminate, 3 veined. Floating leaves petiolate, usually alternate; lamina opaque, elliptic to oblong ovate, entire, acute to obtuse, base rounded, leathery. Spikes densely flowered. Fruits obovoid.

Flowers & Fruits: August to January.

Specimen Cited: Gorati Beel, Goutam & AP Das 0008, dated 05. 02. 2009.

Local Distribution: In most of the Beels; common.

General Distribution: India: West Bengal, Sikkim, Madhya Pradesh, Jammu and Kashmir, Meghalay; Indonesia, Japan including Ryukyus, Korea, Malaysia, Nepal, Russia; Africa, Asia, Australia.

Potamogeton crispus L., Sp. Pl. 1: 126. 1753; Hook. f., Fl. Brit. Ind. 6: 566. 1893; Noltie, Fl. Bhut. 3(1): 171. 1994; Prain, Beng. Pl. 2: 1123. 1903; Cook, Aqua. Wetl. Pl. Ind. 268, 1996; Majumdar, Bull. Bot. Soc. Beng. 19 (1): 15. 1965; Rao et Verma, Bull. Bot. Surv. Ind. 18 (1-4): 42. 1976. *Potamogeton tuberosus* Roxb., Fl. Ind. 1: 472. 1820. *Buccaferrea crispata* Bubani, Fl. Pyren. 4: 13. 1901. *Potamogeton crispus* var. *serrulatus* (Opiz) Roxb., Icon. Fl. Germ. Helv. 7: 18. 1845. *Potamogeton crispus* var. *najadoides* Graebn., Pflanzenr. IV, 11: 100. 1907. *Potamogeton lactucaceum* Montandon, Syn. Fl. Jura ed. 2: 305. 1868. *Potamogeton serrulatus* Opiz, Flora 5: 267. 1822.

Plants perennial, submerged in freshwater. Rhizome terete. Stems sparsely branched, terete to slightly flattened and angular, creeping at base. Leaves sessile; lamina broadly linear to narrowly oblong, undulate to crispate and serrate, obtuse, 3 – 7 veined. Spikes cylindrical. Fruits ovoid.

Flowers & Fruits: August to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0023, dated 05. 02. 2009.

Local distribution: Gorati Beel.

General Distribution: India: West Bengal, Sikkim, Madhya Pradesh, Uttar Pradesh, Karnataka, Goa, Maharashtra; Bhutan, Nepal, Japan, Kazakhstan, Korea, Pakistan, Russia, Tajikistan, Thailand, Uzbekistan; Cosmopolitan: Africa, Asia, Europe, Australia, introduced into New Zealand, North & South America.

Potamogeton nodosus Poir., Encycl. Meth. Bot. Suppl. 4: 535. 1810; Majumdar, Bull. Bot. Soc. Beng. 20(2): 78. 1966; Noltie, Fl. Bhutan 3(1): 170. 1994; Cook, Aqua. Wetl. Pl. Ind. 333, 1996; Hajra et al., Fl. Sikkim 1: 196, 1996; *Potamogeton indicus* Roxb., Fl. Ind. 1: 471. 1820 (*nom. Illeg.*); Hook.f., Fl. Brit. Ind. 6: 565. 1893; Prain, Beng. Pl. 2: 845. 1903. *Potamogeton mexicanus* Benn., J. Bot. 25: 289. 1887. *Potamogeton roxburghianus* Schult. et Schult. f., Mant. 3: 367. 1827. *Potamogeton peruviana* Presl, J. Bot. 28: 298. 1890.

Aquatic herbs, stem terete, branched, length depends upon the depth of the water. Upper leaves floating, petiolate; lamina oblong or elliptic-lanceolate, entire, acuminate, base acuminate, coriaceous, glossy, many nerved. Spike 3 – 4 cm long, dense flowered, green. Flowers bisexual. Druplets long beaked, oblique.

Flowers & Fruits: September to March.

Specimen Cited: Gorati Beel, Goutam & AP Das 0035, dated 05. 02. 2009.

Local Distribution: Gorati Beel.

General Distribution: India, Sri Lanka, Malaya, Temperate and Tropical region.

Order: Asparagales Bromhead (1838)

Amaryllidaceae Chen, Acta Phytotax. Sin. 19(3): 323. 1981.

CRINUM L., Sp. Pl. 1: 291. 1753

Key to the species:

- 1a. Leaves linear-lanceolate, margins undulate *C. asiaticum*
- 1b. Leaves spreading, ensiform, margins narrow membranous *C. amoenum*

Crinum asiaticum L., Sp. Pl. 292. 1753; Prain, Beng. Pl. 2: 1061. 1903. *Amaryllis carnosa* Hook.f., Fl. Brit. India 6: 280. 1892. *Crinum bancanum* Kurz, Tijdschr. Ned.-Indië 27: 231. 1864.

Local name: Bara Kanur

Perennial bulbous herb. Leaves dark green, linear-lanceolate, acute-acuminate, margins undulate. Umbels, white, scape with 3 – 10 white flowers; bracts linear with 2 involucre, perianth white, anthers versatile. Capsules subglobose.

Flowers & Fruits: June to August.

Specimen Cited: Gorumara, Goutam & AP Das 1170, dated 08. 02. 2011..

Local Distribution: Gorumara.

General Distribution: India, Sri Lanka, Java, Malaysia, Western Polynesia.

Crinum amoenum Roxb. ex Ker Gaw., J. Sci. Arts (London) 3: 106. 1817; Hajra *et al.*, Fl. Sikkim 1: 137. 1996. *Crinum himalense* Royle, Ill. Bot. Himal. Mts. 374. 1839. *Crinum vercundum* Carey ex Roem., Fam. Nat. Syn. Monogr. 4: 75. 1847. *Crinum amoenum* Roxb., Fl. Ind. 2: 127. 1832; Hook. f., Fl. Brit. Ind. 6: 282. 1892; Noltie, Fl. Bhutan 3(1): 83. 1994.

Bulbs subglobose. Leaves spreading, ensiform, margins narrow membranous, acute. Umbels on long solid, purplish scape with 3 – 10 white; flowers fragrant; perianth white; anthers versatile. Capsules subglobose.

Flowers & Fruits: June to August.

Specimen Cited: Murti, Goutam & AP Das 0170, dated 08. 02. 2009.

Local Distribution: All over the forests.

General Distribution: India: West Bengal, Sikkim, Assam; Sri Lanka, Bhutan, Bangladesh, China, Myanmar.

Hypoxidaceae R.Br. in Flinders, Voy. Terra Austr. 2: 576. 1814 ('Hypoxidae'); *nom. cons.*

Key to the genera:

1a. Inflorescences from base of stem, 4 to 6 flowered raceme *Curculigo*

1b. Inflorescences from node of stem, flowers more than 5 in raceme *Molineria*

CURCULIGO Gaertn., Fruct. i. 63. t. 16. 1788.

Curculigo orchioides Gaertn., Fruct. Sem. Pl. 1: 63, t. 13. 1788; Hook. f., Fl. Brit. India 6: 279. 1894; Prain, Beng. Pl. 2: 1059. 1903; Noltie, Fl. Bhut. 3(1): 69. 1994; Hajra *et al.*, Fl. Sikkim 1: 139. 1996. *Curculigo brevifolia* Dryand. in Aitton, Hort. Kew. 2(2): 253. 1811. *Curculigo malabarica* Wight, Ic. t. 2043. A, f. 1. 1853. *Curculigo orchioides* var. *minor* Benth., Fl. Hongk. 366. 1861.

Rhizomes erect, subcylindric. Leaves in rosette, sessile to shortly petiolate; lamina lanceolate to linear, usually 10 – 55 × 1 – 2.5 cm, narrowly acuminate. Racemes umbellate, 4 to 6 flowered. Pedicel 2 mm. Perianth yellow; segments oblong-lanceolate, 8 – 10 × 2 – 3 mm. Stamens half as long as perianth segments. Ovary narrowly oblong. Stigma lobes longer than style. Berry subfusiform.

Flowers & Fruits: April to September.

Specimen Cited: Murti, Goutam & AP Das 0140, dated 07. 02. 2009.

Local Distribution: Throughout the forest in open and semiopen habitat

General Distribution: Pakistan, India, Myanmar, Thailand, Cambodia, Indonesia, Japan, Laos, Papua New Guinea, Philippines, Vietnam.

MOLINERIA Colla, Hort. Ripul. App. ii. 333. t. 18. 1826.

Molineria capitulata (Lour.) Herb., Amaryllidaceae 84. 1837; Fl. Jow. 2: 533. 1987; Noltie, Fl. Bhut. 3(1): 67. 1994. *Leucojum capitulatum* Lour., Fl. Cochinch. 199. 1790. *Curculigo capitulata* (Lour.) Kuntze, Rev. Gen. Pl. 2: 703. 1891; Hajra *et al.*, Fl. Sikkim 1: 1139. 1996; *Leucojum capitulatum* Lour., Fl. Cochinch. 199. 1790. *Curculigo recurvata* Dryand. in Aiton, Hort. Kew 2(2): 253. 1811; Hook. *f.*, Fl. Brit. India 6: 278. 1894; Prain, Beng. Pl. 2: 1059. 1903. *Molineria recurvata* (Dryand.) Herb., Amaryllidaceae 84. 1837.

Herbs up to 1 m. Rhizomes tuberous. Leaves 4 to 7 in rosette; petiole 30 – 70 cm; lamina oblong-lanceolate, 40 – 70 × 5 – 15 cm, acuminate. Flowering stems Br. villous. Racemes nodding, capitate to subovoid, densely many flowered. Perianth yellow; segments ovate-oblong. Stamens 5 mm. Ovary subglobose to oblong. Style longer than stamens. Berry white. Seeds black.

Flower & Fruit: April to May

Specimen Cited: Murti, Goutam & AP Das 0196, dated 09. 02. 2009.

Local Distribution: Murti and Dhupjhora forests.

General Distribution: Subtropical and temperate Himalayas, India, Sri Lanka, Bhutan, Myanmar, Malaysia, Indochina, China, Australia.

Order: Dioscoreales Hook. *f.* (1873)

Burmanniaceae Bl., Enum. Pi. Jav. 1: 27. 1830. *nom. cons.*

BURMANNIA L., Sp. Pl. 1: 287. 1753.

Burmattia coelestis Don, Prodr. Fl. Nepal. 44. 1825; Prain, Beng. Pl. 2: 998. 1903; Noltie, Fl. Bhut. 3(1): 91. 1994; Hajra *et al.*, Fl. Sikkim 1: 23. 1996. *Burmattia triflora* Roxb., Fl. Ind. 2: 117. 1832. *Burmattia javanica* Bl., Enum. Pl. Javae 1: 28. 1827. *Burmattia bifurca* Ham. *ex* Hook. *f.*, Fl. Brit. India 5: 665. 1888.

Small erect herbs. Stems green. Leaves few in basal rosette; cauline leaves linear, 1 – 3 x 0.2 – 0.5 cm. Racemes terminal, 2– 4 flowered. Flowers pedicellate to subsessile, bluish purple with yellow tepals. Perianth tube 4–12 mm; outer tepals ovate triangular, margin double. Stamens sessile. Capsule obovoid.

Flowers & Fruits: July to October.

Specimen Cited: Medlajhora, Goutam & AP Das 0428, dated 22. 07. 2009.

Local Distribution: Marshy low land areas; rare.

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

Dioscoreaceae R. Br., Prodr. 1: 294. 1810 ('Dioscoreae'). *nom. cons.*

DIOSCOREA L., Sp. Pl. 2: 1032. 1753.

Key to the Species:

- 1a. Female spikes born solitary *D. prazeri*
- 1b. Female spikes more than one in a axis 2

- 2a. Leaves palmately 3 – 7 foliolate *D. pentaphylla*
 2b. Leaves simple 3
 3a. Stem twining to right *D. pubera*
 3b. Stem twining to left 4
 4a. Plant densely hairy *D. bulbifera*
 4b. Plants glabrous *D. esculenta*

Dioscorea bulbifera L., Sp. Pl. 1: 1033. 1753; Prain, Beng. Pl. 2: 1066. 1903; Hara, Fl. East. Himal. 1: 419. 1966; Noltie, Fl. Bhut. 3(1): 9. 1994. *Dioscorea sativa* Thunb., Fl. Jap. 151. 1784; *non* L., 1753; Hook. f., Fl. Brit. Ind. 6: 295. 1892. *Dioscorea latifolia* Benth., Niger Fl. 535. 1849. *Dioscorea pulchella* Roxb., Fl. Ind. 3: 801. 1832.

Local name: Mete alu.

Tuber solitary, ovoid; roots fibrous. Stem twining to left. Bulblets purplish Br. with orbicular spots. Leaves alternate, lamina broadly cordate, 9 – 17 × 4 – 14 cm, entire, caudate-acuminate. Male spikes usually clustered in leaf axils. In female flowers- staminodes 6. Capsule reflexed or drooping, oblong-globose. Seeds inserted near apex.

Flowers & Fruits: June to February.

Specimen Cited: Budhram, Goutam & AP Das 0330, dated 21. 07. 2009.

Local Distribution: Cultivated in forest villages and all over the forests.

General Distribution: A native of Old World; India, Nepal, Sri Lanka.

Dioscorea esculenta (Lour.) Burkill, Gard. Bull. Straits Settlem. 1: 396. 1917; Noltie, Fl. Bhut. 3(1): 8. 1994; Hajra *et al.*, Fl. Sikkim 1: 141. 1996. *Onchus esculentus* Lour., Fl. Coch. 194. 1790. *Dioscorea spinosa* Roxb. ex Wall., Numer. List n. 5103. 1830. *Dioscorea fasciculata* Roxb., Fl. Ind. 3: 801. 1832; Prain, Beng. Pl. 2: 1066. 1903.

Local name: Metey Aalu.

Twining to left with large unequal tubers; densely hairy; stems prickly. Lamina simple, reniform or orbicular, acuminate or cuspidate, base cordate, 5 – 7 veined. Male spikes erect, sessile or shortly pedicellate; bracteoles very broad. Female racemes short. Capsules obcordate; seeds broadly winged.

Flowers & Fruits: September to January.

Specimen Cited: Budhram, Goutam & AP Das 0341, dated 21. 07. 2009.

Local Distribution: Cultivated in forest villages.

General Distribution: Cultivated in tropical Asia.

Dioscorea pentaphylla L., Sp. Pl. 1: 1032. 1753; Hook. f., Fl. Brit. India 6: 289. 1892; Prain, Beng. Pl. 2: 1066. 1903; Hara, Fl. East. Himal. 1: 420. 1966; Noltie, Fl. Bhut. 3(1): 10. 1994. *Dioscorea jacquemontii* Hook. f., Fl. Brit. India 6: 290. 1892. *Dioscorea digitata* Mill., Gard. Dict. 8: 6. 1768. *Dioscorea pentaphylla* var. *jacquemontii* (Hook. f.) Prain et Burkill, J. Proc. Asiat. Soc. Bengal 10(1): 23. 1914.

Local name: Pnachpata.

Tubers irregular, long-ovoid; blaze white when fresh, becoming Br.. Stem twining to left, prickly. Leaves alternate, palmately 3 – 7 foliolate; petiole 7 – 10 cm; leaflets ovate to lanceolate, 7 – 20 × 2 – 7 cm, pinnately veined, base attenuate, entire, acute. Male spikes in axillary panicles with long, lateral branches. Female spikes simple or branched, puberulent. In female flowers bracts, perianth, and ovary hairy. Capsule long ellipsoid.

Flowers & Fruits: September to February.

Specimen Cited: Murti, Goutam & AP Das 0337, dated 21. 07. 2009.

Local Distribution: All over the forests.

General Distribution: India, Bangladesh, Sri Lanka, Myanmar, tropical Africa.

Dioscorea prazeri Prain et Burkill in Jour. Asiat. Soc. Beng. 73 (2): 2. 1896 & in Annott, Roy. Bot. Gard. (Calcutta) 14: 29. 202. t.5. 1936; F Enum. Fl. Pl. Nepal 1: 68. 1978; Fl. Sikkim 1: 142. 1996; Trans. Bose Res. Inst. 51(4): 112. 1987; Fl. Bhutan 3 (1): 7. 1994. *Dioscorea sikkimensis* Prain et Burkill in Rec. Bot. Surv. Ind. 4: 77, 84, 134. 1910. *Dioscorea deltoidea* var. *sikkimensis* Prain, Beng. Pl. 2: 1066. 1903.

Local Name: Chupri alu

Tuber irregular, branched, brownish black out-side, pale white inside. Stem twining clockwise, terete, glabrous, bulbils absent. Leaves alternate, triangular-ovate, 10 – 18 × 5 – 12 cm, thick textured coriaceous and glossy above, cordate, acuminate. Male inflorescence unbranched axillary panicle pairs, flowers lax. Male flower minute, shortly pedicellate; perianth lobes 6, all similar, ovate, obliquely open, pale green; stamens 6. Female spike axillary, borne solitary; ovary oblong-ovate. Capsule oblong-obovate.

Flowers & Fruits: August to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0330, dated 21. 07. 2009.

Local Distribution: Dhupjhora and Gorumara.

General Distribution: Endemic to tropical & subtropical E Himalaya.

Note : Wild but highly exploited for its high diosgenin content.

Dioscorea pubera Bl., Enum. Pl. Javae 1: 21. 1827; Noltie, Fl. Bhut. 3(1): 14. 1994. *Dioscorea anguinea* Roxb., Fl. Ind. 3: 803. 1832; Hook. f., Fl. Brit. Ind. 6: 293. 1892; Prain, Beng. Pl. 2: 1066. 1903. *Dioscorea cornifolia* Kunth, Enum. Pl. 5: 385. 1850.

Tubers 1 or 2, narrowly cylindric, rootlets few, flesh lemon yellow. Stem twining to right, lacking prickles, shortly pubescent; bulbils sometimes produced. Leaves alternate-subopposite; lamina ovate, cuspidate to shortly caudate, base shallowly cordate, margins cartilaginous, persistently pubescent beneath.

Flowers & Fruits: August to January.

Specimen Cited: Murti, Goutam & AP Das 0324, dated 21. 07. 2009.

Local Distribution: Throughout the forest areas.

General Distribution: Himalayas, India, Myanmar, Sumatra, Java.

Order: Liliales Perleb (1826)

Smilacaceae Vent., Tabl. Regne V6g. 2: 146. 1799 ('Smilaceae'); *nom. cons.*

SMILAX L., Sp. Pl. 2: 1028. 1753.

Key to the Species:

1a. Lamina ovate, peduncles slightly zigzagged, berries globose *S. perfoliata*

1b. Lamina ovate - elliptic, peduncles stout, berries oblong;..... *S. zeylanica*

Smilax perfoliata Lour., Fl. Cochinch. 2: 622. 1790; Noltie, Fl. Bhutan 3(1): 28. 1994; Hajra *et al.*, Fl. Sikkim 1: 165. 1996. *Smilax proliferata* Roxb., Fl. Ind. 3: 795. 1832; Prain, Beng. Pl. 2: 1071. 1903.

Climbing shrubs. Stem branched, woody. Petiole 2 – 4 cm, broadly winged; wings 7 – 10 mm wide. Lamina usually ovate, 6 – 15 × 3 – 10 cm. umbels in panicles with slightly zigzagged rachis, 15 – 30 flowered. Male flowers: stamens 3 – 5 mm. Female flowers: tepals slightly smaller than male ones; staminodes 3. Berries globose.

Flowers & Fruits: Not recorded.

Specimen Cited: Murti, Goutam & AP Das 0242, dated 09. 02. 2009.

Local Distribution: Throughout the forests.

General Distribution: India, Myanmar, Thailand, Laos, Vietnam.

Smilax zeylanica L., Sp. Pl. 1: 1029. 1753; Hook. *f.* in Fl. Brit. India 6: 309. 1892; Hara *et al.*, Enum. Fl. Pl. Nepal 1: 79. 1978; Hajra *et al.*, Fl. Sikkim 1: 166. 1996. *Smilax collina* Kunth, Enum. Pl. 5: 261. 1850.

Local name: Kukur-dainy.

Shrubby climbers. Branchlets striate, glabrous, prickly. Tendrils simple, glabrous. Lamina ovate–elliptic, entire, acute, base cuneate. In female umbels peduncles stout; receptacle globose. Receptacles in male umbels globose with Br. bracteoles, flower buds oblong. Berries red when ripen.

Flowers & Fruits: March to December.

Specimen Cited: Murti, Goutam & AP Das 0335, dated 21. 07. 2009; Dhupjhora, Goutam & AP Das 0285, dated 10. 02. 2009.

Local Distribution: throughout the forests.

General Distribution: Tropical Himalayas, India: West Bengal, Assam, Bihar; Bhutan, Nepal, China, Bangladesh, Myanmar.

Commelinids; unassigned at ordinal level - Keine Ordnungseinteilung

Order 16: Arecales Bromhead (1840)

Areaceae Schultz, Nat. Syst. Pflanz. 317. 1832 (*nom. alt.* vs. *Palmae*); *nom. cons.*

Key to the genera:

1a. Leaves twice pinnate; leaflets wedge shaped ***Caryota***

1b. Leaves simply pinnate 2

2a. Leaf rachis spiny; slender climber ***Calamus***

2b. Leaf rachis not spiny; not climbing but with slender to stout trunk 3

3a. Inflorescence interfoliar 4

3b. Inflorescence intrafoliar ***Cocos***

4a. Stem narrow, 10 – 18 cm diameter throughout; inflorescence branched to

only 3 order *Areca*

4b. Stem swollen at base with 30 – 60 cm diametre, often irregularly swollen at the middle portion, upward gradually narrowed; inflorescence branched generally

to 2 order *Roystonea*

ARECA L., Sp. Pl. 2: 1189. 1753.

Areca catechu L., Sp. Pl. 1189. 1753; Hajra *et al.*, Fl. Sikkim 1: 180. 1996; Noltie, Fl. Bhut. 3(1): 430. 1994; Prain, Beng. Pl. 2: 1097. 1903. *Areca cathechu* Burm. f., Fl. Indica 241. 1768. *Areca hortensis* Lour., Fl. Cochinch. 568. 1790.

Local name: Supari

Trunk green when young, distant annual scars, 10 – 18 cm in diametre throughout. Leaves pinnate; leaflets narrow. Calyx minute in male flowers; corolla lobes lanceolate, ribbed. Calyx lobed to base in females, oblong – ovate, imbricate; corolla lobes small. Fruits orange when ripe, large, mesocarp fibrous; nuts ellipsoid.

Flowers & Fruits: March to July.

Specimen Cited: Murti, Goutam & AP Das 0089, dated 06. 02. 2009.

Local Distribution: Planted in all forest villages.

General Distribution: Widely cultivated throughout tropical Asia; origin probably C. Malaysia.

CALAMUS L., Sp. Pl. 325. 1753.

Calamus tenuis Roxb., Fl. Ind. 3:780. 1832; Blatt., J. Bomb. Nat. Hist. Soc. 25(3): 392. 1918; Noltie, Fl. Bhut. 3(1): 421. 1994; Prain, Beng. Pl. 2: 1099. 1903. *Palmijuncus tenuis* (Roxb.) Kuntze, Revis. Gen. Pl. 2: 734. 1891. *Calamus amarus* Lour., Fl. Cochinch. 210. 1790. *Calamus royleanus* Griff., Calcutta J. Nat. Hist. 5: 40. 1845.

Local name: Bandari Bet.

Climbing shrubs, growing in clumps, stem large, slender. Leaves glabrous, pinnate, 40 – 70 cm long, leaflets 18 – 30 on each side, equidistant, alternate, linear lanceolate, acuminate, gradually becoming smaller upward, setose above. Petiole short; petiole and the nerves of the leaflets armed with straight spines. Leaf sheath armed with flat spines. Inflorescence very long, flexuose. Flowers minute. Fruit subglobose, mucronate.

Flowers & Fruits: April to October.

Specimen Cited: Murti, Goutam & AP Das 0055, dated 07. 02. 2009.

Local Distribution: Rarely found in Murti and Dhupjhora.

General Distribution: India: West Bengal, Assam; Tropical Himalaya, Bangladesh, Bhutan, Myanmar.

CARYOTA L., Sp. Pl. 1189. 1753.

Caryota urens L., Sp. Pl. 1181. 1753; Noltie, Fl. Bhut. 3(1): 428. 1994; Hajra *et al.*, Fl. Sikkim 1: 182. 1996; Prain, Beng. Pl. 2: 1093. 1903.

Local name: Sago Paam.

Tree, up to 25 m tall, stem blackish Br., 40 65 cm diameter throughout, surface not covered, leaf scars ringed. Leaves 3 – 5 m long; leaflets broadly cuneiform to narrowly oblique cuneiform, regularly

toothed margins, tips irregularly cut with sharp angles. Cymba 1 – 2 m covering much branched numerous spikes. Fruits globose to oblate, red when ripe.

Flowers & Fruits: January to July.

Specimen Cited: Murti, Goutam & AP Das 0088, dated 06. 02. 2009.

Local Distribution: Murti and Gorumara.

General Distribution: India, peninsula of Indo-china, Myanmar, Sri Lanka.

COCOS L., Sp. Pl. 1188. 1753.

Cocos nucifera L., Sp. Pl. 1188. 1753; Noltie, Fl. Bhut. 3(1): 430. 1994; Prain, Beng. Pl. 2: 1095. 1903. *Cocos indica* Royle, Ill. Bot. Himal. Mts. 395. 1840. *Cocos nana* Griff., Not. Pl. Asiat. 3: 166. 1851. *Calappa nucifera* (L.) Kuntze, Revis. Gen. Pl. 2: 982. 1891.

Local name: Narkel.

Trees to 30 m tall, leaf scars ringed, enlarged towards the base. Leaves 3 – 4 m long; leaflets numerous, reduplicate, entire, linear lanceolate, 60 – 100 x 3 – 4 cm, acuminate. Inflorescence axially, branched multiple; cymba spindle shaped, thickly woody. Fruits ovoid to subglobose, slightly trigonous apical.

Flowers & Fruits: Round the year.

Specimen Cited: Murti, Goutam & AP Das 0090, dated 07. 02. 2009.

Local Distribution: In the villages.

General Distribution: Cultivated throughout Asia.

ROYSTONEA Cook in Sci. Ser. 2. 12: 479. 1900.

Roystonea regia (HBK) O.F. Cook in Sci. Ser. 2. 12: 479. 1900. *Oreodoxa regia* HBK, Nov. Gen. & Sp. Pl. 1: 244. 1815. *Oenocarpus regius* (HBK) Spreng., Syst. Veg. 2: 140. 1825. *Roystonea elata* (W. Bartram) F. Harper, Proc. Biol. Soc. Wash. 59: 29. 1946. *Roystonea regia* var. *hondurensis* P.H. Allen, Ceiba 3: 17. 1952.

Trees to 20 m tall, swollen at base, often irregularly swollen at the middle portion, upward gradually narrowed. Leaves 4 – 5 m long; leaflets 150 to 250 on both side of rachis; leaflets 4-farious, linear lanceolate, acuminate; terminal leaflets shorter. Inflorescence interfolier, branched, 2 and 3 order. Female flowers only at base of rachillae.

Flowers & Fruits: December to April.

Specimen Cited: Dhupjhora, Goutam & AP Das 0092, dated 07. 02. 2009.

Local Distribution: Often planted in Dhupjhora Beat Offices and villages.

General Distribution: Usually planted in tropical areas as avenue tree.

Order: Commelinales Dumort. (1829)

Commelinaceae R. Br., Prodr. 1: 268. 1810 ('Commelinae'); *nom. cons.*

Key to the genera

- 1a. Inflorescence within leaf sheath, sessile *Amischotolype*
- 1b. Inflorescence outside of leaf sheath, stalked 2
- 2a. Fruits indehiscent baccate *Pollia*

- 2b. Fruits dehiscent capsular 3
- 3a. Inflorescence broomlike, with extremely numerous small flowers;
capsule 2-valved *Floscopa*
- 3b. Inflorescence not broomlike, with few flowers; capsule 3-valved 4
- 4a. Involucral bracts spathe-like 5
- 4b. Involucral bracts absent or spreading or sheathlike *Murdannia*
- 5a. Petals connate with 2 ends free; bracts imbricately arranged in
2 rows *Cyanotis*
- 5b. Petals wholly free; bracts not imbricately arranged in 2 rows *Commelina*

AMISCHOTOLYPE Hassk., Flora 46: 391. 1863.

Amischotolype hookeri (Hassk.) Hara, Fl. East. Himal. 1: 399. 1966; Noltie, Fl. Bhut. 3(1): 223. 1994; Hajra *et al.*, Fl. Sikkim 1: 167. 1996; *Forrestia hookeri* Hassk., Flora 47: 629. 1864; Prain, Beng. Pl. 2: 1086. 1903.

Perennial herbs. Stems erect, distally branched. Leaf sheaths overlapping in distal part of stem; lamina elliptic, 25 – 30 × 5 – 10 cm, adaxially sparsely hispid or glabrous, abaxially yellow hirsute along veins, entire, caudate-acuminate, base cuneate. Heads with up to 10 flowers, within leaf sheath, sessile. Sepals ovate-oblong, 5 × 4 mm, sub-glabrous. Petals pale purple to reddish. Capsule ovoid, trigonous, rugose.

Flowers & Fruits: June to July.

Specimen Cited: Gorati Beel, Goutam & AP Das 0148, dated 08. 02. 2009.

Local Distribution: Marginal lowland areas; common

General Distribution: Bangladesh, Bhutan, India, Laos, Myanmar, Nepal, Vietnam.

COMMELINA L., Sp. Pl. 1: 40. 1753.

Key to the species:

- 1a. Lamina elliptic-ovate; capsule 5 seeded *C. benghalensis*
- 1b. Lamina ovate-lanceolate or linear-lanceolate; capsules 2 – 3 seeded 2
- 2a. Leaves scabridly pubescent; ovary 2 celled *C. suffruticosa*
- 2b. Leaves glabrous with only a few hairs at mouth or hirsute throughout;
ovary 3 celled 3
- 3a. Leaves acute; spathes 2 – 3 cm 4
- 3a. Leaves acuminate; spathes 2 – 4 cm *C. longifolia*
- 4a. Spathes conduplicate or free margins *C. diffusa*
- 4b. Spathes funnel shaped or fused margins *C. paludosa*

Commelina benghalensis L., Sp. Pl. 1: 41. 1753; Hook. *f.*, Fl. Brit. Ind. 6: 370. 1892; Noltie, Fl. Bhut. 3(1): 238. 1994; Hajra *et al.*, Fl. Sikkim 1: 168. 1996; Prain, Beng. Pl. 2: 1082. 1903; Cook, Aqua. Wetl. Pl. Ind. 86, 1996; Guha Bakshi, Fl. Mur. Dist. 326. 1984.

Local name: Kanchera.

Perennial herbs. Stems mostly creeping. Leaf sheaths sparsely hirsute-ciliate; lamina ovate, 3 – 6 × 1.5 – 3 cm, subglabrous. Involucral bracts borne opposite to leaves, often several, aggregated at branch-tips, proximal margins connate, acute. Proximal branch of cincinni with elongate peduncle and 1 – 3 exserted, flowers sterile, distal branch longer with fertile flowers. Sepals 2 mm, membranous. Petals blue, free, 5 mm. Chasmogamous flowers underground. Capsule ellipsoid, dehiscent.

Flowers & Fruits: January- September

Specimen Cited: Murti, Goutam & AP Das 0156, dated 08. 02. 2009.

Local Distribution: In open area all over forests and road side; very common

General Distribution: India, Bangladesh, Myanmar, Java, Hong Kong.

Commelina diffusa Burm. *f.*, Fl. Indica 18. t. 7. f. 2. 1768; Datta *et* Majumdar, Bull. Bot. Soc. Bengal 20(2): 39. 1966; Noltie, Fl. Bhutan 3(1): 237. 1994; Cook, Aqua. Wetl. Pl. Ind. 86, 1996; Hajra *et al.*, Fl. Sikkim 1: 168. 1996; *Commelina nudiflora auct. non L.*, Sp. Pl. 1: 41. 1753; Hook. *f.*, Fl. Brit. Ind. 6: 369. 1892; Prain, Beng. Pl. 2: 1082. 1903.

Local name: Kanchera.

Annual herbs. Stems creeping, branched. Leaves subsessile; lamina lanceolate, 3 – 10 × 1 – 3 cm. Spathes conduplicate. Involucral bracts borne opposite to leaves, folded, ovate-lanceolate, acuminate. Cincinni dichotomously branched from base; 1 – 4 long exserted male flowers; other branches with much shorter peduncle and 3 – 5 bisexual flowers. Sepals 3 – 4 mm, membranous. Petals blue, free, 2 longer ones 5 mm. Capsule oblong, trigonous.

Flowers & Fruits: January to September

Specimen Cited: Murti, Goutam & AP Das 0182, dated 09. 02. 2009.

Local Distribution: In open area all over forests and road side; very common

General Distribution: Pantropical.

Commelina longifolia Lam., 111. Gen. 1: 129. 1791; Cook, Aqua. Wetl. Pl. Ind. 85, 1996; Khan *et* Alam, Fl. Banglad. 4: 22. 1977. *Commelina salicifolia* Roxb., Fl. Ind. 1: 172. 1832; Hook. *f.*, Fl. Brit. Ind. 6: 370. 1892; Prain, Beng. Pl. 2: 1082. 1903. *Commelina pedunculosa* Spreng. *et*. Link, Jahrb. Gewächsk. 1(3): 74. 1820.

Local name: Pani Kanchera.

Stem slender, diffuse or spreading with long internodes; rooting from the basal nodes. Lamina glabrous, linear or linear-lanceolate, acute; sheath ciliate. Spathe axillary, ovate to ovate-lanceolate usually acuminate. Flowers blue. Petals free. Capsule upto 6 mm long, broadly oblong, 3-celled; seeds 2 – 4 mm long, ovoid, smooth, appendiculate.

Flowers & Fruits: July to January.

Specimen Cited: Gorati Beel, Goutam & AP Das 0216, dated 09. 02. 2009.

Local Distribution: Beel marginal forest.

General Distribution: India, Java and Hong Kong.

Commelina sufruticosa Bl., Enum. Pl. Jav. 1: 3. 1827-28; Hook. *f.*, Fl. Brit. Ind. 6: 374. 1892; Noltie, Fl. Bhut. 3(1): 236. 1994; Hajra *et al.*, Fl. Sikkim 1: 169. 1996; Prain, Beng. Plants 2: 1083. 1903.

Commelina rugulosa Clarke, J. Linn. Soc., Bot. 11: 446. 1871. *Commelina simsonii* Clarke, J. Linn. Soc., Bot. 11: 446. 1871. *Spathodithyros suffruticosus* (Bl.) Hassk., Commelin. Ind. 11. 1870.

Local name: Kanchera.

Perennial herbs. Stems erect or ascending, branched only distally, glabrous. Leaf sheaths sparsely hirsute ciliate; lamina lanceolate to ovate lanceolate, 8 – 10 × 3 – 5 cm, glabrous on both surfaces. Involucral bracts borne opposite to leaves, broadly cordate, obtuse. Cincinni 4 flowered; pedicels 3 mm, twisted in fruit. Petals white, free. Capsule sub globose, 2 valved. Seeds 1 per valve.

Flowers & Fruits: January to March.

Specimen Cited: Murti, Goutam & AP Das 0201, dated 09. 02. 2009.

Local Distribution: All over the forests.

General Distribution: India, Bangladesh, Nepal and Malaysia.

Commelina paludosa Bl., Enum. Pl. Jav. 1: 2. 1827; Hook. f., Fl. Brit. India 6: 372. 1894; Hara *et al.*, En. Fl. Pl. Nepal 1: 82. 1978; Noltie, Fl. Bhut. 3(1): 235. 1994; Cook, Aqua. Wetl. Pl. Ind. 85, 1996; Hajra *et al.*, Fl. Sikkim 1: 169. 1996. *Commelina obliqua* Buch.–Ham. ex Don, Prodr. Fl. Nepal. 45. 1825 (*nom. Illeg.*); Hook. f., Fl. Brit. India 6: 372. 1894; Prain, Beng. Pl. 2: 1083. 1903. *Commelina donii* Dietrich, Sp. Pl. 2: 895. 1832. *Commelina paludosa* f. *pedunculata* Qaiser *et* Jafrin, Fl. W. Pakistan 84: 13. 1975.

Local name: Jota Kanchera.

Perennial herbs. Stems often semi-erect. Leaves sessile; sheath densely Br. hispid at mouth; lamina lanceolate to ovate-lanceolate, 9 – 18 × 3 – 6 cm. Spathes funnel shaped. Involucral bracts often 5 – 8, forming terminal heads, sessile, glabrous, proximal margins connate, acute. Cincinnus 1; peduncle 1 cm; flowers 1 to several; pedicels twisted. Sepals 3 – 6 mm, membranous. Petals blue, 5 – 8 mm. Capsules ovoid – globose, trigonous.

Flowers & Fruits: August to April.

Specimen Cited: Murti, Goutam & AP Das 0282, dated 10. 02. 2009.

Local Distribution: Throughout forests; abundant.

General Distribution: India, Nepal, Bhutan, Myanmar, China, Thailand, Malaysia, Laos, Vietnam, Cambodia, Indonesia.

CYANOTIS D. Don, Prodr. Fl. Nepal. 45. 1825, *nom. cons.*

Key to the species:

- 1a. Cincinni reduced, 3 - 6 in axillary fascicles *C. axillaris*
- 1b. Cincinni solitary, rarely terminal and also with flowers in axillary heads ... 2
- 2a. Capsule obovoid, roots not fibrous *C. vaga*
- 2b. Capsule columnar, roots fibrous *C. cristata*

Cyanotis axillaris (L.) Don ex Sweet, Hort. Brit. 430. 1826; Noltie, Fl. Bhut. 3(1): 222. 1994; Hajra *et al.*, Fl. Sikkim 1: 167. 1996; Prain, Beng. Pl. 2: 1085. 1903; Cook, Aqua. Wetl. Pl. Ind. 87, 1996. *Commelina axillaris* L., Sp. Pl. 1: 42. 1753; *Cyanotis axillaris* (L.) Schult. f., Syst. Veg. 7(2): 1154. 1830. *Tonningia axillaris* (L.) Kuntze, Revis. Gen. Pl. 2: 722. 1891. *Cyanotis disruptens* Hassk., Commelin. Ind. 105. 1870.

Annual herbs; roots fibrous. Stems creeping, branched, 25 – 40 cm. Leaves all cauline; lamina linear, 20 – 60 × 5 – 7 mm, abaxially glabrous. Cincinni reduced, in axillary fascicles of 3 – 6 flowers. Sepals free, linear spatulate, abaxially hirsute. Petals blue, connate with 2 ends free; bracts imbricately arranged in 2 rows. Filaments blue, lanate. Capsules oblong, trigonous.

Flowers & Fruits: June to September.

Specimen Cited: Dhupjhora, Goutam & AP Das 0721, dated 14. 02. 2008.

Local Distribution: Roadside forests; less common.

General Distribution: India, Sri Lanka, Myanmar, Malaysia, Indonesia, Cambodia, Laos, Philippines, Thailand, Vietnam, Oceania.

Cyanotis cristata (L.) Don, Prodr. Fl. Nepal. 46. 1825; Noltie, Fl. Bhut. 3(1): 222. 1994; Hajra *et al.*, Fl. of Sikkim 1: 169. 1996; Prain, Beng. Pl. 2: 1085. 1903; Cook, Aqua. Wetl. Pl. Ind. 87, 1996. *Commelina cristata* L., Sp. Pl. 1: 42. 1753; *Tonningia cristata* (L.) Kuntze, Revis. Gen. Pl. 2: 722. 1891. *Tradescantia cristata* (L.) L., Syst. Nat. 12(2): 233. 1767. *Cyanotis imbricata* (Roxb.) Kunth, Enum. Pl. 4: 103. 1843. *Tradescantia imbricata* Roxb., Fl. Ind. 2: 120. 1824.

Annual herbs; roots fibrous. Stems creeping, often branched, 10 – 30 cm. Leaves all cauline; lamina oblong, lanceolate to narrowly elliptic, 2 – 8 × 1 – 2 cm. Cincinni often solitary, terminal or also axillary. Sepals connate at base, linear-lanceolate to oblanceolate, abaxially hirsute along mid-vein and margin. Petals blue or purple, connate with 2 ends free, 4 – 5 mm; bracts imbricately arranged in 2 rows. Filaments blue, lanate. Capsules columnar, trigonous, 2.5 mm. Seeds gray-Br., pitted.

Flowers & Fruits: July to October.

Specimen Cited: Khunia, Goutam & AP Das 0654, dated 13. 02. 2008.

Local Distribution: Throughout the forests.

General Distribution: India, Bhutan, Sri Lanka, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

Cyanotis vaga (Lour.) Schult. *et* Schult.f., Syst. Veg. 7: 1153. 1830; Hara *et al*, Enum. Fl. Pl. Nepal 1: 82. 1978; Noltie, Fl. Bhut. 3(1): 220. 1994; Hajra *et al.*, Fl. Sikkim 1: 169. 1996. *Transescantia vaga* Lour., Fl. Cochinch. 193. 1790. *Cyanotis barbara* Don, Prodr. Fl. Nepal 46. 1825; Hook. f., Fl. Brit. India 6: 385. 1894. *Commelina hirsuta* Hochst. *ex* Rich., Tent. Fl. Abyss. 2: 344. 1850. *Tonningia vaga* (Lour.) Kuntze, Revis. Gen. Pl. 2: 722. 1891. *Tradescantia vaga* Lour., Fl. Cochinch. 193. 1790.

Perennial herbs, bulbiferous. Bulbs globose. Stem branched, branching usually from base. Leaves all cauline; lamina linear to lanceolate, 4–12 cm × 0.3–1.5 cm. Cincinni solitary, rarely terminal and also with flowers in axillary heads. Sepals connate at base, oblong-lanceolate, abaxially white hirsute. Petals blue-purple, connate; bracts imbricately arranged in 2 rows. Filaments blue lanate. Capsule obovoid, trigonous. Seeds gray-Br., striate and finely reticulate.

Flowers & Fruits: July to October.

Specimen Cited: Khunia, Goutam & AP Das 0729, dated 14. 02. 2008.

Local Distribution: Throughout the forests; common in herland areas.

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

FLOSCOPA Lour., Fl. Cochinch. 1: 189, 192. 1790.

Floscopa scandens Lour., Fl. Cochinch. 1: 193. 1790; Noltie, Fl. Bhut. 3(1): 225. 1994; Hajra *et al.*, Fl. Sikkim 1: 170. 1996; Prain, Beng. Pl. 2: 1086. 1903; Cook, Aqua. Wetl. Pl. Ind. 88, 1996.

Perennial herbs. Stems 50 – 70 cm, simple, prostrate proximally. Leaves usually sessile or with short, winged petiole; lamina elliptic to lanceolate, 5 – 10 × 1–3 cm. Inflorescence broomlike, with extremely numerous small flowers; peduncle nearly absent; pedicels very short. Sepals shallowly boat shaped. Petals blue - purple. Fertile stamens 6; filaments glabrous. Capsules ovoid, 2-valved, compressed. Seeds semi-ellipsoid.

Flowers & Fruits: July to November.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0671*, dated 13. 02. 2008.

Local Distribution: Margin of the Gorati Beel.

General Distribution: India, Bhutan, Laos, Myanmar, Thailand, Vietnam; Oceania.

MURDANNIA Royle, Ill. Bot. Himal. Mts. 1: 403. 1840, *nom. cons.*

Key to the species:

- 1a. Lamina linear; inflorescence scorpioid cymose *M. nudiflora*
 1b. Lamina ovate-lanceolate; inflorescence terminal panicle *M. spiralis*

Murdannia nudiflora (L.) Brenan, Kew. Bull. 7: 189. 1952; Noltie, Fl. Bhut. 3(1): 229. 1994; Hajra *et al.*, Fl. Sikkim 1: 171. 1996; Cook, Aqua. Wetl. Pl. Ind. 90, 1996. *Commelina nudiflora* L., Sp. Pl. 1: 41. 1753. *Aneilema nudiflorum* (L.) R. Br., Prodr. 271. 1810; Hook. *f.*, Fl. Brit. Ind. 6: 378. 1892; Prain, Beng. Pl. 2: 1084. 1903. *Commelina minuta* Bl., Catalogus 34. 1823. *Aneilema minutum* (Blume) Kunth, Enum. Pl. 4: 661. 1843.

Annual herbs. Roots fibrous. Rhizomes absent. Stems diffuse, creeping proximally. Leaves nearly all cauline; lamina linear to lanceolate, 3 – 10 × 0.5 – 1 cm, obtuse or acuminate. Involucral bracts absent or spreading or sheathlike. Cincinni several, in terminal panicles, several densely arranged flowers; peduncle slender; pedicels slender, straight. Sepals ovate-elliptic. Petals purple, obovate-orbicular. Fertile stamens 2. Capsules ovoid globose, trigonous.

Flowers & Fruits: October to April.

Specimen Cited: Medlajhora, *Goutam & AP Das 0613*, dated 11. 02. 2008.

Local Distribution: Marshy low lands of forest.

General Distribution: Pantropical.

Murdannia spirata (L.) Brückn., Pfamilien. 2, 15a: 173. 1930 (ut “*spiratum*”); Noltie, Fl. Bhut. 3(1): 229. 1994; Cook, Aqua. Wetl. Pl. Ind. 91, 1996. *Commelina spirata* L., Mant. Alt. 176. 1771. *Aneilema spiratum* (L.) R.Br., Prodr. 271. 1810; Hook. *f.*, Fl. Brit. Ind. 6: 377. 1892; Prain, Beng. Pl. 2: 1084. 1903.

Perennial herbs. Roots fibrous. Rhizomes horizontal. Stems slender. Lamina narrowly ovate to lanceolate, 2 – 3.5 × 1 cm, margin undulate, obtuse to acute, base truncate, glabrous on both surfaces. Cincinni 1 – 4, forming terminal panicles; bracts very small; pedicels elongate. Sepals elliptic, persistent. Petals pale blue or nearly white, obovate-orbicular. Fertile stamens 3; staminodes 3. Capsules oblong, trigonous.

Flowers & Fruits: July to February.

Specimen Cited: Medlajhora, *Goutam & AP Das 0591*, dated 25. 07. 2009.

Local Distribution: Marshy low land of conserved areas.

General Distribution: India and Indo-Malaysia.

POLLIA Thunb., Nov. Gen. Pl. 1: 11. 1781 [24 Nov 1781].

Pollia hasskarlii R.S. Rao in Notes Roy. Bot. Gard. Edinburgh 25: 188. 1964; Noltie, Fl. Bhut. 3(1): 232. 1994; Hajra *et al.*, Fl. Sikkim 1: 171. 1996.

Perennial herbs. Stems ascending. Leaves sessile; lamina elliptic to obovate-oblongate, 20 – 30 × 4 – 8 cm, glabrous on both surfaces. Inflorescence usually shorter than distal leaves; cincinni numerous; bracts membranous. Sepals subovate, shallowly boat shaped, abaxially puberulent glandular, caducous. Petals white or pale purple, obovate. Stamens 6, all fertile. Fruits indehiscent baccate, globose.

Flowers & Fruits: March to June.

Specimen Cited: Medlajhora, Goutam & AP Das 0568, dated 24. 07. 2009.

Local Distribution: Marshy low land.

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

Pontederiaceae Kunth in HBK, Nov. Gen. et Sp. 1: 265. 1816; *nom. cons.*

Key to the genera

- 1a. Flowers sessile; perianth zygomorphic, segments basally united *Eichhornia*
- 1b. Flowers pedicellate; perianth actinomorphic, segments free nearly to base *Monochoria*

EICHHORNIA Kunth, Enum. Pl. iv. 129. 1843.

Eichhornia crassipes (Mart.) Solms in de Candolle, Monogr. Phan.4: 527. 1883; Subramanym, Aquat. Angiosp. 70. 1962; Noltie, Fl. Bhut. 3(1): 175. 1994; Cook, Aqua. Wetl. Pl. Ind. 329, 1996; Hajra *et al.*, Fl. Sikkim 1: 166. 1996; Bora *et* Kumar, Fl. Div. Ass. 358. 2003. *Pontederia crassipes* Mart., Nov. Gen. Pl. 9. t. 4. 1823. *Heteranthera formosa* Miq., Linnaea 17: 60. 1843. *Piaropus crassipes* (Mart.) Raf., Fl. Tellur. 2: 81. 1837.

Local name: Kachuri pana

Floating herbs. Roots many, long fibrous. Stems very short; stolons simple, apically producing new plants. Leaves radical; petiole green, 5 – 30 cm, spongy, usually very much swollen; lamina orbicular to broadly ovate, 5 – 18 × 5 – 16 cm, leathery, shallowly cordate to rounded. Spike spirally 7 – 15 flowered. Perianth 6 parted. Stamens 6; filaments curved. Pistil heterostylic; stigma glandular hairy.

Flowers: September to January.

Specimen Cited: Medlajhora, Goutam & AP Das 0179, dated 09. 02. 2009.

Local Distribution: Throughout the water bodies of National Park.

General Distribution: India: all states of the country; Sri Lanka, Nepal, Bhutan, Bangladesh, Pakistan. Native to Brazil, now Pantropic.

MONOCHORIA Presl, Rel. Haenk. i. 127. 1827.

Key to the species:

- 1a. Lamina triangular with sagittate or hastate base *M. hastata*
- 1b. Lamina broadly ovate to oblong, base obtuse *M. vaginalis*

Monochoria hastata (L.) Solms in Candolle, Mon. Phan.4: 523. 1883; Prain, Beng. Pl. 2: 1079. 1903; Noltie, Fl. Bhut. 3(1): 175. 1994; Bora *et* Kumar, Fl. Div. Ass. 358. 2003. *Pontederia hastata* L., Sp. Pl. 1: 288. 1753. *Monochoria hastaefolia* Presl, Rel. Haenk.1: 128. 1827; Hook. *f.*, Fl. Brit. Ind. 6: 362. 1882. *Carigola hastata* (L.) Raf., *Fl. Tellur.* 2: 10. 1837.

Perennial herbs, aquatic. Radical leaves with sheath broadened at base; petiole 10 – 60 cm; lamina triangular to triangular-ovate, 5 – 20 × 3 – 15 cm, sagittate to hastate, acuminate. Racemes short, erect, subumbellate; peduncle shorter than associated leaf petiole. Perianth segments bluish with green median vein and reddish blotch, ovate. Stamens filaments filiform. Style hairy at apex. Capsule oblong. Seeds oblong.

Flowers & Fruits: August to March.

Specimen Cited: Gorati Beel, Goutam & AP Das 0212, dated 09. 02. 2009.

Local Distribution: Marginal areas of Gorati Beel.

General Distribution: Throughout India; Sri Lanka, China, Malaysia and S.E. Asia.

Monochoria vaginalis (Burm. *f.*) C. Presl, Reliq. Haenk. 1: 128. 1827; Prain, Beng. Pl. 2: 1079. 1903; Noltie, Fl. Bhut. 3(1): 174. 1994; Hajra *et al.*, Fl. Sikkim 1: 166. 1996. *Monochoria vaginalis* (Burm. *f.*) C. Presl *ex* Kunth, Enum. 4: 134. 1834; Hook. *f.*, Fl. Brit. Ind. 6: 363. 1892. *Pontederia vaginalis* Burm. *f.*, Fl. Ind. 80. 1768. *Monochoria vaginalis* var. *plantaginea* (Roxb.) Solms, in Candolle, Monog. Phan. 4: 524. 1883; Hook. *f.*, Fl. Brit. Ind. 6: 363. 1892. *Gomphima vaginalis* (Burm. *f.*) Raf., *Fl. Tellur.* 2: 10. 1837.

Aquatic herbs. Stems erect. Radical leaves with broad sheath; petiole 3 – 40 cm; lamina narrowly cordate, ovate to lanceolate, 2 – 20 × 1 – 8 cm, acute to acuminate. Flowering stems 12 – 35 cm. Inflorescences reflexed after anthesis; bract lanceolate. Flowers pedicellate. Perianth segments purplish. Filaments of smaller stamens filiform. Capsules ovoid. Seeds ellipsoid.

Flowers & Fruits: September to May.

Specimen Cited: Gorati Beel, Goutam & AP Das 0257, dated 10. 02. 2009.

Local Distribution: Marginal areas of Gorati Beel.

General Distribution: India, Bangladesh, Sri Lanka, Malayan Islands, China, Japan, Tropical Africa.

Order: Poales Small (1903)

Sub-order: Graminoid

Poaceae Nash in Small, Fl. Southeast U.S. 48. 1903 (*nom. alt.* vs. Gramineae *nom. cons.*)

Key to the genera:

- 1a. Spikelets unisexual, male and female in same or different inflorescence **Coix**
- 1b. Spikelets hermaphrodite, sterile and fertile in mixed inflorescence 2
- 2a. Spikelets 2 flowered 3
- 2b. Spikelets 3 to many flowered 16
- 3a. Spikelets paired 4
- 3b. Spikelets solitary 7
- 4a. Spikelets in false compact spike..... **Hemarthria**
- 4b. Spikelet not in above manner 5

5a. Spikelets awned; glumes coriaceous	<i>Sclerostachya</i>
5b. Spikelets awnless; glumes herbaceous	6
6a. Panicle cylindric; all spikelets pedicellate	<i>Imperata</i>
6b. Panicle wide; only one spikelet pedicellate	<i>Saccharum</i>
7a. Some spikelets replaced by solitary bristle	<i>Setaria</i>
7b. Spikelets not replaced by any bristle	8
8a. Spikelets in panicles	10
8b. Spikelets in spike or raceme like inflorescence	9
9a. Lateral inflorescence erect... ..	<i>Sacciolepis</i>
9b. Lateral inflorescence densely congested and spike like	<i>Panicum</i>
10a. Upper lemma cartilaginous	<i>Digitaria</i>
10b. Upper lemma crustaceous or coriaceous	11
11a. Spikelets abaxial	<i>Bracharia</i>
11b. Spikelets adaxial	12
12a. Spikelets surrounded by one or more bristles	<i>Pennisetum</i>
12b. Spikelets not surrounded by bristles	13
13a. Glumes awned	14
13b. Glumes awnless	15
14a. Lamina ovate- lanceolate; spikelet solitary	<i>Oplismenus</i>
14b. Lamina linear; spikelets crowded	<i>Echinochloa</i>
15a. Lower glume absent or very small	<i>Paspalum</i>
15b. Lower glume usually half length of spikelets	<i>Paspalidium</i>
16a. Spikelets with only one fertile floret and others sterile	17
16b. Spikelets with 2 or more fertile florets	23
17a. Raceme deciduous or spikelets falling entire	<i>Perotis</i>
17b. Raceme persistent; spikelets breaking up at maturity	18
18a. Spikes arranged digitately	19
18b. Spikes usually in panicle	20
19a. Spikelets without reduced florets, awnless	<i>Cynodon</i>
19b. Spikelets with one or more reduced florets; awned	<i>Chloris</i>
20a. Glumes well developed; stamens 1-3	<i>Sporobolus</i>
20b. Glumes minute or absent; stamens 6	21
21a. Culms floating, lamina ovate-lanceolate	<i>Hygroryza</i>
21b. Culms not floating, lamina linear	22
22a. Spikelets consist of a single fertile florets	<i>Leersia</i>
22b. Spikelets with 2 glume like sterile lemmas bellow fertile florets	<i>Oryza</i>

- 23a. Lower glumes absent; upper one long *Axonopus*
 23b. Both glumes present 24
 24a. Spikelets arranged in open, contractile or spike like panicle *Eragrostis*
 24b. Spikelets arranged in solitary digitate spike 25
 25a. Inflorescence solitary terminal spike *Desmostachya*
 25b. Inflorescence not in solitary terminal spike 26
 26a. Spikes racemosely arranged *Leptochloa*
 26b. spikes digitatly arranged 27
 27a. Rachis ending in a sharp point *Dactyloctenium*
 27b. Rachis ending in a spikelet *Eleusine*

AXONOPUS P. Beauv., Ess. Agrostogr. 12. 1812.

Axonopus compressus (Sw.) P. Beauv., Ess. Agrost. 12: 154, 167. 1812; Noltie, Fl. Bhut. 3(2): 717. 2000. *Milium compressus* Sw., Prodr. Veg. Ind. Occ. 24. 1788.

Perennial ascending tufted grass, culms slender, compressed. Lamina oblong to linear-lanceolate; sheath keeled; ligules thin, fimbriate. Inflorescence racemose. Upper glumes elliptic – lanceolate, laterally hairy. Lemma ovate, acute.

Flowers & Fruits: August to December.

Specimen Cited: Gorumara, Goutam & AP Das 0605, dated 26. 07. 2009.

Local Distribution: Open forests and road side areas.

General Distribution: India: Arunachal Pradesh, Assam, North India, West Bengal, Andaman & Nicobar Islands; America, Brazil, Mexico, Myanmar.

BRACHIARIA (Trin.) Griseb., Ledebour, Fl. Ross. 4: 469. 1853.

Key to the species:

- 1a. Lamina linear-lanceolate, hispid at margin *B. distachya*
 1b. Lamina ovate-lanceolate, amplexicaul, hairy *B. reptans*

Brachiaria distachya (L.) Stapf in Prain, Fl. Trop. Afr. 9: 565. 919. *Panicum distachyum* L., Mant. 1: 138. 1767; Hook. f., Fl. Brit. Ind. 7: 37. 1896; Prain, Beng. Pl. 2: 1178. 1903.

Annual decumbent creeping grass. Lamina linear-lanceolate, hispid at margin; ligule with ring of hairs. Spikelets in panicle, elliptic-ovate. Caryopsis oblong.

Flowers & Fruits: September to December.

Specimen Cited: Khunia, Goutam & AP Das 0659, dated 13. 02. 2008.

Local Distribution: Low grasslands.

General Distribution: Plains of India, Myanmar, Malaysia, China and Australia.

Brachiaria reptans (L.) Gardner et Hubb. in Hook., Pl. sub. t. 3: 363. 1938; Hajra et al., Fl. Sikkim 1: 246. 1996. Guha Bakshi, Fl. Mur. Dist. 378. 1984. *Panicum reptans* L., Syst. Nat. 10: 870. 1759.

Panicum prostratum Lam. in Tab. Morais, Encycl. Meth. Bot. 1: 171. 1791; Hook. f., Fl. Brit. Ind. 7: 33. 1896; Prain, Beng. Pl. 2: 1177. 1903. *Urochloa reptans* Stapf; *sensu* Haines, Bot. Bihar & Orissa V: 1003. 1924.

Clums long, creeping below, nodes glabrous; much branched, innovation shoots intravaginal. Lamina amplexicauled, hairy, ovate-lanceolate, sheaths ciliate not up to the next node. Racemes spreading, usually crowded, rachis hairy, trigonous pedicels with cilia longer than spikelets. Spikelets crowded, sub-sessile, ellipsoid glabrous.

Flowers & Fruits: March to December.

Specimen Cited: Murti, Goutam & AP Das 0362, dated 21. 07. 2009.

Local Distribution: Roadside areas.

General Distribution: Pantropical.

BAMBUSA Schreber, Gen. Pl. 236. 1789, *nom. cons.*

Key to the Species:

- 1a. Culms sheaths without auricles *B. balcooa*
- 1b. Culms sheaths with auricles 2
- 2a. Nodes with rings of gray-white silky hairs below and above sheath scar *B. tulda*
- 2b. Nodes without hairs and sheath scar but a deep yellow ring is present *B. vulgaris*

Bambusa balcooa Roxb., Hort. Beng. 25. 1814; Fl. Ind. 2: 196. 1832; Hook. f., Fl. Brit. Ind. 7: 39. 1896; Noltie, Fl. Bhut. 3(2): 488. 2000; Prain, Beng. Pl. 2: 1233. 1903.

Local name: Boro Bansh

Culms up to 25 m long, to 16 cm in diameter, green when young, pale grayish-green on maturity; wall thick at base, sheaths without auricles; nodes swollen with whitish ring above, hairy below; lower internodes 10 – 12 cm and upper internodes upto 45 cm long. Lamina oblong – lanceolate, rounded or sub-cordate at the base, glabrous above; leaf-sheaths with dense, Br. hairs. Mature spikelets flattened.

Flowers & Fruits: June to December.

Specimen Cited: Village sector, Goutam & AP Das 0702, dated 14. 02. 2008.

Local Distribution: Planted in Murti and Dhupjhora forests and forest villages.

General Distribution: Bangladesh, India, Indonesia.

Bambusa tulda Roxb., Fl. Ind., 2: 193. 1832; Noltie, Fl. Bhut. 3(2): 491. 2000; Prain, Beng. Pl. 2: 1232. 1903; Hajra *et al.*, Fl. Sikkim 1: 237. 1996.

Local name: Talda Bansh

Culms up to 14 m, internodes 30 – 35 cm, wall very thick, sheaths with auricles; nodes with rings of gray-white silky hairs below and above sheath scar, apex subtruncate; auricles unequal, shortly fimbriate; blade erect, slightly asymmetrical, broadly triangular, apex acutely acuminate. Lamina broadly linear or linear – lanceolate, densely villous, glabrous.

Flowers & Fruits: June to December.

Specimen Cited: Murti, Goutam & AP Das 0715, dated 14. 02. 2008.

Local Distribution: Planted in Villages.

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

Bambusa vulgaris Schrad. ex Wendl., Coll. Pl. 2: 26. 1810; Prain, Beng. Pl. 2: 1233. 1903.

Local name: Holud Bansh.

Culms up to 15 m, straight, sheaths with auricles; internodes deep yellow; nodes prominent; usually branching from lower nodes. Branches many, clustered. Culm sheaths deciduous. Lamina lanceolate, 10–25 x 1–3 cm. Pseudospikelets several, clustered at nodes, narrowly lanceolate to linear lanceolate, slightly flattened, apparently bifid.

Flowers & Fruits: Not recorded.

Specimen Cited: Dhupjhora, Goutam & AP Das 0678, dated 14. 02. 2008.

Local Distribution: Planted in Tourist Lodge garden.

General Distribution: Pantropical.

Note: Cultivated in Forest boundary areas.

CHLORIS Sw., Prodr. 25. 1788.

Chloris inflata Link, Enum. Pl. 1: 105. 1821. *Andropogon barbatus sensu* L., Mantissa 2: 302. 1771. *Chloris barbata sensu* Sw., Prodr. 1: 200. 1797; Hook. f., Fl. Brit. Ind. 7: 292. 1897; Prain, Beng. Pl. 2: 1228. 1903; Guha Bakshi, Fl. Mur. Dist. 379. 1984.

Perennial tufted grass; culms erect, stout with creeping branched base; nodes with large tuft of leaves. Lamina flat, sometimes folded, sheath mouth ciliate, ligules a narrow membranous ring. Inflorescence a whorl of 4–22 spikes, sub-erect, rachis scabrid.

Flowers & Fruits: June to October.

Specimen Cited: Gorati Beel, Goutam & AP Das 0628, dated 12. 02. 2008.

Local Distribution: Marginal to highland.

General Distribution: Pantropical.

COIX L., Sp. Pl. 2: 972. 1753.

Coix lachryma-jobi L., Sp. Pl. 2: 972. 1753; Hook. f., Fl. Brit. Ind. 7: 100. 1897; Noltie, Fl. Bhut. 3(2): 839. 2000; Prain, Beng. Pl. 2: 1210. 1903; Hajra *et al.*, Fl. Sikkim 1: 248. 1996; *Coix lachrymal* L., Syst. Nat. (ed. 10) 1261. 1759. *Coix arundinacea* Lam., Encycl. Meth. Bot. 3: 422. 1791.

Tall densely tufted or perennial, grass; culms much branched, rooting at lower nodes, robust, spongy, glabrous, polish leafy. Lamina flat, firm, acuminate, cordate at base; inflorescence sub erect, false spikes, peduncles long.

Flowers & Fruits: October to March.

Specimen Cited: Murti Jaldhaka junction, Goutam & AP Das 0657, dated 13. 02. 2008.

Local Distribution: Marginal to lowland areas.

General Distribution: India; Tropical Asia, Africa, America.

CYNODON Rich. in Pers., Syn. Pl. 1: 85. 1805, *nom. cons.*

Cynodon dactylon (L.) Pers., Syn. Pl. 1: 85. 1805; Hook. *f.*, Fl. Brit. Ind. 7: 288. 1896; Noltie, Fl. Bhut. 3(2): 678. 2000; Prain, Beng. Pl. 2: 1227. 1903; Hajra *et al.*, Fl. Sikkim 1: 285. 1996; Bor, Grass. Bur. Cey. Ind. & Pak. 269, t. 52. 1960; Guha Bakshi, Fl. Mur. Dist. 381. 1984. *Panicum dactylon* L., Sp. Pl. 58. 1753.

Local name: Durbaghas

Perennial prostrate or creeping; runners rooting at nodes. Lamina linear-lanceolate or ovate-lanceolate, sparsely hairy; sheath margin ciliate; ligule membranous. Panicle of radiating branches, peduncle erect; spikelets pedicelled, 2-flowered; lower florets sterile; upper bisexual, glumes 3 – 5 nerved.

Flowers & Fruits: Most part of the year.

Specimen Cited: Khunia, Goutam & AP Das 0689, dated 14. 02. 2008.

Local Distribution: Forests and road side open areas.

General Distribution: India and S.E. Asia.

DESMOSTACHYA (Stapf) Stapf in Dyer, Fl. Cap. 7: 316. 1898.

Desmostachya bipinnata (L.) Stapf, Fl. Cap. 7: 632. 1900; Majumdar, Bull. Bot. Soc. Beng. 10 (1 & 2): 30. 1956; Guha Bakshi *et. Sen*, Bull. Bot. Soc. Beng. 23: 34. 1964. *Briza bipinnata* L., Syst. Nat. (ed. 10) 2: 875. 1759. *Uniola bipinnata* L., Sp. Pl. (ed. 2) 104. 1762. *Cynosurus durus* Forssk., Fl. Aegypt. Arab. 21. 1775. *Eragrostis cynosuroides* Beauv., Agrost. 71: 162. 1812; Hook. *f.*, Fl. Brit. Ind. 7: 324. 1896; Prain, Beng. Pl. 2: 1223. 1903.

Perennial, giant grass, branches from base. Root stock very stout; stolons with shiny sheath. Stem tufted, sub-erect. Leaves many, basal, rigid; lamina with filiform apex, margin hispid; sheath with long hairs, ligule ciliate, ridged. Panicles strict and erect; rachis puberulous. Spikelets sessile, jointed. Caryopsis obliquely obovoid to ovate-oblong.

Flowers & Fruits: April to January.

Specimen Cited: Khunia, Goutam & AP Das 0707, dated 14. 02. 2008.

Local Distribution: Forests and road side areas.

General Distribution: India, Persia, Arabia, North Africa to Tropical Africa.

DACTYLOCTENIUM Willd., Enum. Pl. 2: 1029. 1809.

Dactyloctenium aegyptium (L.) Willd., Enum. Pl. Horti. Berol. 1029. 1809, as “*aegypticum*”; Bor, Grass. Bur. Cey. Ind. & Pak. 489, t. 52. 1960; Hajra *et al.*, Fl. Sikkim 1: 285. 1996. *Cynosurus aegyptius* L., Sp. Pl. 1: 72. 1753. *Eleusine aegyptiaca* (L.) Desf., Fl. Atlant. 1: 85. 1798; Prain, Beng. Pl. 2: 1230. 1903. *Panicum dactylon* L., Sp. Pl. 1: 58. 1753; Hook. *f.*, Fl. Brit. Ind. 7: 295. 1896.

Annual herbs; rooting at nodes. Leaves distichous; lamina linear-lanceolate, flat, ciliate on margin; ligule membranous. Panicle of 2 – 6 digitate horizontal spikes; spikelets long, compressed, sessile, densely crowded; glumes unequal. Stamens 3. Caryopsis laterally flattened.

Flowers & Fruits: July to December.

Specimen Cited: Khunia, Goutam & AP Das 0718, dated 14. 02. 2008.

Local Distribution: Forests and road side areas.

General Distribution: India, Tropical parts of the world.

DIGITARIA Haller, Hist. Stirp. Helv. 2: 244. 1768, *nom. cons.*, non Heister *ex* Fabricius (1759), *nom. rej.*

Key to the species:

- 1a. Racemes 2 – 9; decumbent *D. bicornis*
 1b. Racemes 2; erect *D. ciliaris*

Digitaria bicornis (Lam.) Roem. *et* Schult., Syst. 2: 470. 1817; Guha Bakshi, Fl. Mur. Dist. 384. 1984. *Paspalum bicornis* Lam., Encycl. 1: 176. 1791. *Digitaria biformis* Willd., Enum. Pl. Hort. Berol. 1: 92. 1809. *Paspalum sanguinale* Lam. var. *commutatum* Hook.f., Fl. Brit. Ind. 7: 15. 1896. *Digitaria sanguinalis* Scopoli var. *commutata* Hook.f. *sensu* Haines, Bot. Bihar & Orissa V: 1007. 1924; Prain, Beng. Pl. 2: 1181. 1903.

Erect, annual herbs. Lamina linear, scabrid, sparsely soft-hairy; sheath glabrous to pilose. Spikelets binate, glabrous to slightly hairy, sessile spikelet slightly pubescent; stamens 3. Caryopsis elliptic, 0.25 cm long.

Flowers & Fruits: July to November.

Specimen Cited: Murti, Goutam & AP Das 0725, dated 14. 02. 2008.

Local Distribution: All over the forests and road side areas.

General Distribution: India, Tropical and Sub-tropical Asia and Africa.

Digitaria ciliaris (Retz.) Koeler, Descr. Gram. 27. 1802; Noltie, Fl. Bhut. 3(2): 728. 2000; Hajra *et al.*, Fl. Sikkim 1: 251. 1996; Guha Bakshi, Fl. Mur. Dist. 385. 1984. *Panicum ciliare* Retz., Obs. Bot 4: 16. 1786. *Paspalum sanguinale* Lam. Var *ciliaris* (Retz.) Hook.f., Fl. Brit. Ind. 15. 1896. *Digitaria sanguinalis* Scopoli, fa. *commutata sensu* Haines, Bot. Bihar & Orissa V: 1007. 1924; Prain, Beng. Pl. 2: 1181. 1903. *Digitaria adscendens* (H B K) Henrard, Blumea 1: 92. 1934.

Erect or decumbent, annual grass. Lamina linear-lanceolate, glabrous, ligule truncate. Racemes 2 – 9, sub-digitate; spikelets in pairs, oblong, acute, awnless. Stamens 3. Caryopsis 0.2 cm long.

Flowers & Fruits: May to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0674, dated 13. 02. 2008.

Local Distribution: All over the marshy lands.

General Distribution: Pantropical.

ECHINOCHLOA Beauv., Ess. Agrostogr. 53. 1812, *nom. cons.*

Key to the species:

- 1a. Stem slender, decumbent; lowest racemes usually under 2 cm *E. colona*
 1b. Stem stout, erect; lowest racemes usually over 3 cm *E. crus-galli*

Echinochloa crus-galli (L.) Beauv., Ess. Agrost. 53: 161. 1812; Noltie, Fl. Bhut. 3(2): 703. 2000; Hajra *et al.*, Fl. Sikkim 1: 254. 1996; Guha Bakshi, Fl. Mur. Dist. 387. 1984. *Panicum crusgalli* L., Sp. Pl. 1: 56. 1753; Hook. *f.*, Fl. Brit. Ind. 7: 30. 1896; Prain, Beng. Pl. 2: 1177. 1903.

Annual, aquatic, floating or ascending, glabrous grass. Lamina linear, tapering to the acute point, subflaccid, margin finely cartilaginous. Inflorescence erect, much branched, pedicles binate or fascicled, very short; spikelets crowded, ovate elliptic, cuspidate or awned. Caryopsis broadly elliptic.

Flowers & Fruits: August to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0730, dated 14. 02. 2008.

Local Distribution: All over the marshy lands.

General Distribution: India, Myanmar, S. E. Asia, Sri Lanka, Africa.

Echinochloa colona (L.) Link, Enum. Hort. Berol. 2: 209. 1833; Noltie, Fl. Bhut. 3(2): 702. 2000; Hajra *et al.*, Fl. Sikkim 1: 253. 1996; Bor, Grass. Bur. Cey. Ind. & Pak. 308. 1960; Guha Bakshi, Fl. Mur. Dist. 387. 1984. *Panicum colonum* L., Syst. 870. 1759; Hook. *f.*, Fl. Brit. Ind. 7: 295. 1896; Prain, Beng. Pl. 2: 1177. 1903.

Annual, marshland, prostrate, slender grass; branched at lower parts, glabrous and smooth. Lamina narrow, linear, glabrous; sheath loose, smooth, compressed. Panicles branches 6 to many; spikelets ovate or elliptic, nearly sessile, glabrous, crowded, 4-ranked. Caryopsis elliptic.

Flowers & Fruits: July to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0708, dated 14. 02. 2008.

Local Distribution: All over the marshy lands.

General Distribution: India, Tropical Asia, Australia.

ELEUSINE Gaertn., Fruct. Sem. Pl. 1: 7. 1788.

Eleusine indica (L.) Gaertn., Fruct. 1: 8. 1788; Hook. *f.*, Fl. Brit. Ind. 7: 293. 1896; Noltie, Fl. Bhut. 3(2): 667. 2000; Hajra *et al.*, Fl. Sikkim 1: 288. 1996; Bor, Grass. Bur. Cey. Ind. & Pak. 493. 1960; Prain, Beng. Pl. 2: 1229. 1903. *Cynosurus indicus* L., Sp. Pl. 1: 72. 1753.

Annual herbs. Culms tufted, rooted at nodes. Lamina flat or folded, 8 – 14 x 0.2 – 0.5 cm, glabrous to adaxial surface tuberculate-pilose. Inflorescence of digitate, 2 – 5 linear ascending racemes; spikelets elliptic, florets 3 – 9; glumes lanceolate, scabrid along keel; lower glume 1 veined; upper glume with thickened keel; lemmas ovate, acute; palea keels winged. Grain blackish, oblong to ovate.

Flowers & Fruits: June to October.

Specimen Cited: Gorumara, Goutam & AP Das 0574, dated 25. 07. 2009.

Local Distribution: All over the forests.

General Distribution: India, tropical and subtropical parts of world.

ERAGROSTIS Wolf, Gen. Pl. 23. 1776.

Key to the species:

1a. Rachilla jointed *E. tenella*

1b. Rachilla tough and smooth 2

- 2a. Spikelets flate, elliptic-oblong..... *E. unioloides*
 2b. Spikelets not flat, linear-oblong *E. pilosa*

Eragrostis pilosa (L.) Beauv., Ess. Agrost. 71. 162. 175. 1812; Hook. *f.*, Fl. Brit. Ind. 7: 323. 1896; Noltie, Fl. Bhut. 3(2): 665. 2000; Prain, Beng. Pl. 2: 1223. 1903; Hajra *et al.*, Fl. Sikkim 1: 291. 1996; *Poa pilosa* L., Sp. Pl. 1: 68. 1753.

Annual grass. Culms tufted. Lamina finely acuminate; sheath glabrous, ligule a ridge of hairs. Panicles long, pyramidal, spikelets linear, purplish; rachilla persistent; glumes unequal, ovate; stamens 3. Caryopsis ellipsoid.

Flowers & Fruits: June – August.

Specimen Cited: Gorati Beel, Goutam & AP Das 0558, dated 24. 07. 2009.

Local Distribution: All over the marshy lands.

General Distribution: Tropical and warmer regions of world.

Eragrostis tenella (L.) Beauv. *ex* Roem. *et* Schult., Syst. Veg. 2: 576. 1817; Noltie, Fl. Bhut. 3(2): 657. 2000; Prain, Beng. Pl. 2: 1221. 1903; Hajra *et al.*, Fl. Sikkim 1: 291. 1996; Guha Bakshi, Fl. Mur. Dist. 392. 1984. *Poa tenella* L., Sp. Pl. 1: 69. 1753. *Eragrostis tenella* var. *plumosa* (Retz.) Stapf, 315. 1896; Prain, Beng. Pl. 2: 1220. 1903.

Annual, erect, tufted grass. Lamina narrowly linear; sheath ciliate at the mouth; ligule ciliate. Panicles loose, plumose; spikelets oblong. Glumes ovate-oblong. Caryopsis ovoid.

Flowers & Fruits: August to February.

Specimen Cited: Gorati Beel, Goutam & AP Das 0514, dated 23. 07. 2009.

Local Distribution: All over the marshy lands.

General Distribution: India, tropical parts of world.

Eragrostis unioloides (Retz.) Nees *ex* Steud., Syn. Pl. Glum. 1: 264. 1854; Hajra *et al.*, Fl. Sikkim 1: 292. 1996. *Poa unioloides* Retz., Obs. Bot. 5: 19. 1789. *Eragrostis amabelis* auct. non Wight *et* Arn. in Hook. *f.*, Fl. Brit. Ind. 317. 1896; Prain, Beng. Pl. 2: 1220. 1903.

Annual, erect, tufted grass. Lamina flat; sheath striate; ligules membranous. Spikelets ovate – oblong, obtuse, pinkish-white. Caryopsis pointed.

Flowers & Fruits: August to March.

Specimen Cited: Medlajhora, Goutam & AP Das 0572, dated 24. 07. 2009.

Local Distribution: Moist areas.

General Distribution: India, Myanmar, Sri Lanka, S.E. Asia.

HEMARTHRIA R.Br., Prodr. 207. 1810.

Key to the species:

- 1a. Decumbent, pubescent grass *H. compressa*
 1b. Erect, glabrous grass *H. longifolia*

Hemarthria compressa (L.f.) R.Br., Prodr. 207. 1810; Majumdar, Bull. Bot. Soc. Beng. 10(1&2): 102. 1956. Hajra *et al.*, Fl. Sikkim 1: 256. 1996. *Rottbia compressa* L.f., Suppl. 114. 1781; Hook. f., Fl. Brit. Ind. 7: 153. 1896; Prain, Beng. Pl. 2: 898. 1903. *Rottbia glabra* Roxb., Fl. Ind. 1: 253. 1820.

Annual, erect, tufted grass; usually branched; culms leafy throughout; lamina linear, acute; sheath loose and short; ligule small and round. Racemes, compressed, erect; spikelets linear, lanceolate.

Flowers & Fruits: March to January

Specimen Cited: Gorumara, Goutam & AP Das 0584, dated 25. 07. 2009.

Local Distribution: Forests and road side areas.

General Distribution: India and hotter part of world.

Hemarthria longiflora (Hook.f.) Camus in Lecomte, Fl. Gen. Indo-Chine, 7: 380. 1922. Chowdhury *et* Das in Indian J. Appl. Res. 3(5): 48 – 49. 2013. *Rottbia longiflora* Hook. f., Fl. Brit. Ind. 7: 154. 1896; Naskar, Aqu. Semiaquat. Pl. Low. Ganget. plain, 252. 1990.

Perennial. Stoloniferous, culms prostrate. Lamina conduplicate, acuminate; sheaths purple. Racemes subtended by an inflated leaf-sheath; spikelets in pairs with cuneate callus; base truncate; attached obliquely. Fertile lemma oblong; lemma apex obtuse. Palea absent or minute.

Flowers & Fruits: February to May.

Specimen Cited: Gorumara, Goutam & AP Das 0564, dated 24. 07. 2009.

Local Distribution: All over the forests and road side areas.

General Distribution: Eastern India: West Bengal; Bangladesh, Myanmar, Thailand, Vietnam, China, Malaysia.

HYGRORYZA Nees, Edinb. New Philos. J. 15: 380. 1833.

Hygroryza aristata (Retz.) Nees *ex* Wight *et* Arn., Edinb. New Phil. Journal 15: 380. 1838; Hook. f., Fl. Brit. Ind. 7: 95. 1896; Prain, Beng. Pl. 2: 1185. 1903.

Culms floating. Leaf sheaths open, strongly inflated, forming floats. Lamina 4 – 6 × 0.5 – 2 cm, obtuse, base rounded to cordate, adaxial surface papillate; ligule truncate. Inflorescence triangular; branches short, lowermost sub-verticillate; spikelets greenish; stipe 2 – 5 mm; lemma body 5 – 8 mm, spinulose on veins; palea keeled and spinulose along midvein, outer veins smooth, apex acute.

Flowers & Fruits: October to December.

Specimen Cited: Murti Jaldhaka junction, Goutam & AP Das 0623, dated 11. 02. 2008.

Local Distribution: Throughout the lowlands and beel areas.

General Distribution: India, Myanmar, S.E. Asia.

IMPERATA Cirillo, Pl. Rar. Neapol. 2: 26. 1792.

Imperata cylindrica (L.) Raeusch., Nom. Bot. ed. 3: 10. 1797; Bor, Grass. Bur. Cey. Ind. & Pak. 169. 1960; Hajra *et al.*, Fl. Sikkim 1: 257. 1996. *Lagurus cylindricus* L., Syst. Nat. ed. 10, 2: 878. 1759. *Imperata arundinacea* Cirillo, Pl. Rar. Neap. 2: 26. 1792; Hook. f., Fl. Brit. Ind. 7: 106. 1896; Prain, Beng. Pl. 2: 1188. 1903. *Imperata cylindrica* var. *major* (Nees) Hubb. *et* Vaughan, Grasses Maur. 96. 1940. *Cynosurus indicus* L., Sp. Pl. 1: 72. 1753.

Perennial, tufted, erect, long grass. Rootstock rigid, creeping with deep-seated succurs. Lamina linear-lanceolate, margin scabrid; ligule membranous. Inflorescens compact panicle; spikelets lanceolate, densely white-silky. Stamens 2. Stigmas 2. Caryopsis oblong.

Flowers & Fruits: February to May.

Specimen Cited: Gorati Beel, Goutam & AP Das 0656, dated 13. 02. 2008.

Local Distribution: All over the marshy lands.

General Distribution: India, Asia, Australia, S. E. Africa.

ISACHNE R.Br., Prodr. 196. 1810.

Isachne globosa (Thunb.) Kuntze, Revis. Gen. Pl. 2: 778. 1891. *Milium globosum* Thunb., Fl. Jap. 49 1784. *Isachne miliacea* Roth, Syst. Veg. 2: 476. 1817; Prain, Beng. Pl. 2: 1172. 1903.

Perennial herbs. Culms slender, erect to decumbent. Leaf sheaths shorter than internodes; lamina narrowly lanceolate, 3 – 11 × 0.4 – 0.8 cm, acute, base rounded, glabrous. Panicle open; branches and pedicels filiform, flexuose; spikelets elliptic-globose; lower floret male, upper female; glumes subequal, broadly elliptic; lower lemma oblong, shallowly convex.

Flowers & Fruits: October to March.

Specimen Cited: Gorati Beel, Goutam & AP Das 0350, dated 21. 07. 2009.

Local Distribution: All over the marshy lands.

General Distribution: India, Bangladesh, Sri Lanka, Bhutan, Nepal, Thailand, Malaysia, Indonesia, Japan, Korea, New Guinea, Philippines, Vietnam; Australia, Pacific Islands.

LEERSIA Solander ex Sw., Prodr. 21. 1788, *nom. cons.*

Leersia hexandra Sw., Prodr. 1: 21. 1788; Hook. *f.*, Fl. Brit. Ind. 7: 94. 1896; Prain, Beng. Plants 2: 1184. 1903; Bora *et.* Kumar, Flor. Div. Ass. 412. 2003. *Leersia australis* R.Br., Prodr. 210. 1810.

Annual, aquatic, erect grass. Branches slender, creeping, rooting at base. Lamina linear, acuminate, rigid, flat; sheath somewhat loose; ligules glaucous and truncate. Panicles, oblong, contracted, branches few; spikelets, oblong, closely imbricate, pale Br., sparsely hispidous, keels bristly ciliate. Caryopsis narrowly oblong.

Flowers & Fruits: October to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0327, dated 21. 07. 2009.

Local Distribution: Margins of Gorati Beel.

General Distribution: India (Lower Himalaya); Tropical Africa, Australia, Myanmar.

LEPTOCHLOA P. Beauv., Ess. Agro. 71. 1812.

Leptochloa panicea (Retz.) Ohwi, Bot. Mag. Tokyo 55: 311. 1941; Bor, Grass. Burma, Ceyl., Ind. & Pak. 517.1960. *Poa panicea* Retz., Obs. 3: 11. 1783. *Leptochloa filiformis* Roem. *et* Schult., Syst. 2: 580.1870; Hook. *f.*, Fl. Brit. Ind. 7: 298. 1896; Prain, Beng. Pl. 2: 924. 1903. *Aira filiformis* Koen. *ex* Roxb., Fl. Ind. 1: 328. 1820.

Annual, slender, aquatic grass. Lamina flat, finely tapering; sheath papillose-pilose, lacerate. Panicle diffuse, much branched; spikelets 2 – 4-fid, almost sessile, unilateral, alternate.

Flowers & Fruits: May to October

Specimen Cited: Gorati Beel, Goutam & AP Das 0368, dated 21. 07. 2009.

Local Distribution: Margins of Gorati Beel.

General Distribution: India, Sri Lanka; Asia, Tropical Africa and America.

OPLISMENUS Beauv., Fl. Oware 2: 14. 1810 [“1807”], *nom. cons.*

Key to the Species:

- 1a. Inflorescence with 2 – 7 racemes, awns of glumes very slender ... *O. burmannii*
- 1b. Inflorescence with 5 – 10 racemes, awns of glumes stout *O. compositus*

Oplismenus burmannii (Retz.) Beauv., Ess. Agrost. 54: 168 – 169. 1812; Hook. f., Fl. Brit. Ind. 7: 68. 1896; Prain, Beng. Pl. 2: 1173. 1903; Hajra *et al.*, Fl. Sikkim 1: 261. 1996; Gierson *et Long*, Fl. Bhut. 3(2): 684. 2000. *Panicum burmannii* Retzius, Obs. Bot. 3: 10. 1783.

Annual herbs, prostrate; rooting at nodes. Lamina ovate-elliptic to lanceolate, pubescent; sheath compressed, ciliate. Panicle of 4 – 7 racemes; spikelets elliptic-lanceolate. Caryopsis convex.

Flowers & Fruits: August to December.

Specimen Cited: Gorumara, Goutam & AP Das 0396, dated 22. 07. 2009.

Local Distribution: Abundant in forests and road side areas.

General Distribution: India, Bangladesh, Sri Lanka, China, Japan.

Oplismenus compositus (L.) Beauv., Ess. Agrost. 54: 168. 1812; Noltie, Fl. Bhut. 3(2): 684. 2000; Prain, Beng. Pl. 2: 1173. 1903; Hajra *et al.*, Fl. Sikkim 1: 261. 1996. *Panicum compositum* L., Sp. Pl. 1: 57. 1753.

Annual prostrate herb; rooting at nodes. Lamina lanceolate, acuminate, pubescent; sheath compressed, ciliate. Panicle 12 – 23 cm long with 5 – 10 racemes; spikelets 3 – 4 mm, elliptic – lanceolate. Caryopsis convex.

Flowers & Fruits: August to December.

Specimen Cited: Gorumara, Goutam & AP Das 0443, dated 22. 07. 2009.

Local Distribution: Abundant on forest margins and road side open vegetation.

General Distribution: Pantropical.

ORYZA L., Sp. Pl. 1: 333. 1753.

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

- 1a. Spikelets long awned, awn over 2 cm. *O. rufipogon*
- 1b. Spikelets unawned, or awns under 1 cm 2
- 2a. Lamina 1.5-3.5 cm, ligules 3-5 mm *O. latifolia*
- 2b. Lamina 0.5-2cm, ligules 10-40 mm..... *O. sativa*

Oryza rufipogon Griff., Notul. 3: 5. 1851; Hook. f., Fl. Brit. Ind. 7: 92. 1896; Cook, Aqua. Wetl. Pl. Ind. 304 – 305. 1996; Shukla, Grass. North East Ind. 301. 1996. *Oryza sativa* Linnaeus var. *fatua* Prain, Beng. Pl. 1184. 1903. *Oryza nivara* Sharma *et Shastri*, Ind. I. Genet. Pl. Breed. 25: 161. 1965; Cook, Aqua. Wetl. Pl. Ind. 304. 1996.

Annual grass; culms long, spongy below. Lamina linear, acuminate, margins scabrid; sheath loose; ligules splitting at tip. Spikelets long, long awned. Caryopsis elliptic or oblong.

Flowers & Fruits: October to January.

Specimen Cited: Gorati Beel, Goutam & AP Das 0401, dated 22. 07. 2009.

Local Distribution: All over the marshy lands.

General Distribution: India: Assam, Meghalaya, Sikkim, West Bengal, Central India; Tropical Australia and Peru.

Oryza sativa L., Sp. Pl. 1: 333. 1753; Hook. *f.*, Fl. Brit. Ind. 7: 92. 1896; Prain, Beng. Pl. 2: 1184. 1903; Cook, Aqua. Wetl. Pl. Ind. 304. 1996. Gierson *et* Long, Fl. Bhut. 3(2): 517. 2000. *Oryza communissima* Lour., Fl. Cochinch. 215. 1790. *Oryza glutinosa* Lour., Fl. Cochinch. 215. 1790. *Oryza perennis* Moench, Methodus 197. 1794.

Local name: Dhaan

Annual, aquatic, tufted. Culms erect, often rooting at lower submerged nodes. Leaf sheaths slightly inflated below, upper sheaths tight, glabrous, auricles falcate, ciliate; glabrous, smooth or scabrid on both sides, acuminate. Spikelets oblong to oblong-lanceolate, persistent; sterile lemmas lanceolate, acuminate; fertile lemma papillose, spinulose, acuminate; awn very variable, slender or stout. Caryopsis ovate or elliptic.

Flowers & Fruits: June – December Exiccatus: Mahananda Barrage, Anurag & AP Das 0302, dated 26.11.2011; Doumahoni Beel, Anurag & AP Das 0508, dated 12.06.2013. Status: Abundant. Local Distribution: Throughout the study area General Distribution: Note: Main cultivated crop of the area; often escapes.

Flowers & Fruits: October to January.

Specimen Cited: Medlajhora, Goutam & AP Das 0971, dated 08. 09. 2010.

Local Distribution: Medlajhora.

General Distribution: India, China, Tropical and Temperate America.

Oryza latifolia Desv., J. Bot. Agric. 1: 77. 1813; Prain, Beng. Plants 2: 1184. 1903. *Oryza sativa* var. *latifolia* Doell in Mart. Fl. Bras. 23:7. 1871.

Annual grass. Culms 1-2 m. high, succulent, sheaths elongate, longer than the internodes, ligule 3 – 5 mm. long, hispid; lamina mostly 32 – 40 cm. long, 1.5 – 3.5 cm. wide, scabrous and sparsely pubescent on both surfaces; spikelets 5 mm. long, short-pedicellate, oblong, sparsely hispid, the awns 1 – 2.5 cm. long.

Flowers & Fruits: June to September.

Specimen Cited: Gorati Beel, Goutam & AP Das 0901, dated 22. 07. 2010.

Local Distribution: Gorati Beel.

General Distribution: India, West Indies to Brazil.

PANICUM L., Sp. Pl. 1: 55. 1753.

Panicum repens L., Sp. Pl. 2: 87. 1762; Hook. *f.*, Fl. Brit. Ind. 7: 49. 1896; Prain, Beng. Pl. 2: 1179. 1903. Hajra *et al.*, Fl. Sikkim 1: 263. 1996.

Perennial, tufted, erect, marshland grass. Rooting at nodes. Lamina long, linear-lanceolate; sheaths ciliate at throat. Spikelets long, elliptic-lanceolate. Caryopsis oblong.

Flowers & Fruits: September to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0445, dated 22. 07. 2009.

Local Distribution: Marginal marshy areas.

General Distribution: India, S. Europe, Asia, Africa, America.

PASPALUM L., Syst. Nat., ed. 10, 2: 855. 1759.

Paspalum conjugatum Berg., Acta Helv. Phys. – Math. 7: 129. 1772; Hook. f., Fl. Brit. Ind. 7: 11. 1897; Prain, Beng. Pl. 2: 1182. 1903; Hajra *et al.*, Fl. Sikkim 1: 264. 1996; Shukla, Grass. North East. Ind. 345. 1996.

Perennial with long stolons producing small tufts of culms, compressed. Leaf sheaths keeled, glabrous or pilose along upper margins and mouth, a line of hairs at junction with blade; lamina lanceolate-linear, acute, thin, glabrous or papillose along margins. Peduncled panicle of 2 racemes; spikelets single, in 2 rows, ovate to suborbicular; upper glume hyaline, long silky hairs along margins; lower lemma similar but not ciliate; upper lemma pallid at maturity, ovate, crustaceous.

Flowers & Fruits: May to September.

Specimen Cited: Gorati Beel, Goutam & AP Das 0403, dated 22. 07. 2009.

Local Distribution: Lowland and moist areas.

General Distribution: India; throughout tropics and subtropics of the world.

PASPALIDIUM Stapf in Prain, Fl. Trop. Africa 9: 582. 1920.

Paspalidium punctatum (Burm.f.) Camus in Lecomte, Fl. Gen. Del. Indo–China 7: 419. 1922; Hajra *et al.*, Fl. Sikkim 1: 264. 1996; Sukla, Grass. North East. Ind. 344. 1996; Bora *et* Kumar, Flor. Div. Ass. 421. 2003. *Panicum punctatum* Burm.f., Obs. Bot. 4: 15. 1786; Prain, Beng. Pl. 2: 1177. 1903.

Perennial grass. Culms long, floating, rooting at base, spongy. Lamina long, linear, acute, scabrid margined; sheaths glabrous; ligule hairy. Spikes longer than internodes; spikelets long, ovate-oblong, imbricate, sessile; glumes membranous. Caryopsis compressed.

Flowers & Fruits: August to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0279, dated 10. 02. 2009.

Local Distribution: All over the marshy lands.

General Distribution: India, tropical Asia, North Africa.

PENNISETUM Rich. ex Pers., Pers. Syn. 1: 72. 1805.

Key to the species:

- 1a. Ligules ciliated 2
- 1b. Ligules not ciliated *P. polystachion*
- 2a. Upper lemma coarsely rugose, boat-shaped *P. glaucum*
- 2b. Upper lemma not coarsely rugose, lanceolate *P. pauperum*

Pennisetum glaucum (L.) R. Br., Prodr. Fl. Nov. Holl. 195. 1810. *Panicum glaucum* L., Sp. Pl. 56. 1753. *Setaria glauca* (L.) Beauv., Ess. Agrost. 51: 178. 1812; Hook. f., Fl. Brit. Ind. 7: 78. 1896; Haines, Bot. Bihar & Orissa Pt. V: 988. 1924; Bor, Grass. Bur. Cey. Ind. & Pak. 360. 1960; Panda *et* Das, Fl. Sambalp. 439. 2004.

Annual grass. Culms erect, prostrate below. Leaves linear, rough on margins; sheaths keeled; ligules ciliate. Spike dense, cylindrical; spikelets long, elliptic; upper lemma coarsely rugose, boat-shaped. Caryopsis rounded-elliptic.

Flowers & Fruits: February to August.

Specimen Cited: Medlajhora, *Goutam & AP Das 914* dated 05. 02. 2010.

Local Distribution: Medlajhora.

General Distribution: Tropical Africa to India.

Pennisetum pauperum Steud., Syn. Pl. Glumac. 1: 102. 1854. *Pennisetum purpureum* Schum., Beskr. Guin. Pl. 44. 1827; Hsu, Fl. Taiwan 5: 592. 1978; Gierson *et* Long, Fl. Bhut. 3(2): 741 – 742. 2000.

*Local Name:*Hati-ghaash

Perennials erect herbs. Ligules ciliated. Panicle cylindrical; spikelets 2-flowered, solitary, subsessile; glumes deltoid as long as spikelet; lower lemma lanceolate, minutely hispidous, 5-veined, palea absent; upper lemma lanceolate.

Flowers & Fruits: October to November.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0562*, dated 24. 07. 2009.

Local Distribution: Gorati Beel.

General Distribution: Tropical Africa to India.

Pennisetum polystachion (L.) Schult., Syst. Veg. Mant. 2: 146. 1824; Noltie, Fl. Bhut. 3(2): 741. 2000. *Panicum polystachion* L., Syst. Nat. 10, 2: 870. 1759.

Annual grass, culms \pm 1 m tall. Leaves linear, acuminate, glabrous or hairy. Sheath glabrous. Ligule line fringed with soft hairs. Panicle purplish Br.; rachis glabrous. Spikelet solitary, sessile; upper glumes oblong; lemma oblong, truncate, smooth; palea oblong, toothed or ciliate at tip.

Flowers & Fruits: October to November.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0548*, dated 24. 07. 2009.

Local Distribution: Margin of the Gorati Beel.

General Distribution: Tropical Africa to India.

PEROTIS Aiton, Hort. Kew. 1: 85. 1789.

Perotis indica (L.) Kuntze, Rev. Gen. Pl. 2: 787. 1891; Majumdar, Bull. Bot. 10(1 & 2): 44. 1956. *Anthoxanthum indicum* L., Sp. Pl. 1: 28. 1753. *Saccharum spicatum* L., Sp. Pl. 1: 54: 1753. *Perotis latifolia* Aiton, Hort. Kew 1: 85. 1789; Hook. *f.*, Fl. Brit. Ind. 7: 98. 1896; Prain, Beng. Pl. 2: 1186. 1903.

Aquatic, soft, wiry, spongy grass. Leaf-sheaths short, loose, striate; ligule short. Inflorescence terminal, rachis simple and scabrid; spikelets 1-flowered; pedicel small. Stamens 3. Caryopsis free in glume, terete.

Flowers & Fruits: July – August.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0308*, dated 10. 02. 2009.

Local Distribution: Marginal areas of the Gorati Beel.

General Distribution: India, Sri Lanka, Mayanmer, tropical Africa.

SACCHARUM L., Sp. Pl. 1: 54. 1753

Key to the Speices:

- 1a. Lower glumes glabrous on the back; lemmas not cuspidate *S. sponteneum*
1b. Lower glumes with long hairs; lemmas cuspidate *S. arundinaceum*

Saccharum arundinaceum Retz., Obs. Bot. 4: 14. 1786; Hook. *f.*, Fl. Brit. Ind 7: 119. 1897; Prain, Beng. Pl. 2: 1189. 1903; Sedge. & gras. Dakh. Kan & Udu. Dist. 315. 2001. *Erianthus arundinaceus* (Retz.) Jews. In Arch. Suikerind. Ned.-Ind. 399. 1925.

A tufted large perennial grass. Culms upto 6 m high, erect from the root stock. Leaf sheath beaded about the mouth; ligule hairy. Panicle effuse, long, white villous. Spikelets lanceolate; hairs at callus silky. Lower lemma empty, oblanceolate; upper lemma bisexual; palea ovate.

Flowers & Fruits: January to March.

Specimen Cited: Khunia, Goutam & AP Das 0322, dated 21. 07. 2009.

Local Distribution: Khunia.

General Distribution: India (coastal area), E. Australia, S. Europe, Sri Lanka.

Saccharum spontaneum L., Mant. Alt. 183. 1771; Hook. *f.*, Fl. Brit. Ind 7: 118. 1896; Prain, Beng. Pl. 2: 1188. 1903; Hajra *et al.*, Fl. Sikkim 1: 271. 1996; Bor, Grass. Bur. Cey. Ind. & Pak. 214. 1960. *Imperata spontanea* (L.) Beauv., Ess. Agro. 8. 1812.

Tall perennial herbs; rhizomes long. Culms hollow, softly pilose below inflorescence. Leaf-sheaths pilose at mouth and margin; lamina 60 – 150 × 0.2 – 1 cm, glaucous, long attenuate; ligule Br. Panicle up to 40 cm; spikelets 3–4 mm; lower glume papery, acuminate; lower lemma ovate-lanceolate; upper lemma linear to linear-oblong. Lodicules ciliate.

Flowers & Fruits: September to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0322, dated 21. 07. 2009.

Local Distribution: Marginal lowland areas of Gorati Beel.

General Distribution: Afghanistan, Pakistan, India, Sri Lanka, Bhutan, Japan, Myanmar, Thailand, Malaysia, Indonesia, Cambodia, New Guinea, Philippines, Turkmenistan, Vietnam; SW Asia, Australia, Pacific Islands, Africa.

SACCIOLEPIS Nash, Man. Fl. N. States 89. 1901.

Key to the species:

- 1a. Plants annual; panicles under 4 cm long; caryopsis elliptic *S. indica*
1b. Plants perennial; panicles more than 6 cm long; caryopsis obovoid *S. interrupta*

Sacciolepis indica (L.) Chase, Proc. Biol. Soc. Wash. 21: 8. 1908; Hajra *et al.*, Fl. Sikkim 1: 271. 1996; Bor, Grass. Bur. Cey. Ind. & Pak. 357. 1960. *Panicum indicum* L., Mant. 2: 184. 1771 (*non P. indicum* Mill.); Hook. *f.*, Fl. Brit. Ind. 7: 156. 1896; Prain, Beng. Pl. 2: 1178. 1903.

Erect, annual grass. Culms long, spreading. Lamina linear, acuminate, glabrous; sheath slightly keeled; ligule membranous. Panicle spike like, terete, upto 4 cm long; spikelets shortly pedicelled, ovoid. Stamens 3. Caryopsis elliptic.

Flowers & Fruits: August to January.

Specimen Cited: Gorati Beel, Goutam & AP Das 0352, dated 21. 07. 2009.

Local Distribution: All over the marshy lands.

General Distribution: India, tropical and sub-tropical regions of Asia and Australia.

Sacciolepis interrupta (Willd.) Stapf in Prain, Fl. Trop. Afr. 9: 757. 1920; Blatt. et Mac Cann, Bombay grass 167. 1935; Majumdar, Bull. Bot. soc. Beng. 10(1&2): 58. 1956; Hajra *et al.*, Fl. Sikkim 1: 272. 1996. *Panicum interrupta* Willd., Sp. Pl. 1: 341. 1798; Hook. *f.*, Fl. Brit. Ind. 7: 40. 1896; Prain, Beng. Pl. 2: 1178. 1903.

Erect, branched, perennial, quite glabrous. Culms creeping, spongy, lower nodes rooting. Lamina soft, glabrous, base sub-cordate; ligule short. Panicles spike-like, terete; spikelets lanceolate, densely arranged, imperfect, ovoid, turgid spreading. Caryopsis obovoid.

Flowers & Fruits: August to January.

Specimen Cited: Gorati Beel, Goutam & AP Das 0437, dated 22. 07. 2009.

Local Distribution: Marginal marshy areas of Gorati Beel.

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

SETARIA P. Beauv., Ess. Agrostogr. 51. 1812, *nom. cons.*, non Acharius ex Michaux (1803).

Key to the Species:

1a. Leaves linear, margins rough; panicles spike-like; bristles in clusters

of 6 or more *S. glauca*

1b. Leaves linear-lanceolate, margins ciliate; panicles partially distant;

bristles borne singly *S. palmifolia*

Setaria palmifolia (Koen.) Stapf, J. Lin. Soc. Bot. 42: 186. 1914; Hara *et al.*, Fl. East. Himal. 1: 376. 1966; Noltie, Fl. Bhut. 3(2): 723. 2000; Hajra *et al.*, Fl. Sikkim 1: 273. 1996. *Panicum palmaefolium* Koenig, Naturf. 22: 208. 1788.

Perennial, rhizomatous stem woody, knotted. Culms decumbent. Lamina linear-lanceolate, ciliate margins, acuminate, glabrous or sparsely hairy; sheath margin ciliate. Panicles partially distant, loose. Spikelets solitary, bristle single.

Flowers & Fruits: May to February.

Exsiccatum: Gorati Beel, Goutam & AP Das 0450, dated 22. 07. 2009.

Local Distribution: Marginal lowland moist areas of Gorati Beel.

General Distribution: Tropics of the Old World.

Setaria glauca (L.) Beauv., Ess. Agro. 51: 178. 1812; Hook. *f.*, Fl. Brit. Ind. 7: 78. 1896; Bor, Grass. Bur. Cey. Ind. & Pak. 360. 1960. *Panicum glaucum* L., Sp. Pl. 56. 1753; Prain, Beng. Pl. 2: 1170. 1903.

Small erect annual. Culms light. Lamina linear, rough on margins; sheaths keeled; ligules ciliate. Panicle spike like, dense, terete; spikelets long, elliptic; bristles in clusters of 6 or more; ciliate margins upper lemma coarsely rugose, boat-shaped. Caryopsis rounded-elliptic.

Flowers & Fruits: February to August.

Specimen Cited: Gorati Beel, Goutam & AP Das 0489, dated 23. 07. 2009.

Local Distribution: Marginal lowland areas of Gorati Beel.

General Distribution: India, throughout the warm and temperate countries.

SPOROBOLUS R.Br., Prodr. 169. 1810.

Sporobolus diander (Retz.) Beauv., Ess. Agro. 26: 147 – 178. 1812; Hook. *f.*, Fl. Brit. Ind. 7: 247. 1896; Hajra *et al.*, Fl. Sikkim 1: 303. 1996; Prain, Beng. Pl. 2: 1213. 1903; Bora *et* Kumar, Flor. Div. Ass. 427. 2003. *Agrostis diandra* Retz., Obs. Bot. 5: 19. 1789.

Perennial grass. Culms tufted, slender, branched. Lamina narrowly lanceolate, 1 – 7 × 0.1 – 0.4 cm. Panicle linear, spikelike, 1.5 – 7 × 0.3 – 0.6 cm; branches short, erect, mostly unbranched; spikelets narrowly lanceolate-oblong; lower glume lanceolate, upper glume oblong; lemma oblong, acute; palea broader, obtuse. Anthers 3. Grains red-Br., elliptic, apex rounded.

Flowers & Fruits: August to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0619, dated 11. 02. 2008.

Local Distribution: Marginal lowland areas of Gorati Beel.

General Distribution: India: Assam, Manipur, Nagaland, Bihar, Orissa, West Bengal; Sri Lanka, Australia.

Sub order: cyperoid

Cyperaceae Juss., Gen. Pl. 26. 1789 ('Cyperoideae'); *nom. cons.*

Key to the genera :

- | | |
|--|-----------------------|
| 1a. Flowering glumes all distichous | 2 |
| 1b. Flowering glumes spirally arranged | 4 |
| 2a. Rachilla deciduous..... | 3 |
| 2b. Rachilla persistent | <i>Kyllinga</i> |
| 3a. Style base dilated, separate from achene by a constriction | <i>Fimbristylis</i> |
| 3b. Style base neither dilated nor constricted | <i>Cyperus</i> |
| 4a. Style base dilated and constricted | 5 |
| 4b. Style base neither dilated nor constricted | 6 |
| 5a. Hypogynous bristles present ... | <i>Eleocharis</i> |
| 5b. Hypogynous bristles absent | <i>Bulbostylis</i> |
| 6a. Glumes awned | 7 |
| 6b. Glumes not awned | <i>Fuirena</i> |
| 7a. Leaves reduced to sheath | <i>Schoenoplectus</i> |
| 7b. Leaves well developed | 8 |
| 8a. Spikelets solitary in terminal | <i>Bolboschoenus</i> |
| 8b. Spikelets in terminal cluster | <i>Scirpus</i> |

BOLBOSCHOENUS (Asch.) Palla in Hallier & Brand, Syn. Deut. Schweiz. Fl., ed. 3, 3: 2531. 1905.

Bolboschoenus maritimus Palla var. *affinis* (Roth) Parmar, Shetty *et* Singh, Fl. Rajsthan 3: 888. 1993. *Scirpus affinis* Roth, Roem. *et* Schult., Veg. 2: 140. 1817. *Bolboschoenus affinis* (Roth) Drobow, Trav. Mus. Bot. Acad. Sc. Imp. Petersburg 16: 139. 1916. *Scirpus maritimus* L. ssp. *affinis* (Roth) Norlindh Nils, Bot. Not. 125: 404. 1972; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 659. 1893; Pain, Beng. Pl. 2: 1161. 1903.

Aquatic, erect, annual sedge. Stem triangular, glabrous. Leaves linear-lanceolate; sheath Br.. Spikes terminal, compact, oval; glumes Br., oval, membranous. Achenes black-Br., cordate, hard, compressed.

Flowers & Fruits: October to January.

Specimen Cited: Medlajhora, Goutam & AP Das 0192, dated 09. 02. 2009.

Local Distribution: Marshy lowlands.

General distribution: India to Europe.

BULBOSTYLIS Kunth, Enum. Pl. 2: 205. 1837. *nom. cons.*

Bulbostylis densa (Wall.) Hand.-Mazz. *ex* Karsten *et* Schenck, Vegetations Beelder 20. 7: 16. 1930; Noltie, Fl. Bhut. 3(1): 298. 1994; Hajra *et al.*, Fl. Sikkim 1: 198. 1996; *Scirpus densus* Wall., Roxb., Fl. Ind. 1: 231. 1820. *Bulbostylis capillaris* var. *trifida* (Nees) C.B. Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 652. 1893; Prain, Beng. Pl. 2: 1156. 1903.

Annual herbs, without rhizome. Clumps tufted, slender. Leaves basal, erect, half or more of stem length, entire, slightly evolute on margins, acuminate. Bracts 2 – 3. Inflorescence simple or subcompound anthela, bearing 4 – 7 spikelets. Spikelets solitary or clustered, 5 – 18 flowered. Glumes ovate to broadly ovate, ciliate. Stamens 2; style filiform, stigmas 3. Achenes obovate, trigonous.

Flowers & Fruits: April to December.

Specimen Cited: Forest, Goutam & AP Das 0160, dated 08. 02. 2009.

Local Distribution: Marshy lowlands.

General Distribution: India, Bangladesh, Nepal, China, Japan, Africa.

CYPERUS L., Sp. Pl. 1: 44. 1753.

Key to the species:

- 1a. Spikelets digitate or clustered *C. haspan*
- 1b. Spikelets spicate or racemose 2
- 2a. Rachilla of spikelet prominently winged 3
- 2b. Rachilla of spikelet not winged or slightly winged 5
- 3a. Spikelets 3 – 9 in short spike *C. rotundus*
- 3b. Spikelets more than 8 in long spike 4
- 4a. Wing of rachilla deciduous *C. stoloniferus*
- 4b. Wing of rachilla persistent *C. pangorie*
- 5a. Slender annual, tufted 6
- 5b. Stout perennial 7
- 6a. Bracts ovate, margin not curved *C. iria*
- 6b. Bracts oblong, margin curved; spikelets winged *C. compressus*

- 7a. Rachilla of spikes hairy *C. pilosus*
 7b. Rachilla of spikes glabrous 8
 8a. Glumes obtuse; spikelets ovate *C. distans*
 8b. Glumes mucronate; spikelets linear *C. cyperoides*

Cyperus compressus L., Sp. Pl. 46. 1753; C.B. Clarke in Hook.f., Fl. Brit. Ind. 6: 605. 1893; Noltie, Fl. Bhut. 3(1): 310. 1994; Hajra *et al.*, Fl. Sikkim 1: 214. 1996; Prain, Beng. Pl. 2: 1143. 1903. *Cyperus pectiniformis* Roem. et Schult., Mantissa 2: 128. 1824; Guha Bakshi, Fl. Mur. Dist. 352. 1984.

Glabrous annual; roots fibrous; stems tufted, erect or rarely prostrate, 3- gonous. Leaves shorter, sometimes longer than stem, acuminate. Bracts 3 – 7, leafy. Spikelets digitately clustered, much compressed; glumes ovate-lanceolate, closely imbricate; keel produced, laterally compressed. Nuts obovate, dark- Br. or Br. or brownish-black.

Flowers & Fruits: July to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0211, dated 09. 02. 2009.

Local Distribution: Margin of the Gorati Beel.

General Distribution: Throughout India; Sri Lanka, Tropical Africa, Asia and America.

Cyperus cyperoides (L.) Kuntze, Revis. Gen. Pl. 3 (2): 333. 1898; Noltie, Fl. Bhut. 3(1): 307. 1994. *Scirpus cyperoides* L., Mantissa Pl. 181. 1771; Hajra *et al.*, Fl. Sikkim 1: 230. 1996; *Mariscus sieberianus* Nees ex Steud., Synops. Pl. Glum. 2: 61. 1855; Prain, Beng. Pl. 2: 1147. 1903.

Perennials herbs. Rhizome short. Culms laxly tufted, acutely triquetrous. Lamina 5 mm wide, conduplicate at basal part, gradually flatted upward, margin not scabrous. Bracts leaf-shaped, longer than inflorescence. Spikes cylindric to oblong, with densely arranged many spikelets. Spikelets linear-lanceolate; rachilla wings white. Stamens 3; anthers shortly linear. Style short; stigmas 3, slender. Achenes dark Br..

Flowers & Fruits: April to October.

Specimen Cited: Gorati Beel, Goutam & AP Das 0237, dated 09. 02. 2009.

Local Distribution: All over the marshy lands.

General Distribution: Pakistan, India, Sri Lanka, Nepal, Bhutan, Myanmar, Malaysia, Indonesia, Japan, Korea, Laos, Philippines, Thailand, Vietnam; tropical Africa, America, and Oceanic Islands

Cyperus haspan L., Sp. Pl. 45. 1753; Clarke in Hook.f., Fl. Brit. Ind. 6: 600. 1892; Noltie, Fl. Bhut. 3(1): 313. 1994; Hajra *et al.*, Fl. Sikkim 1: 215. 1996; Prain, Beng. Pl. 2: 1142. 1903.

Perennial, erect sedge. Stems solitary, compressed-trigonous. Lamina broad, spreading. Spikelets linear-lanceolate. Glumes ovate-oblong. Stamen-1; style bifid. Nuts shortly apiculate.

Flowers & Fruits: May to January.

Specimen Cited: Gorati Beel, Goutam & AP Das 0131, dated 07. 02. 2009.

Local Distribution: All over the marshy lands.

General Distribution: India, Tropical, sub-tropical and temperate regions of the old world.

Cyperus iria L., Sp. Pl. 45. 1753; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 606. 1893; Noltie, Fl. Bhut. 3(1): 312. 1994; Hajra *et al.*, Fl. Sikkim 1: 215. 1996; Prain, Beng. Pl. 2: 1143. 1903; Guha Bakshi, Fl. Mur. Dist. 356. 1984.

Annuals. Roots fibrous. Culms tufted, slender to slightly stout, compressed triquetrous. Leaves much shorter than culm; sheath reddish Br. to brownish purple; lamina slightly folded. Bracts 3 to 5, leaf-like, basal 2 longer than inflorescence. Spikes ovoid; spikelets laxly arranged, lanceolate to oblong, compressed; rachilla almost wingless. Stamens 3; anthers ellipsoid. Style very short; stigmas short. Achenes dark Br..

Flowers & Fruits: August to February.

Specimen Cited: Gorati Beel, Goutam & AP Das 0343, dated 21. 07. 2009.

Local Distribution: Margin of the Gorati Beel.

General Distribution: India; Southern Hemisphere.

Cyperus distans L.f., Suppl. Pl. 103. 1781; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 607. 1893; Noltie, Fl. Bhut. 3(1): 314. 1994. Hajra *et al.*, Fl. Sikkim 1: 214. 1996; Prain, Beng. Pl. 2: 1143. 1903.

Perennial sedge, usually rhizomatous. Stem solitary, trigonous. Leaves shorter or as long as stem. Umbels compound, large. Spikelets spicate, narrowly linear, erect or spreading 10 – 20 flowered; rachilla slender, scarcely winged. Glumes long, elliptic-oblong, redish-Br., margins membranous, obtuse, slightly imbricate. Stamens 3. Achenes oblong, trigonous, Br..

Flowers & Fruits: August to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0359, dated 21. 07. 2009.

Local Distribution: Marginal lowland areas.

General distribution: Tropical and sub-tropical regions of the old world.

Cyperus rotundus L., Sp. Pl. 45. 1753; C.B. Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 598. 1893; Noltie, Fl. Bhut. 3(1): 316. 1994; Prain, Beng. Pl. 2: 1145. 1903; Hajra *et al.*, Fl. Sikkim 1: 217. 1996; Guha Bakshi, Fl. Mur. Dist. 358. 1984; Bora *et al.*, Fl. Div. Ass. 382. 2003.

Local name: Mutha ghas

Perennial sedges; rhizome elongated tuberous, ovoid, black, fragrant. Stems trigonous. Leaves acuminate. Umbel simple to compound; bracts usually 3, shorter or longer than inflorescence. Spikelets linear-lanceolate, many-flowered redish-Br.; rachilla winged; glumes ovate to elliptic, imbricate. Achenes broadly obovoid, trigonous, dark-brown.

Flowers & Fruits: July to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0370, dated 21. 07. 2009.

Local Distribution: Marginal lowland of Gorati Beel.

General distribution: Throughout India; warm countries.

Cyperus stoloniferus Retz., Observ. Bot. 4: 10. 1786. *Cyperus arenarius* Hance ex Clarke, J. Linn. Soc., Bot. 21: 173 1884; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 616. 1893; Prain, Beng. Pl. 2: 1142. 1903.

Rhizome long, thick. Culms solitary, trigonous. Leaves usually shorter than culm; lamina folded, rarely flat. Bracts leafy. Spikelets oblong-lanceolate to lanceolate, 8 – 14 x 2 – 3 mm; rachilla narrowly winged; scales densely imbricate, broadly ovate, acute to subobtuse. Stamens 3; anthers linear. Style medium in length; stigmas 3. Achenes dark Br. when mature, trigonous.

Flowers & Fruits: July.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0042*, dated 05. 02. 2009.

Local Distribution: Marginal low lands.

General Distribution: Pakistan, India, Sri Lanka, Myanmar, Malaysia, Indonesia, Cambodia, Laos, New Guinea, Philippines, Thailand, Vietnam; N Australia, Indian Ocean Islands, Madagascar

Cyperus pangorei Rottb., *Descr. Pl. Rar.* 18. 1772; Noltie, *Fl. Bhut.* 3(1): 314. 1994; Hajra *et al.*, *Fl. Sikkim* 1: 216. 1996; Prain, *Beng. Pl.* 2: 1144. 1903.

Rhizome short. Culms trigonous. Leaves apically bladeless or with a short blade. Bracts longer than inflorescence. Anthela compound, unequal. Spikes broadly ovate, with 4 - 12 laxly arranged spikelets, slightly compressed, 6 – 30 flowered; scales reddish Br. on both surfaces, obtuse. Stamens 3. Styles medium in length; stigmas 3. Achenes dark Br..

Flowers & Fruits: November to January.

Specimen Cited: Medlajhora, *Goutam & AP Das 0084*, dated 06. 02. 2009.

Local Distribution: Marshy lowland areas.

General Distribution: Pakistan, India, Sri Lanka, Nepal, Bhutan, Myanmar, Vietnam.

Cyperus pilosus Vahl, *Enum. Pl.* 2: 354. 1805; Noltie, *Fl. Bhut.* 3(1): 315. 1994; Hajra *et al.*, *Fl. Sikkim* 1: 216. 1996; Prain, *Beng. Pl.* 2: 1143. 1903.

Perennial herbs. Rhizome with slender stolons. Culms scattered, triquetrous. Leaves shorter than culm; sheath brownish; lamina flat. Bracts 5, basal 3 longer than inflorescence. Spikes ovate to oblong; rachis densely yellow hispid. Spikelets distichous, laxly arranged; rachilla wings white; scales pale, mucronate. Stamens 3. Style short; stigmas 3. Achenes blackish, trigonous.

Flowers & Fruits: August to November.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0099*, dated 07. 02. 2009.

Local Distribution: Marshy lowlands.

General Distribution: India, Nepal, Bhutan, Malaysia, Indonesia, Philippines.

ELEOCHARIS R.Br. in DC., *Prodr.* 224. 1810.

Key to the species:

- 1a. Erect, over 1m high; spikes over 30 mm long *E. tetraquetra*
- 1b. Erect, less than 1m high; spikes less than 20 mm long 2
- 2a. Styles 2-fid, nuts compressed 3
- 2b. Styles 3-fid, nuts trigonous or obovoid 5
- 3a. Rhizome present, creeping *E. palustris*
- 3b. Rhizome absent 4
- 4a. Bristlets glistening, white *E. atropurpurea*
- 4b. Bristlets Br. or rusty *E. geniculata*
- 5a. Nuts smooth, spikelets dense *E. conjesta*
- 5b. Nuts coarse, spikelets lax *E. retroflexa*

Eleocharis retroflexa (Poir.) Urb. ssp. ***chaetaria*** (Roem. et Schult.) Koyama, Bull. Nat. Sci. Mus. Tokyo 17: 68. 1974; Noltie, Fl. Bhut. 3(1): 287. 1994. *Eleocharis chaeraria* Roem. et Schult., Syst. 2: 154. 1871; Prain, Beng. Pl. 2: 1149. 1903.

Tufted annual, marshland sedge. Stems filiform, recurved. Leaves reduced to sheaths. Purple spikelets elliptical or ovoid, few flowered. Glumes 6 – 8, boat-shaped, obtuse or subacute, margin hyaline, membranous, purple-tinged, pale-Br., style base pyramidal, 3-lobed; style 3-fid. Achenes obovate, trigonous, trabeculate.

Flowers & Fruits: July to December.

Specimen Cited: Medlajhora, Goutam & AP Das 0220, dated 09. 02. 2009.

Local Distribution: Marshy lowland areas.

General distribution: Tropical to temperate regions of the world.

Eleocharis tetraquetra Nees in Wight, Contr. Bot. Ind. 112. 1834; Noltie, Fl. Bhut. 3(1): 186. 1994; Naskar, Aqu. Semiaqut. Pl. Low. Ganget. plain, 245. 1990.

Annual, erect, strait, stoloniferous. Stems rather firm, tetraquetrous. Leaf-sheaths 2, reddish Br.. Spikelets erect, ovoid-lanceolate, acute, 1 nerved. Perianth bristles 5, subequal, rather coarse; stamens 2; style long; stigmas 3. Nuts narrowly of broadly obovoid, biconvex, smooth, pale Br..

Flowers & Fruits: October to November.

Specimen Cited: Medlajhora, Goutam & AP Das 0234, dated 09. 02. 2009.

Local Distribution: Marshy lowland areas.

General distribution: India to Malaysia.

Eleocharis congesta Don, Prodr, Fl. Nepal 41.1825; Clarke in Hook. f., Fl. Brit. Ind. 6: 630. 1893; Noltie, Fl. Bhut. 3(1): 286. 1994; Prain, Beng. Pl. 2: 1149. 1903. *Eleocharis afflata* Steud., Syn. Pl. glum. 2: 76. 1855.

Annual or perennial marshland sedge; stems triangular, ridged. Sheath apex truncate, apiculate. Spikelets oblong, terete, sub-acute, purplish; glumes loosely imbricate, oblong; stigmas 3. Nuts 0.15 cm long, yellow-green. Bristles 7, white or Brown..

Flowers & Fruits: July to December.

Specimen Cited: Medlajhora, Goutam & AP Das 0219, dated 09. 02. 2009.

Local Distribution: Marshy lowland areas.

General distribution: India, Sri Lanka, Malaysia.

Eleocharis palustris R.Br., Prodr. 224. 1810; Clarke in Hook. f., Fl. Brit. Ind. 6: 628. 1893; Noltie, Fl. Bhut. 3(1): 285. 1994; Prain, Beng. Pl. 2: 1149. 1903. *Helocharis palustris* Lindl., syst. 2: 154. 1817 & Syn. Brit. Fl. 280.1829.

Erect tufted sedge with creeping rhizome. Stem terete. Lamina absent, sheath truncate. Spikelets ellipsoid or cylindrical. Glumes imbricate, ovate-lanceolate. Nuts broadly obovoid, biconvex.

Flowers & Fruits: November to March.

Specimen Cited: Medlajhora, Goutam & AP Das 0266, dated 10. 02. 2009.

Local Distribution: Marshy lowland areas.

General Distribution: Cosmopolitan except Australia.

Eleocharis atropurpurea (Retz.) Kunth, Enum. 2: 151. 1837; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 627. 1893; Noltie, Fl. Bhut. 3(1): 287. 1994; Prain, Beng. Pl. 2: 1149. 1903. *Scirpus atropurpurea* Retz., Obs. 5: 14. 1788. *Eleocharis atropurpurea* Nees in Wight, Contrib. Bot. Ind. 113. 1834.

Marshy unbranched sedge. Stem terete, short. Spikelets in terminal head. Glumes imbricate. Nut black, obtuse, biconvex, tipped with the pale disciform style base, style 2-fid.

Flowers & Fruits: October to December.

Specimen Cited: Medlajhora, Goutam & AP Das 0293, dated 10. 02. 2009.

Local Distribution: Marshy lowland areas.

General Distribution: Pantropical.

Eleocharis geniculata (L.) Roem. et Schult., Syst. Veg. 2: 150. 1817; Svenson, Rhodora 41: 50. 1939. *Scirpus geniculata* L., Sp. Pl. 1: 48. 1753. *Eleocharis capitata* R. Br., Prodr. 225. 1810; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 627. 1893; Prain, Beng. Pl. 2: 1149. 1903.

Small, marshland sedge. Roots fibrous, stem terete. Leaf-sheath short, base oblique with acute tip. Spikelets terminal, Br., globose – oblong. Glumes imbricate. Nuts brownish, slightly compressed.

Flowers & Fruits: July to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0248, dated 10. 02. 2009.

Local Distribution: Marginal lowland areas.

General Distribution: India and in other warmer countries.

FIMBRISTYLIS Vahl, Enum. Pl. 2: 285. 1805, *nom. cons.*

Key to the species:

- 1a. Stem with only one spikelet *F. tetragona*
- 1b. Stem with more than one spikelet 2
- 2a. Stems tufted, compressed, grooved; nuts whitish *F. dichotoma*
- 2b. Stems filiform, slender, not grooved; nuts yellow *F. aestivalis*

Fimbristylis tetragona R.Br., Prodr. 226. 1810; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 631. 1893; Prain, Beng. Pl. 2: 1152. 1903.

Tufted, erect perennial sedge. Stems slender, quadrangular. Leaves reduced to sheaths. Inflorescence of one terminal ovoid or conical spikelet. Glumes obovate-oblong or obtuse, rounded on the back. Stamens usually 2, rarely 3; style flattened, villous, 2-fid. Achenes linear – oblong, pale, tapering towards base, with a slender stalk.

Flowers & Fruits: October to December.

Specimen Cited: Medlajhora, Goutam & AP Das 0290, dated 10. 02. 2009.

Local Distribution: Common in marshy lowland areas.

General distribution: India, Bangladesh, Nepal, Sri Lanka, E. Asia to tropical Australia.

Fimbristylis aestivalis (Retz.) Vahl, Enum. Pl. 2: 288. 1806; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 637. 1893; Noltie, Fl. Bhut. 3(1): 296. 1994; Hajra *et al.*, Fl. Sikkim 1: 219. 1996; Prain, Beng. Pl. 2: 1154. 1903. *Scirpus aestivalis* Retz., Obs. Bot. 4: 12. 1786.

Culms densely tufted without rhizome, flatly trigonous, few leaves at base. Leaves shorter than culms, flat; sheaths short. Bracts filiform; anthelae compound, loose; spikelets solitary, ovate to oblong-lanceolate, many-flowered; glumes spiral, membranous, ovate to oblong, mucronate, reddish Br.; stamen 1, anther lanceolate; style long and compressed. Achenes obovate, yellow.

Flowers & Fruits: May to August.

Specimen Cited: Medlajhora, Goutam & AP Das 0616, dated 11. 02. 2008.

Local Distribution: Abundant in marshy areas.

General distribution: India, China, Japan, Malaysia and N. Australia.

Fimbristylis dichotoma (L.) Vahl, Enum. Pl. 2: 287. 1806; Noltie, Fl. Bhut. 3(1): 294. 1994; Hajra *et al.*, Fl. Sikkim 1: 220. 1996; Bora *et al.* Kumar, Fl. Div. Assam, 385. 2003. *Scirpus dichotomus* L., Sp. Pl. 50. 1753. *Fimbristylis diphylla* (Retz.) Vahl, Enum. Pl. 2: 289. 1806; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 636. 1893; Prain, Beng. Pl. 2: 1153. 1903.

Annual or perennial, erect, marshland sedge, shortly rhizomatous. Leaves flat, broad. Anthela simple or sub-compound. Spikelets ovate, acute, terete; glumes broadly ovate; stamens 3. Nuts obovate – elliptic, whitish.

Flowers & Fruits: May to November.

Specimen Cited: Medlajhora, Goutam & AP Das 0555, dated 24. 07. 2009.

Local Distribution: Abundant in marshy areas.

General Distribution: Tropical to temperate zones across the world.

FUIRENA Rottb., Descr. Icon. Rar. Pl. 70. 1773.

Fuirena ciliaris (L.) Roxb., Fl. Ind. 1: 184. 1820; Noltie, Fl. Bhut. 3 (1): 282. 1994. *Scirpus ciliaris* L., Mant. Ail. 182. 1771. *Fuirena glomerata* Lam., Encyl. 1: 150. 1791; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 666. 1893; Prain, Beng. Pl. 2: 1158. 1903.

Erect, annual, marshland sedge. Rhizome absent. Stems tufted. Leaves linear – lanceolate, acuminate; sheaths striate. Spikelets in clusters of 3 – 10, gray-green or brownish, ovoid or oblong. Glumes obovate or oblong; keel green. Achenes triquetrous, obovoid, surface smooth, pale.

Flowers & Fruits: October to January.

Specimen Cited: Gorati Beel, Goutam & AP Das 0509, dated 23. 07. 2009.

Local Distribution: Common along the margin of Gorati Beel.

General distribution: Cosmopolitan to tropical and sub-tropical regions.

KYLLINGA Rottb., Descr. Icon. Rar. Pl. 12. 1773, *nom. cons.*, not *Killinga* Adanson (1763).

Key to the species:

1a. Keel of achene glume winged; heads greenish *K. brevifolia*

1b. Keel of achene glume not winged; heads whitish *K. nemoralis*

Kyllinga brevifolia Rottb., Descr. 13. t. 4. f. 3. 1773; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 588. 1893; Noltie, Fl. Bhut. 3(1): 324. 1994; Prain, Beng. Pl. 2: 1135. 1903; Hajra *et al.*, Fl. Sikkim 1: 227. 1996. *Cyperus brevifolius* (Rottb.) Hassk., Cat. Hort. Bogor. 24. 1844.

Rhizome slender. Culms tufted, compressed, trigonous, 4 to 5 sheathed. Leaf-sheaths Br., acuminate; lamina 5 – 17 cm x 2 - 4 mm, flaccid. Bracts 3, leaf-like. Spike 1, ovoid-globose, with numerous densely arranged spikelets. Spikelets oblong-lanceolate, compressed, 1 to 2 flowered; scales ovate, keel spinulate. Stamens 1 – 3; anthers short, linear. Style long; stigmas 2. Achenes obovoid-oblong.

Flowers & Fruits: May to October.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0485*, dated 23.07.2009.

Local Distribution: In open areas, over the forests; common.

General distribution: Tropical and warm regions of South-East Asia.

Kyllinga nemoralis (Forst. & Forst.) Dandy *ex* Hutchinson & Dalziel, Fl. W. Trop. Afr. 2: 487. 1936; Noltie, Fl. Bhut. 3(1): 325. 1994; Hajra *et al.*, Fl. Sikkim 1: 227. 1996. *Kyllinga monocephala* Rottb., Descr. 13, t. 4, F. 4. 1773, *nom. Superfl.*; Prain, Beng. Pl. 2: 1141. 1903. *Thryocephalon nemorale* Forst. & Forst., Char. Gen. Pl. 65. 1775. *Cyperus kyllinga* Endl., Cat. Hort. Ac.Vindob.1: 94.1842.

Local name: Gothube.

Perennials herbs. Culms tufted, compressed triquetrous. Leaves usually shorter than culm; sheath brown; lamina flat. Bracts 3 to 4, much longer than inflorescence. Spikes ovoid to globose, with numerous spikelets. Spikelets sub-obovoid, compressed, 1-flowered; scales boat-shaped, apex slightly recurved mucronate. Stamens 3. Style long; stigmas 2. Achenes Br., oblong to obovoid-oblong.

Flowers & Fruits: May to August.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0550*, dated 24. 07. 2009.

Local Distribution: In open areas, over the forests; common.

General Distribution: Pantropical.

RHYNCHOSPORA Vahl, Enum. Pl. 2: 229. 1805 [“Rynchospora”], *nom. cons.*

Rhynchospora corymbosa (L.) Britton in Trans. New York Acad. Sci. 11: 84. 1892; Noltie, Fl. Bhut. 3(1): 329. 1994; Cook, Aqua. Wetl. Pl. Ind. 173, 1996; Hajra *et al.*, Fl. Sikkim 1: 233. 1996. *Scirpus corymbosus* L., Cent. Pl. 2: 7.1956.

Rhizome short. Culms erect, trigonous. Leaves basal and cauline, blades broadly linear, long acuminate; sheaths membranous. Bracts shorter than large compound paniculate inflorescence; anthela 2 – 5, distant corymbiform. Spikelets many, lowest flower bisexual, upper 1 - 2 male. Glumes ovate to ovate lanceolate. Stamens 3. Achenes oblong-obovate to obovate, Br..

Flowers & Fruits: June to November.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0423*, dated 22.07.2009.

Local Distribution: Common in marshy areas.

General Distribution: Pantropical; India: West Bengal, Assam, Arunachalpradesh, Meghalaya, Tripura, Nagaland, Kerala, Karnataka; Sri Lanka, Bangladesh, Bhutan, Nepal.

SCHOENOPLECTUS (Rchb.f.) Palla, Verh. K. K. Zool.-Bot. Ges. Wien 38 (Sitzungsber.): 49. 1888, *nom. cons.*

Key to the species:

- 1a. Nuts smooth, triangular *S. grossus*
- 1b. Nuts transversely wavy 2

- 2a. Glumes distinctly keeled, spikelets angular *S. laterifolius*
 2b. Glumes faintly keeled, spikelets terete 3
 3a. Spikelets 2 – 4; nuts plano-convex *S. juncooides*
 3b. Spikelets more than 10; nut triquetrous *S. articulatus*

Schoenoplectus articulatus (L.) Palla, Bot. Jahrb. 10: 229. 1888; Palla, Fl. Hassan dist. 697. 1976; Noltie, Fl. Bhut. 3(1): 284. 1994. *Scirpus articulatus* L., Sp. Pl. 47. 1753; Hook. f., Fl. Brit. Ind. 6: 656. 1893; Prain, Beng. Pl. 2: 1160. 1903. *Isolepis articulate* Nees in Wight, Contrib. Bot. Ind. 108.1834.

Glabrous, annual, tufted marshland robust sedge. Stems terete, spongy, transversely septate. Leaves reduced to sheaths. Inflorescence of many sessile spikelets, head like cluster. Spikelets ovoid to cylindrical-oblong. Glumes ovate, concave, acute; hypogynous bristles absent. Style linear. Achenes obovate, triquetrous, black, smooth.

Flowers & Fruits: October to January.

Specimen Cited: Murti, Goutam & AP Das 0439, dated 22. 07. 2009; Gorati Beel, Goutam & AP Das 0617, dated 11. 02. 2008.

Local Distribution: All over the marshy and riverine lowlands.

General distribution: Tropical Asia, Africa and Australia.

Schoenoplectus grossus (L.f.) Palla, Allg. Bot. Z. 17. Biebl. 3. 1911; Srivastava in Hajra *et al.*, Fl. Sikkim 1: 234. 1996. *Scirpus grossus* L.f., Suppl. 104. 1781; Clarke in Hook. f., Fl. Brit. Ind. 6: 659. 1896; Noltie, Fl. Bhut. 3(1): 280. 1994; Prain, Beng. Pl. 2: 1160. 1903.

Perennial, aquatic, glabrous sedges. Rootstock stout, stolons produces tubers; roots fibrous, triquetrous spongy. Leaves few, radical, concave, strongly keeled, spongy; sheaths long open. Inflorescence decomposed, terminal, open, ovoid, dark Br.. Glumes broadly elliptic concave. Nuts elliptic-obovoid.

Flowers & Fruits: September to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0617, dated 11. 02. 2008.

Local Distribution: Margins of lowland areas.

General distribution: India, Bhutan, Bangladesh, Sri Lanka, China, Malaysia, Philippines.

Schoenoplectus juncooides (Roxb.) Palla, Bot. Jahrb. 10: 299.1888; Noltie, Fl. Bhut. 3(1): 283. 1994; Srivastava in Hajra *et al.*, Fl. Sikkim 1: 235. 1996. *Scirpus juncooides* Roxb., Fl. Ind. 1: 218. 1820; *Scirpus erectus sensu* Clarke in Hook. f., Fl. Brit. Ind. 6: 656. 1893; Prain, Beng. Pl. 2: 1160. 1903.

Tufted annual, marshland sedge. Stems flaccid or rigid. Leaves reduced to sheaths. Spikelets sessile, 2–5 in a lateral cluster; glumes suborbicular, concave, acute, pale-Br.; hypogynous bristles 5–6, unequal, retrorsely scarbid, shorter or longer than achenes. Style linear, branches 2. Achenes globose obovoid, Br. to black.

Flowers & Fruits: July to February.

Specimen Cited: Gorati Beel, Goutam & AP Das 0631, dated 12. 02. 2008.

Local Distribution: Marginal areas of Gorati Beel.

General distribution: India, China, Japan, Malaysia, Australia.

Schoenoplectus lateriflorus (Gmelin) Lye, Bot. Nat. 290. 1971; Bhat *et al.*, Sedg. & Gras. 82. 2001. *Scirpus lateriflorus* Gmelin, Syst. Nat. 2, 1: 127. 1791. *Scirpus supinus* var. *uninoides* Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 656. 1893; Prain, Beng. Pl. 2: 1160. 1903. *Scirpus supinus* var. *lateriflorus* (Gmelin) Koyama, J. Fac. Sci. Univ. Tokyo sect. 3, Bot. 7: 302. 1958; Noltie, Fl. Bhut. 3(1): 284. 1994. *Scirpus supinus auct non L.*, Sp. Pl. 1: 49. 1753; Hara *et al.*, Enn. Flower. Pl. Nepal 1: 119. 1978.

Aquatic or marshland annual, erect, tufted. Stems glabrous, trigonous. Leaves short, sheath short. Spikelets in a axillary cluster, ovate, oblong, sessile, rachilla slender. Glumes ovate, membranous. Nuts transversely lineolate.

Flowers & Fruits: August to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0635, dated 12. 02. 2008.

Local Distribution: Marginal areas of Gorati Beel.

General distribution: India, Tropical Asia, N. America and Australia.

SCIRPUS L., Sp. Pl. 1: 47. 1753, *nom. cons.*

Scirpus michelianus L., Sp. Pl. 1: 52. 1753; Clarke in Hook. *f.*, Fl. Brit. Ind. 6: 662. 1893; Noltie, Fl. Bhut. 3(1): 280. 1994; Prain, Beng. Pl. 2: 873. 1903; Datta & Majumdar, Bull. Bot. Soc. Beng. 20(2): 35. 1966. *Cyperus diffuses* Roxb., Fl. Ind. 1: 189. 1832.

Small, annual, tufted sedge; root fibrous. Stem triquetrous, leafy towards and base. Leaves as long as stem, linear, acute. Spikelets numerous, in dense compound terminal heads. Glumes elliptic. Nuts fusiform.

Flowers & Fruits: July to January.

Specimen Cited: Gorati Beel, Goutam & AP Das 0349, dated 21. 07. 2009.

Local Distribution: Marginal areas of Gorati Beel.

General distribution: Warmer parts of India, South Asia, South Europe to Japan.

Juncaceae Juss., Gen. Pl. 43. 1789 ('Junci'); *nom. cons.*

JUNCUS L., Sp. Pl. 1: 325. 1753.

Juncus prismatocarpus R.Br., Prodr. Fl. Nov. Holl. 1: 259. 1810; Noltie, Fl. Bhut. 3(1): 254. 1994; Hajra *et al.*, Fl. Sikkim 1: 176. 1996; Prain, Beng. Pl. 2: 1088. 1903.

Perennial tufted herbs. Stems erect. Basal leaves few; lamina linear, 8 – 22 cm × 2 – 4 mm, obtuse to acute. Inflorescence terminal, much branched; involucre bracts leafy, shorter than inflorescence; heads globose to hemispheric; bracts broadly ovate to ovate lanceolate. Perianth segments narrowly lanceolate to linear-lanceolate, acute. Stamens 3. Stigmas very long. Capsules narrow.

Flowers & Fruits: May to November.

Specimen Cited: Medlajhora, Goutam & AP Das 0169, dated 08. 02. 2009.

Local Distribution: Common in marshy areas.

General Distribution: Pakistan, India, Sri Lanka, Bhutan, Nepal, Indonesia, Japan, Korea, Laos, Cambodia, Malaysia, Papua New Guinea, Thailand, Vietnam, Australia, Pacific Islands.

Typhaceae Juss. Gen. Pl. 25. 1789 ('Typhae').

TYPHA L., Sp. Pl. 2: 971. 1753.

Typha elephantina Roxb., Fl. Ind., 3: 566. 1832; Noltie, Fl. Bhut. 3(1): 177. 1994; Prain, Beng. Pl. 2: 1102. 1903. *Typha schimperi* Rohrbach, Verh. Bot. Vereins Prov. Brandenburg 11: 95. 1869. *Typha maresii* Batt., Bull. Soc. Bot. France 34: 389. 1887. *Typha elephantina* var. *schimperi* (Rohrbach) Graebn., Pflanzenr. IV, 8: 11. 1900. *Typha latifolia* subsp. *maresii* (Batt.) Batt., Fl. Algérie 1(2): 18. 1895.

Plants up to 2.5 m, stout. Leaves 1 – 1.5 m long, abaxially carinate, transverse section triangular. Staminate part of spikes with 1 bract, axis with dense Br. hairs; pistillate part of spikes separated from staminate part. Female flowers with whitish bracteoles; bracteoles linear; ovary lanceolate, stalked; stigmas lanceolate.

Flowers & Fruits: unknown.

Specimen Cited: Gorati Beel, Goutam & AP Das 0566, dated 24. 07. 2009.

Local Distribution: Lowlands, mostly in central area of GNP.

General Distribution: Pakistan, India, Bangladesh, Bhutan, Nepal, Myanmar; Africa.

Eriocaulaceae P. Beauv. ex Desv., Ann. Sc. Nat. 13: 45. 1828 ('Eriocauloneae').

ERIOCAULON L., Sp. Pl. 1: 87. 1753.

Key to the Species :

- 1a. Leaves upto 5 cm long; anthers white or pale yellow *E. cinereum*
 1b. Leaves 5 – 12 cm long; anthers black *E. alpestre*

Eriocaulon cinereum R.Br., Prodr. 254. 1810; Noltie, Fl. Bhut. 3(1): 244. 1994; Cook, Aqua. Wetl. Pl. Ind. 191. 1996. *Eriocaulon Sieb.ianum* Sieb. et Zucc. ex Steud., Syn. Pl. Glum. 2: 272. 1855; Hook. f., Fl. Brit. Ind. 6: 577. 1893; Prain, Beng. Pl. 2: 1127. 1903.

Small, stemless, tufted annual sedge. Leaves 2 – 5 cm long, narrowly linear glabrous, gradually attenuate to filiferous apex. Peduncle 10 – 15 cm, numerous, aggregated, glabrous, 5-ribbed. Heads small, whitish globose or ovoid; bracts glabrous.

Flowers & Fruits: October to March.

Specimen Cited: Medlajhora, Goutam & AP Das 0734, dated 14. 02. 2008.

Local Distribution: In all marshlands.

General Distribution: India and Tropical parts of world.

Eriocaulon alpestre Hook. f. & Thoms. ex Körnicke, Miq. Ann. Mus. Bot. Lugduno-Batavi 3: 163. 1867; Noltie, Fl. Bhut. 3(1): 245. 1994; Hajra *et al.*, Fl. Sikkim 1: 197. 1996; Cook, Aqua. Wetl. Pl. Ind. 187. 1996. *Eriocaulon alpestre* var. *ampullaceum* Royen, Blumea 10: 126. 1960.

Leaves linear, 5 – 12 x 0.3 – 0.5 cm. Scapes 5 – 8 cm; sheath 3 – 8 cm; heads straw colored at base, black at apex; involucre bracts yellowish green, ovate, usually silky, glabrescent; floral bracts obovate to oblanceolate, glabrescent. Male flowers: petals 3, subequal, anthers black. Female flowers: petals 3, spatulate; ovary 3 loculed. Seeds narrowly ovoid.

Flowers & Fruits: June to August.

Specimen Cited: Gorati Beel, Goutam & AP Das 0136, dated 07. 02. 2009.

Local Distribution: In all marshy areas.

General Distribution: India, Bhutan, Nepal, Japan, Korea, Philippines, Thailand.

Xyridaceae Agardh, Aphor. Bot. 158. 1823 ('Xyridae').

XYRIS L., Sp. Pl. 1: 42. 1753.

Xyris pauciflora Willdenow, Phytogr. 1: 2, t. f. 1 & Sp. Pl. 1: 255. 1794; Hooker *f.*, Fl. Brit. Ind. 6: 363. 1892; Noltie, Fl. Bhut. 3(1): 242. 1994; Hajra *et al.*, Fl. Sikkim 1: 167. 1996; Prain, Beng. Pl. 2: 1080. 1903; Cook, Aqua. Wetl. Pl. Ind. 369, 1996. *Xyris denticulata* R.Br., Prodr. Fl. Nov. Holl. 256. 1810. *Xyris maritima* Koyama, Philipp. J. Sci. 84: 367. 1956. *Xyris dajacensis* Royen, Blumea 7: 208. 1953.

Tufted, aquatic, erect annual herbs. Lamina linear acuminate. Heads globose or ovoid. Flowers 4 – 6 in a head, bracts orbicular. Capsule broadly ovoid. Seeds minute, linear oblong, many.

Flower & Fruits: November to February.

Specimen Cited: Medlajhora, Goutam & AP Das 0143, dated 08. 02. 2009.

Local Distribution: In all marshy areas.

General Distribution: India; native to Tropical Australia.

Order: Zingiberales Griseb. (1854)

Cannaceae Juss. Gen. Pl. 62. 1789 ('Cannae'); *nom. cons.*

CANNA L., Sp. Pl. 1: 1. 1753.

Canna indica L., Sp. Pl. 1: 1. 1753; Prain, Beng. Pl. 2: 1047. 1903. *Canna orientalis* var. *flava* Roscoe, Monandr. Pl. Scitam. 40. 1826; Noltie, Fl. Bhut. 3(1): 212. 1994; *Canna montana* Blume, Enum. Pl. Javae 35. 1827. *Canna indica* var. *rubra* Aiton, Hort. Kew. 1: 1. 1789.

Rhizome much branched. Stems up to 2 m. Leaf sheath green; petiole short; lamina adaxially green, 25 – 55 × 8 – 16 cm. Racemes compact, branched; bracts ovate. Flowers 1 – 2 per cincinnus. Sepals pale. Corolla tube apricot yellow. Staminodes 2 or 3; labellum red, lanceolate. Ovary green, globose. Capsule broadly ovoid.

Flowers & Fruits: Through out the year.

Specimen Cited: Dhupjhora Beat Office, Goutam & AP Das 0167, dated 08. 02. 2009.

Local Distribution: Grown in Dhupjhora Beat Offices and gardens; often planted.

General Distribution: Native to tropical America; cultivated throughout the tropics. Seminalized in many areas.

Costaceae (Meisn.) Nakai, Journ. Jap. Bot. 17: 203. 1941.

CHEILOSTUS C.D. Specht, Taxon 55(1): 159. 2006.

Cheilocostus speciosus (König) Specht, Taxon 55: 159. 2006. *Banksia speciosa* König, Retz. Obs. 3: 75. 1783. *Hellenia grandiflora* Retz., Observ. Bot. 6: 18. 1791. *Costus speciosus* (König) Sm., Trans. L. Soc. 1: 249. 1791; G. Watt, Dict. Econ. Prod. 2: 579. 1889; Baker in Hook. *f.*, Fl. Brit. Ind. 6: 249. 1892; Prain, Beng. Pl. 2: 786. 1903; Noltie, Fl. Bhut. 3(1): 210. 1994; Hajra *et al.*, Fl. Sikkim 1: 124. 1996.

Stems up to 3 m. Petiole 5 – 7 mm; lamina oblong to lanceolate, 12 – 22 × 5 – 11 cm. Condensed spike terminal, ellipsoid to ovoid; bracts bright red, apex sharply pointed; bracteoles pale red. Calyx red, apex 3 lobed. Corolla tube 1 cm; lobes oblong-elliptic, apex white. Labellum white. Stamen petaloid, white with orange-yellow base. Capsule red, globose. Seeds black.

Flowers & Fruits: July to November.

Specimen Cited: Murti, Goutam & AP Das 0195, dated 09. 02. 2009.

Local Distribution: All over the forests, prefer open areas; common.

General Distribution: India, Bangladesh, Sri Lanka, Java.

Marantaceae Lindl., Nat. Syst. 267. 1830; *nom. cons.*

PHRYNIUM Willd., Sp. Pl., ed. 4, 1(1): 1, 17. 1797; *nom. cons.*

Phrynium pubinerve Bl., Enum. Pl. Javae 1: 38. 1827; Noltie, Fl. Bhut. 3(1): 214. 1994. *Phrynium densiflorum* Moritzi ex Körnig, Bull. Soc. Imp. Naturalistes Moscou 35(1): 101. 1862. *Phrynium malaccense* Ridl., Jour. Asiat. Soc. Straits 32: 180. 1899.

Plants up to 1 m. Rhizomes tuberous. Basal leaves several; cauline leaf 1; petiole to 60 cm, pulvinus 5 – 6 cm, glabrous; lamina ovate-oblong to oblong, 30 – 45 × 8 – 12 cm, glabrous, shortly acuminate, base acute. Inflorescence sessile, capitate; bracts purple-red, oblong-lanceolate, apex initially acute. Flower sessile. Sepals linear, sericeous. Corolla tube violet, shorter than calyx; lobes dark red, oblong-obovate. Outer staminodes light red, obovate, slightly corrugated. Ovary sericeous. Fruit dark red, shiny, pyriform; exocarp hard. Seeds shallowly grooved.

Flowers & Fruits: June to September.

Specimen Cited: Medlajhora, Goutam & AP Das 0232, dated 09. 02. 2009.

Local Distribution: Dhupjhora and Gorumara lowland areas.

General Distribution: Eastern Himalaya, including Terai and Duars; South East Asia.

Musaceae Juss. Gen. Pl. 61. 1789 ('Musae'); *nom. cons.*

MUSA L., Sp. Pl. 2: 1043. 1753.

Key to the Species:

1a. Bracts adaxially purple red, abaxially yellowish green *M. balbisiana*

1b. Bracts adaxially deep red, abaxially purple *M. paradisiaca*

Musa balbisiana Colla, Mem. Reale Accad. Sci. Torino 25: 384. 1820; Kew Bull. 1948: 14. 1948; Hara, Fl. East. Himal. 3: 136. 1975; Hara *et al.*, En. Flower. Pl. Nepal 1: 63. 1978; Noltie, Fl. Bhutan 3(1): 180. 1994; Hajra *et al.*, Fl. Sikkim 1: 135. 1996.

Local name: Bichikola

Pseudostems upto 5 m high, green with dark markings. Lamina oblong, entire, petiole spongy, base asymmetric. Compound spadix pendulous, 1 - 1.5 m; peduncle and rachis glabrous. Bracts of bisexual and male flowers adaxially purple red, abaxially yellowish green; bracts of female flowers deciduous. Flowers numerous. Berries yellow when ripe, obovoid, distinctly angled at maturity. Seeds numerous, Br., oblate, minutely warty.

Flowers & Fruits: Round the year.

Specimen Cited: Murti, Goutam & AP Das 0567, dated 24. 07. 2009.

Local Distribution: Commonly grown in forests villages.

General Distribution: India, Sri Lanka, Nepal, Myanmar, Thailand, Malaysia, Indonesia (Java), New Guinea, Philippines.

Note: Cultivated widely.

Musa × paradisiaca L., Sp. Pl. 2: 1043. 1753. Hajra *et al.*, Fl. Sikkim 1: 135. 1996. *Musa sapientum* L., Syst. 10, 2: 1303. 1759; Hook. *f.*, Fl. Brit. Ind. 6: 262. 1892; Prain, Beng. Pl. 2: 1050. 1903.

Pseudostems clumped. Leaves erect; lamina adaxially deep green, abaxially light green, oblong, 1.5 – 2.5 m × 30 – 55 cm, base subsymmetric, acute. Compound spadix pendulous; rachis glabrous. Bracts adaxially deep red, abaxially purple, deciduous. Flowers in 2 rows in each bract. Tepal suborbicular to oblong, acuminate. Inflorescence with 6 – 8 clusters of erect to slightly curved berries. Seeds absent.

Flowers & Fruits: All round the year.

Specimen Cited: Dhupjhora, Goutam & AP Das 0630, dated 12. 02. 2008.

Local Distribution: Commonly cultivated in forest villages.

General Distribution: Native to tropical Asia; widely cultivated in the tropics.

Note: Cultivated widely.

Zingiberaceae Lindl., Nat. Syst. ed. 2. 322. 1836; *nom. cons.*

Key to the genera:

- 1a. Inflorescence terminal or lateral on pseudostems 2
- 1b. Inflorescence on separate shoots arising from rhizomes 3
- 2a. Lateral staminodes reduced to small subulate point or swellings *Alpinia*
- 2b. Lateral staminodes attached to corolla tube and petal-like 4
- 3a. Style exerted well beyond anther-thecae and enfolded in a long anther-crest ... *Zingiber*
- 3b. Style not exerted much beyond anther-thecae and not enfolding style..... *Curcuma*
- 4a. Ovary tri-locular; lip free from filament *Hedychium*
- 4b. Ovary unilocular; lip adnate to the base of filament to form a slender tube *Globba*

ALPINIA Roxb., Asiat. Res. 11: 350. 1810, *nom. cons.*

Key to the species:

- 1a. Bracteoles funnel-shaped, persistent *A. nigra*
- 1b. Bracteoles shell-shaped, deciduous after anthesis *A. calcarata*

Alpinia calcarata (Haw.) Roscoe in Trans. Linn. Soc. London 8: 347. 1807; Prain, Beng. Pl. 2: 1047. 1903; Noltie, Fl. Bhut. 3(1): 206. 1994. *Renalmia calcarata* Haw. in Bot. Repos. 6: t. 421. 1805. *Alpinia calcarata* var. *compacta* Gagnep. in Bull. Soc. Bot. France 48: 85. 1902.

Local name: Purundi.

Pseudostems up to 1 m. Leaves sessile, lamina linear-lanceolate, 20 – 40 × 2 – 4 cm, glabrous, acuminate and caudate-mucronate, base attenuate. Panicles terminal, less than 10 cm; rachis slightly velvety. Calyx split on 1 side. Corolla tube white; lobes oblong. Lateral staminodes red. Labellum white with rose red and purple streaks. Filament 1.5 cm. Capsule red, globose.

Flowers & Fruits: May.

Specimen Cited: Gorati Beel, Goutam & AP Das 0716, dated 14. 02. 2008; Goutam & AP Das 0660, dated 13. 02. 2008.

Local Distribution: Common along the margins of Gorati Beel.

General Distribution: India, Sri Lanka, Myanmar.

Alpinia nigra (Gaertn.) Burt, Notes Roy. Bot. Gard. Edinburgh 35(2): 213. 1977; Noltie, Fl. Bhut. 3(1): 205. 1994; Hajra *et al.*, Fl. Sikkim 1: 121. 1996. *Zingiber nigrum* Gaertn., Fruct. Sem. Pl. 1: 35. 1788. *Alpinia allughas* (Retz.) Roscoe, Trans. Linn. Soc. London 8: 346. 1807; Prain, Beng. Pl. 2: 1047. 1903. *Amomum nigrum* (Gaertn.) Rausch, Nomencl. Bot. 3: 1. 1797. *Heritiera allughas* Retz., Observ. Bot. 6: 17. 1791.

Local name: Purundi.

Pseudostems up to 2 m. Leaves sessile to subsessile; lamina elliptic-lanceolate, 25 – 50 × 6 – 8 cm, apex and base acute. Panicles terminal, erect; branches expanded; bracts ovate; bracteoles funnel shaped. Pedicel 5 mm. Calyx tubular. Corolla, cucullate. Lateral staminodes subulate. Labellum obovate. Stamen ca. 2 cm; anther curved. Ovary pubescent. Capsule black when dry.

Flowers & Fruits: July to October.

Specimen Cited: Murti Jaldhaka junction, Goutam & AP Das 0155, dated 08. 02. 2009.

Local Distribution: All over the marshy lands.

General Distribution: India, Bhutan, Sri Lanka, Thailand.

CURCUMA L., Sp. Pl. 1: 2. 1753, *nom. cons.*

Key to species:

1a. Petiole equal to lamina; rhizomes yellow inside *C. aromatic*

1b. Petiole shorter than lamina; deep pink or blackish inside of rhizome *C. caesia*

Curcuma aromatica Salisb., Parad. Lond. 2: t, 96. 1807; Hook. *f.*, Fl. Brit. Ind. 6: 210. 1890; Prain, Beng. Pl. 2: 1042; Noltie, Fl. Bhut. 3(1): 192. 1994. 1903; Hajra *et al.*, Fl. Sikkim 1: 125. 1996. *Curcuma wenyujin* Chen *et. Ling*, Acta Pharm. Sin. 16: 387. 1981.

Local name: Soti.

Plants up to 1 m. Rhizomes pale yellow inside, aromatic. Petiole equaling leaf blade; lamina oblong, 25 – 50 × 10 – 20 cm, narrowly caudate, base attenuate. Inflorescences on separate shoots arising from rhizomes; spike cylindrical; fertile bracts pale green, ovate. Calyx sparsely hairy. Corolla tube funnel-shaped, villous at throat; lobes pinkish white. Lateral staminodes yellowish. Labellum yellow. Ovary villous.

Flowers & Fruits: May to September.

Specimen Cited: Murti, Goutam & AP Das 0189, dated 09. 02. 2009.

Local Distribution: Forest and road side areas.

General Distribution: India, Nepal, Bangladesh, Sri Lanka, Myanmar, Java.

Curcuma caesia Roxb., Asiat. Res. 11: 334. 1810. Fl. Sikkim 1: 125. 1996. *Curcuma kuchoor* Royle, Ill. Bot. Himal. Mts. 357 1839.

Local name: Kalo Halud

Rhizomatous perennial herb up to 10 cm. Rhizomes fleshy, aromatic, bluish inside. Leaves 4 – 8, basal rosette-like; petiole 5 – 15 cm, much shorter than lamina; lamina oblong-lanceolate, glabrous above and beneath, dark purple around mid-vein, acuminate. Inflorescence a spike arising terminal

from a leafy pseudostem; peduncle hidden within petioles; spike cylindrical; fertile bracts green, thick textured, gradually flushed with pink towards apex, ovate; coma bracts red or very deep pink, oblong, obtuse, not widely spreading. Flowers yellow, not much studied.

Flowers & Fruits: May to September.

Specimen Cited: Dhupjhora, Goutam & AP Das 0189, dated 09. 02. 2009.

Local Distribution: Murti, Dhupjhora, Gorumara, Budhram.

General Distribution: India, Nepal, Bangladesh, Sri Lanka, Myanmar, Java.

Note : Rhizomes medicinally important, used in sprains and bruises.

GLOBBA L., Mant. Pl. 2: 143, 170. 1771.

Key to species:

1a. Cincini stalk and bracts *G. clarkei*

1b. Cincini stalk and bracts green *G. racemosa*

Globba racemosa Sm., Exot. Bot. 2: 115. 1806; Noltie, Fl. Bhut. 3(1): 191. 1994; Hajra *et al.*, Fl. Sikkim 1: 127. 1996. *Globba orixensis* var. *racemosa* (Sm.) Gagnep., Bull. Soc. Bot. France 48: 201. 1901; Prain, Beng. Pl. 2: 1037. 1903.

Pseudostems up to 100 cm. Leaves sessile; lamina oblong to ovate-lanceolate, 12 – 20 × 4 – 5 cm, caudate, base acute, glabrous. Flowers in terminal thyrses, yellow, with orange, glandular spots. Calyx turbinate. Corolla lobes reflexed. Lateral staminodes lanceolate. Labellum reflexed, obcuneate. Filament 1 cm; anther without appendages. Capsule ellipsoid, smooth.

Flowers & Fruits: June to September.

Specimen Cited: Murti, Goutam & AP Das 0204, dated 09. 02. 2009.

Local Distribution: Murti, Gorumara.

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

Globba clarkei Baker in Fl. Brit. Ind. 6: 210. 1890; Noltie, Fl. Bhutan 3 (1): 190. 1994; Fl. Sikkim 1: 126. 1996. *Globba hookeri* Clarke *ex* Baker in Fl. Brit. Ind. 6: 202. 1890; Trans. Bose Res. Inst. 51(4): 115. 1987. *Globba racemosa* var. *hookeri* (Clarke *ex* Baker) S. Kumar in Fl. Sikkim 1: 127. 1996.

Rhizomatous, perennial herb. Pseudostems leafy. Leaves sessile, alternate; ligule membranous, 2-lobed; lamina lanceolate, 12 – 30 × 4 – 8 cm. Bulbils formed along main axis at after maturity. Bracts purplish, with 3 – 4 flowers. Flowers yellow; calyx tubular, shortly 3-lobed, lobes greenish; corolla-tube ovate, reflexed; lateral staminodes ovate, equaling petals, narrower; lip reflexed. Capsule globose.

Flowers & Fruits: June to September.

Specimen Cited: Budhram, Goutam & AP Das 1124, dated 19. 02. 2012.

Local Distribution: Murti, Dhupjhora, Gorumara, Budhram, Bichhabhanga.

General Distribution: Endemic to E Himalaya and NE India.

HEDYCHIUM König in Retzius, Observ. Bot. 3: 61 [“73”]. 1783.

Key to the Species:

- 1a. Bracts convolute, 1 – 2 flowered *H. Thyrsiforme*
 1b. Bracts lanceolate, usually 3 flowered *H. coccineum*

Hedychium coccineum Buch.-Ham. ex Smith in Rees, Cycl. 17: 5.1811; Hook. f., Fl. Brit. Ind. 6: 231. 1892; Hara, Fl. E. Himal. 422. 1966; Noltie., Fl. Bhutan 3 (1): 204. 1994. *Hedychium squarrosium* Buch.-Ham. ex Wall. in Hook. f., Kew. Jour. Bot. 5: 372. 1853. *Hedychium angustifolium* Roxb., Fl. Ind. ed. 13. 1832. *Hedychium coccineum* var. *angustifolium* (Roxb.) Baker in Fl. Brit. Ind. 6: 231. 1890; Beng. Pl. 2: 1040. 1903.

Local Name: Dolon Champa

Terrestrial rhizomatous perennial herb. Pseudostems 1 – 2 m, annual. Leaves alternate, sessile; ligule entire, 1.5 – 2.5 cm, obtuse, brown; lamina narrowly linear-lanceolate, 22 – 40 × 3 – 5 cm, glabrous above, minutely pubescent beneath, attenuate, acuminate to shortly caudate. Inflorescence spike, cylindrical, moderately dense; bracts oblong, glabrous, usually 3 flowered, obtuse. Flowers all parts homogeneously brick-red to deep orange. Calyx apically 3 toothed; corolla tube equaling to slightly longer than calyx; petals linear. Capsule globose.

Flowers & Fruits: June to September.

Specimen Cited: Gorumara, Goutam & AP Das 0749, dated 19. 03. 2008.

Local Distribution: Murti, Dhupjhora, Gorumara, Budhuram, Bichhabhanga.

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

Hedychium thyrsiforme Smith in Rees, Cycl. 17: 5.1811; Hooker f., Fl. Brit. Ind. 6: 230. 1892; Beng. Pl. 2: 1033. 1903; Noltie., Fl. Bhutan 3 (1): 201. 1994. *Gandasulium thyrsiforme* (Wall.) Kuntze, Revis. Gen. Pl. 2: 690. 1891.

Local Name: Dolon Champa

Terrestrial rhizomatous perennial herb. Pseudostems up to 2 m. Leaves alternate, shortly petiolate to 1 cm; ligule entire, emerginate; lamina elliptic to broadly lanceolate, 15 – 30 × 6 – 11 cm, acuminate. Spike very densely flowered. Bracts lanceolate, 1 – 2 flowered. Flowers white. Calyx slightly shorter than bracts, membranous; corolla tube white; petals linear, inrolled; lateral staminodes linear-lanceolate; lip clawed, oblong.

Flowers & Fruits: August to November.

Specimen Cited: Gorumara, Goutam & AP Das 0824, dated 19. 03. 2008.

Local Distribution: Murti, Dhupjhora, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India to Myanmar.

ZINGIBER Mill., Gard. Dict. Abr., ed. 4, [1545]. 1754, *nom. cons.*

Key to the Species:

- 1a. Inflorescences deep orange-red at maturity *Z. zerumbet*
 1b. Inflorescences dark brownish green *Z. montanum*

Zingiber montanum (König) Link ex Dietrich, *Sp. Pl. 1: 52. 1831. Amomum montanum* König, Observ. Bot. 3: 51. 1783. *Zingiber purpureum* Roscoe, Trans. Linn. Soc. London 8: 348. 1807;

Noltie, Fl. Bhut. 3(1): 188. 1994. *Zingiber cassumunar* Roxb., Asiat. Res. 11: 347. t. 5. 1810; Roxb., Fl. Ind. 1: 48. 1820; Hook. f., Fl. Brit. Ind. 6: 248. 1892; Prain, Beng. Pl. 2: 1045. 1903.

Local name: Bon aada.

Rhizome perennial, fleshy, aromatic, yellow inside. Leaves subsessile; ligule short, bilobed, pubescent; lamina linear-lanceolate, acute, base slightly rounded. Inflorescence basal, ovate; spike ovate, deep red. Calyx white, membranous. Style exerted well beyond anther-thecae and enfolded in a long anther-crest. Capsules ovoid; seeds purple.

Flowers & Fruits: June to August.

Specimen Cited: Murti, Goutam & AP Das 0246, dated 09. 02. 2009.

Local Distribution: All over the forests.

General Distribution: Native of India; Sri Lanka and Malay Peninsula.

Zingiber zerumbet (L.) Roscoe ex Smith in Exot. Bot. 2: 105. t. 112. 1804; Hook. f., Fl. Brit. Ind. 6: 247. 1892; Prain, Beng. Pl. 2: 1045. 1903; Noltie, Fl. Bhutan 3(1): 188. 1994. *Amomum zerumbet* L., Sp. Pl. 1. 1753; Hook. f., Fl. Brit. Ind. 6: 247. 1892.

Common name : Soti

Loosely tufted, rhizomatous perennial. Rhizomes fleshy, tuberous, aromatic, yellowish inside. Pseudostems to 1.5m, leafy through out. Leaves alternate, sessile; ligule membranous, 1.5 – 2cm, entire; lamina narrow lanceolate, 20 – 30 × 5 – 7 cm, glabrous above, minutely pubescent beneath, acuminate. Flowering shoots separately arising from rhizomes, by the leafy shoot; peduncle erect, 15 – 25 cm, bracteate. Inflorescences terminal, conical or oblong-elliptic, 7 – 10 × 2 – 3 cm, brownish yellow turning deep orange-red at maturity; bracts tightly packed and over-lapping ovate, glabrous, singly flowered, minutely mucronate. Flower and fruits not observed.

Flowers & Fruits: June to August.

Specimen Cited: Dhupjhora, Goutam & AP Das 0845, dated 05. 06. 2009.

Local Distribution: Dhupjhora, Gorumara.

General Distribution: India, Sri Lanka, Myanmar, Thailand, Laos, Vietnam, Malaysia, Cambodia.

Note : Grown for its showy inflorescence; rhizomes used medicinally used variously in bacterial diseases, as antihypertensive, stimulant, carminative etc.

Ceratophyllaceae Gray, Nat. Arr. Brit. Pl. 2: 395, 554. 1822; *nom. cons.*

CERATOPHYLLUM L., Sp. Pl. 2: 992. 1753.

Ceratophyllum demersum L., Sp. Pl. 2: 992. 1753; Hook. f. in Hook. f., Fl. Brit. Ind. 5: 639. 1888; Prain, Beng. Pl. 2: 743. 1903. *Dichotophyllum demersum* (L.) Moench, Methodus 345. 1794. *Ceratophyllum cornutum* Rich. ex Gray, Nat. Arr. Brit. Pl. 2: 555. 1821.

Stems up to 3 m long, suspended in water. Leaves bright green, coarse textured; whorls 1.5 – 6 cm in diameter; segments linear to filiform, not inflated. Flowers 1–3 mm in diameter. Achenes dark green to reddish Br., smooth or slightly tuberculate, margins wingless and spineless, facial spines absent; basal spines or tubercles 2, straight or curved; terminal spine 1.5 – 14 mm.

Flowers & Fruits: August to December.

Specimen Cited: Gorati Beel, Goutam & AP Das 0076, dated 06. 02. 2009.

Local Distribution: All over the marshy lands.

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

Orchidaceae Jussieu, Gen. P1. 64. 1789.

Key to genera:

- | | |
|---|-----------------------------|
| 1a. Plants terrestrial | 2 |
| 1b. Plants epiphytic or lithophytic | 5 |
| 2a. Plants reed like, stem rigid, woody, 1 – 2.5 m tall | <i>Arundina</i> |
| 2b. Plants not as above, stem soft, if taller than 1 m then saprophytic | 3 |
| 3a. Pollinia 8, in 2 groups | <i>Phaius</i> |
| 3b. Pollinia 4 | 4 |
| 4a. Lip equalling or shorter than petals, epichile unlobed | <i>Goodyera</i> |
| 4b. Lip well developed and exerted, epichile largely 2-lobed | <i>Zeuxine</i> |
| 5a. Growth of plants monopodial | 7 |
| 5b. Growth of plants sympodial | 6 |
| 6a. Cylindric pseudobulb present; plants arising from that pseudobulb | <i>Cymbidium</i> |
| 6b. Pseudobulb absent, plants arising directly from tough rhizomes | <i>Dendrobium</i> |
| 7a. Pollinia 4 or 8 | 8 |
| 7b. Pollinia 2 | 11 |
| 8a. Pollinia 4 | 9 |
| 8b. Pollinia 8 | <i>Eria</i> |
| 9a. Inflorescences arising from base of pseudobulb | <i>Bulbophyllum</i> |
| 9b. Inflorescence terminal or lateral from the tip of pseudobulb | 10 |
| 10a. Lip concave or saccate at base | <i>Pholidota</i> |
| 10b. Lip not concave or saccate at base | <i>Coelogyne</i> |
| 11a. Pollinia 2 | 12 |
| 11b. Pollinia 4 | <i>Acampe</i> |
| 12a. Column with a distinct short or long foot | 13 |
| 12b. Column without foot | 14 |
| 13a. Leaves terete | <i>Papilionanthe</i> |
| 13b. Leaves flat | <i>Aerides</i> |
| 14a. Lip distinctly 3-lobed; pollinia attached by a short and broad stipe | <i>Vanda</i> |
| 14b. Lip simple unlobed; stipes long, slender, linear | <i>Rhynchostylis</i> |

ACAMPE Lindley, Fol. Orchid. 4(Acampe): 1. 1853, nom. cons.

Acampe praemorsa (Roxb.) Blatt. et McCann in J. Bombay Nat. Hist. Soc. 35: 495. 1932. *Epidendrum praemorsum* Roxb., Pl. Corom. 1: 34 1795. *Acampe papillosa* (Lindl.) Lindl. in Fol. Orchid. Acampe 4: 2, no.5.1853; Tuyama in Hara, Fl. E. Himal. 2: 176. 1971; Hara *et al.*, Enum. Fl. Pl. Nepal 1: 30. 1978; Hajra *et al.*, Fl. Sikkim 1: 24. 1996; Pears *et* Cribb, Fl. Bhutan 3(3): 491. 2002. *Saccolabium*

papillosum Lindl. in Bot. Reg. 18: t. 1552. 1833; Hook.f., Fl. Brit. Ind. 6: 63. 1890; Prain, Beng. Pl. 2: 1022. 1903. *Gastrochilus papillosum* (Lindl.) Kuntze, Revis. General Pl. 2: 661. 1891.

Monopodial evergreen epiphyte. Stem erect to sub-erect to decumbent, 5 – 20 cm tall; stem 4 – 6 mm thick, covered by old leaf sheaths, rooting from nodes piercing the sheaths, distantly branched below, leafy above. Leaves alternate opposite, jointed; lamina 10 – 15 × 1 – 2 cm, coriaceous, linear oblong. Inflorescence leaf opposed, racemose, 3 – 5 per stem. Peduncle sheathed with dry overlapping sheaths at base. Flowers odorant, 1.2 – 1.6 cm across, sepals and petals sub-equal 0.2 – 0.3 × 0.5 – 1 cm, petals slightly narrower, pale yellow to greenish cream with brick-Br. transverse stripes; lip fleshy, warty, white and fading to yellowish with age, blotched with fade pink, obscurely lobbed along margins and decurved apically, obovate; column short, thick.

Flowers & Fruits: October to April.

Specimen Cited: Dhupjhora, Goutam & AP Das 1851, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Myanmar, China, Thailand, Indochin and Vietnam.

AERIDES Loureiro, Fl. Cochinch. 2: 525. 1790.

Aerides multiflora Roxb., Pl. Corom. 3: 68, t. 217. 1820; Hook.f., Fl. Brit. Ind. 6:44. 1890; King et Pantling in Ann. Roy. Bot. Gard. (Calcutta) 8: 212, t. 283. 1898; Prain, Beng. Pl. 2: 1020. 1903; Hara, Fl. E. Himal. 1. 425. 1966; Hara et al., Enum. Fl. Pl. Nepal 1: 31. 1978; Hajra et al., Fl. Sikkim 1: 26. 1996; Pears & Cribb, Fl. Bhutan 3(3): 493. 2002. *Aerides affine* Lindl., Gen. Sp. Orchid. Pl. 239. 1833. *Epidendrum geniculatum sensu* Buch.-Ham. ex Hook.f., Fl. Brit. Ind. 6: 45. 1890.

Pendent monopodial epiphyte. Stem 8 – 20 × 1 – 1.5 cm, basal portion densely covered with old, Br. distichous leaf sheaths. Aerial roots arising axillary or leaf opposed, fleshy. Leaves distichous, fleshy, oblong-linear, apex bilobed, 12 – 25 × 1.3 – 2 cm, channeled. Inflorescence raceme, 1 – 3, axillary from leafy portion of stem, pendent, 10 – 25 cm, densely many flowered, unbranched; peduncle sheathed, 5 – 10 cm, glabrous; floral bracts triangular-lanceolate, 5 – 8 mm. Flowers pink, showy, fragrant, ± 3 cm wide; pedicel and ovary ± 5 mm, pale pink; sepals oblong-elliptic, spotted with dark pink, 1.5 × 0.9 cm; petals ± similar, slightly larger, obtuse; lip similar in colour and texture, clawed, slightly 3-lobed, 1.5 × 1 cm, lateral lobes semi-circular; mid-lobe hastate-ovate, obtusely acute; spur short, 4 mm, compressed, porrect; column like a head of a bird, beaked, 2 – 3 mm, white. Capsule ovoid, 1.2 – 1.5 × 0.8 cm.

Flowers & Fruits: April to June.

Specimen Cited: Dhupjhora, Goutam & AP Das 1852, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Bangladesh, Myanmar, Thailand, Laos, Cambodia, Vietnam.

ARUNDINA Blume, Bijdr. 401. 1825.

Arundina graminifolia (Don) Hochr. in Bull. New York Bot. Gard. 6: 270. 1910; Hara, Fl. E. Himal. 1. 425. 1966; Hara et al., Enum. Fl. Pl. Nepal 1: 32. 1978; Das et Chanda in Trans. Bose Res. Inst. 51(4): 106. 1987; Hara et al., Fl. Sikkim 1: 30. 1996; Pears et Cribb, Fl. Bhutan 3(3): 319. 2002. *Bletia graminifolia* Don, Prodr. Fl. Nepal 29. 1825. *Cymbidium bambusifolium* Roxb., Hort. Beng. 63. 1814; Fl. Ind. ed. 460. 1832. *Limnorum graminifolium* Buch.-Ham. ex Don, Prodr. Fl. Nepal 30. 1825. *Arundina bambusifolia* (Roxb.) Lindl., Gen. Sp. Orchid. Pl. 125. 1831. *Arundina densa* Lindl. in Bot. Reg. 28: misc. 25, no.26. 1842.

Terrestrial, reed-like plants, 1 – 2.5 m tall. Stem rigid, woody, enclosed by leaf sheaths. Leaves distichous, alternate, linear lanceolate, acuminate, 9 – 18 × 1 – 2 cm; sheaths 2.5 – 4 cm. Inflorescence terminal raceme, 1 – 2 branched at base and paniculate, 5 – 20 cm, laxly 4 – 10 flowered, flowers opening in succession; floral bracts broadly ovate-triangular, 3 – 5 mm, sheathing at base. Flowers uniformly pink, large and showy, 4 – 5 cm across; pedicel and ovary 1.5 – 3 cm. Sepals similar, narrowly elliptic-lanceolate, 2.5 – 4 × 0.7 – 1 cm, acuminate; petals broadly ovate elliptic, spreading, 3 – 4 × 1.2 – 1.5 cm, acute to acuminate; lip simple, 4 – 6 × 2.5 – 3.5 cm, apical margin undulate, apex 2-lobed; disk with 2 (– 3) parallel lamellae; column slightly angular, 2 – 2.6 cm. Fruits ellipsoid.

Flowers & Fruits: February to November.

Specimen Cited: Gorumara, Goutam & AP Das 1881, dated 14. 06. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga; less common.

General Distribution: India, Myanmar, China, Sri Lanka, Thailand, Laos, Vietnam, Cambodia, Indonesia, Malaysia.

BULBOPHYLLUM Thouars, Hist. Orchid., Tabl. Esp. 3. 1822, nom. cons.

Key to species:

- 1a. Racemes lax or dense, cylindric *B. crassipes*
 1b. Racemes umbel or dense umbel like *B. spathulatum*

Bulbophyllum crassipes Hook.f., Fl. Brit. Ind. 5: 760. 1890; Pears *et* Cribb, Fl. Bhutan 3(3): 451. 2002. *Phyllorchis crassipes* (Lindl.) Kuntze, Revis. General Pl. 2: 677. 1891. *Bulbophyllum careyanum* var. *crassipes* (Hook. f.) Pradhan, Indian Orch.: Guide & Ident. & Cult. 2: 713. 1979.

Epiphyte with stout, creeping, rhizome, rooting from base of pseudobulbs. Pseudobulbs borne 2 – 2.5 cm apart, conical, 3 – 5 cm, 1 – 3 cm across. Leaf single, terminal; petiole 1 – 2 cm; lamina oblong, obtuse, slightly mucronate, 10 – 15 × 2 – 3.5 cm, fleshy or thickly leathery. Inflorescence cylindric raceme, arising laterally from base of pseudobulb, arching, 5 – 16 cm; raceme 2 – 8 cm, densely many flowered; peduncle stout, base with 3 to 4, swollen, 1.5 – 2 × 0.3 – 0.6 cm sheaths; floral bracts pale Br., ovate-lanceolate, acute, 4 – 6 mm. Pedicel and ovary 3 – 4 mm. Flowers 4 – 6 mm long, yellowish Br.; dorsal sepal oblong, obtuse rounded, concave, 5 – 5.5 × 2.6 – 3 mm; lateral sepals ovate-lanceolate, acute, much longer than dorsal sepal, 5 – 7.5 × 3 – 4 mm; petals obliquely triangular, 2 – 3 × 0.5 – 1 mm, margins irregularly denticulate; lip ligulate, longer than petals, fleshy, margin finely papillate, with 2 auricles on both basal sides; column 2.5 – 3 mm.

Flowers & Fruits: September to January.

Specimen Cited: Dhupjhora, Goutam & AP Das 1848, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, S China, Myanmar, Thailand, Malaysia.

Bulbophyllum spathulatum (Rolfe *ex* Cooper) Seiden *f.* in Bot. Tidsskr. 65: 347. 1970; Pears *et* Cribb, Fl. Bhutan 3(3): 476. 2002. *Cirrhopetalum spathulatum* Rolfe *ex* Cooper, Orchid Rev. 37: 106. 1929. *Cirrhopetalum bootanense sensu* Hook. f., Fl. Brit. Ind. 5: 775. 1890.

Epiphyte with creeping, stout, 3 – 4 mm wide rhizome, rooting from base of pseudobulbs. Pseudobulbs borne 5 – 10 cm apart, narrowly cylindric-ovoid, 2 – 4 × 0.5 – 1 cm. Leaf 1, terminal; petiole 0.8 – 1 cm, conduplicate; lamina oblong, obtuse, 5 – 10 × 1.5 – 2.5 cm, fleshy. Scape arising from base of

pseudobulb, 3 – 4.5 cm; inflorescence umbel, more than 20 flowered; peduncle with 4 to 5 sheaths; floral bracts oblong ovate, sub-acute, 0.7 – 1 cm. Pedicel and ovary 1 – 2 cm. Flowers purplish red, \pm 1.5 cm long; dorsal sepal sub-obovate, $7 - 8 \times 2 - 3$ mm, apex sub-truncate, slightly mucronate; lateral sepals 1.3 – 1.6 cm, twisted near base, connate upto near apex forming a slipper-shaped synsepal; synsepal 9 – 11 mm wide, outer surface finely papillate, apex rounded; petals narrowly oblong lanceolate, falcate, obtuse, $4 - 5 \times 0.5 - 1$ mm, entire; lip recurved at a right angle, lanceolate, obtuse, glabrous, conduplicate in basal half; column 1 – 2 mm; stelidia 2, triangular.

Flowers & Fruits: March to July.

Specimen Cited: Dhupjhora, Goutam & AP Das 1841, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, S China, Myanmar, Thailand, Laos, Vietnam.

COELOGYNE Lindl., Coll. Bot. ad t. 33. 1821 [“Caelogyne”].

Coelogyne cristata Lindl., Coll. Bot.: sub. t. 33. 1821; Hooker *f.*, Fl. Brit. Ind. 5: 829. 1890; King *et* Pantling in Ann. Roy. Bot. Gard. (Calcutta) 8: 133.t.184. 1898; Tuyama in Hara, Fl. E. Himal. 429. 1966; Hara *et al.*, Enum. Fl. Pl. Nepal 1: 36. 1978; Das *et* Chanda in Trans. Bose Res. Inst. 51(4): 110. 1987; Hara *et al.*, Fl. Sikkim 1: 47. 1996; Pears *et* Cribb, Fl. Bhutan 3(3): 332. 2002; *Cymbidium speciosissimum* Don, Prodr. Fl. Nepal 35. 1825. *Pleione speciosissima* (Don) Kuntze, Revis. Gen. Pl. 2: 681. 1891.

Rhizome rigid, branched, with leathery, scaly sheaths. Pseudobulbs oblong. Lamina linear lanceolate, $7 - 20 \times 0.7 - 2$ cm, papery, base attenuate to inconspicuous petiole, apex long acuminate. Inflorescence heteranthous, 9 – 13 cm, basal half embraced in sheaths; raceme 4 – 7 cm; floral bracts ovate lanceolate. Flowers white, rather large. Sepals lanceolate to oblong lanceolate, apex acute. Petals 9 – 12 mm wide; lip ovate, concave, 3 lobed; lateral lobes subovate, nearly entire; mid lobe broadly obovate, apex obtuse; column 22 – 30 mm, both sides winged; wings widened from base to apex, apex emarginate to sub-truncate.

Flowers & Fruits: March to June.

Specimen Cited: Dhupjhora, Goutam & AP Das 1846, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: General Distribution : Temperate Eastern Himalaya (Nepal to Bhutan) to NE India; S China.

CYMBIDIUM Swartz, Nova Acta Regiae Soc. Sci. Upsal., ser. 2, 6: 70. 1799.

Key to species:

- 1a. Column shorter than lateral lobes of lip *C. aloifolium*
 1b. Column longer than lateral lobes of lip *C. bicolor*

Cymbidium aloifolium (L.) Sw. in Nova Acta Regiae Soc. Sci. Upsal. 6: 73. 1799; Hook.*f.*, Fl. Brit. Ind. 6: 10. 1890; King *et* Pantling in Ann. Roy. Bot. Gard. (Calcutta) 8: 189, t. 252. 1898; Hara *et al.*, Enum. Fl. Pl. Nepal 1: 37. 1978; Hara *et al.*, Fl. Sikkim 1: 51. 1996; Pears *et* Cribb, Fl. Bhutan 3(3): 259. 2002. *Epidendrum aloifolium* L., Sp. Pl. 2: 953. 1753.

Plants epiphytic, forming dense tuft. Pseudobulbs ovoid, bilaterally slightly compressed, enclosed in leaf bases, $5 - 10 \times 3 - 5$ cm. Leaves 4 – 6, jointed, oblong to linear lanceolate, $35 - 85 \times 1.5 - 4$ cm,

thickly leathery, apex obtuse, unequally 2 lobed. Inflorescence laxly 20 – 40-flowered, arising from within sheaths at base of pseudobulb. Flowers 4 – 5 cm across, slightly fragrant; pedicel and ovary 1 – 2.5 cm; sepals and petals pale to cream yellow, with a broad, central maroon Br. stripe; lip white to cream, with dense, maroon venation on lateral lobes and longitudinal maroon stripes on mid lobe. Sepals and petals sub-similar, spreading, narrowly oblong to elliptic, obtuse, 2 – 2.5 × 0.5 – 0.8 cm; lip subovate, saccate at base, 3 lobed; lateral lobes acute, loosely clasping column; mid-lobe recurved; disk minutely papillate or puberulent, with 2 sigmoid ridges; column winged at apex, ± 1 cm. Capsule oblong-ellipsoid.

Flowers & Fruits: April to March.

Specimen Cited: Dhupjhora, Goutam & AP Das 1843, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Nepal, India, Bangladesh, Sri Lanka, Bhutan, Myanmar, China, Thailand, Laos, Vietnam, Indonesia, Malaysia, Cambodia.

Cymbidium bicolor Lindl., Gen. Sp. Orchid. Pl. 164. 1833; Hajra *et al.*, Fl. Sikkim 1: 52. 1996; Pears *et* Cribb, Fl. Bhutan 3(3): 260. 2002. *Cymbidium crassifolium* Lindl., Gen. Sp. Orchid. Pl. 165. 1833. *Cymbidium mannii* Rehb.f., Flora 55: 274. 1872. *Cymbidium pendulum sensu* King *et* Pantl. in Ann. Roy. Bot. Gard. (Calcutta) 8: 188, t. 251. 1898.

Plants epiphytic. Pseudobulbs narrowly ovoid, bilaterally slightly compressed, 3 – 5 × 2 – 3 cm, enclosed in leaf bases. Leaves 5 – 7, thickly leathery, narrowly oblong, acute, 30 – 60 × 1.5 – 3 cm, unequally 2 lobed, emarginate at apex. Inflorescence arising from within sheaths at base of pseudobulb, pendulous; rachis 10 – 20 flowered; floral bracts triangular, 1.5 – 4.5 mm. Pedicel and ovary 1 – 4 cm. Flowers lightly fragrant, 3 – 4 cm across; sepals and petals pale yellowish to whitish, with a central maroon stripe; lip cream yellow, spotted, striped with maroon. Sepals similar, spreading, narrowly oblong, obtuse to acute, 1.5 – 2 × ± 0.5 cm; petals narrowly oblong-elliptic, obtuse, 1.5 – 2 × ± 0.5 cm; lip sub-ovate, base slightly saccate, 3 lobed; mid lobe recurved; disk minutely papillate, pubescent; lateral lobes erect, clasping the column, column ± 1 cm, slightly curved. Capsule cylindrical-ellipsoid.

Flowers & Fruits: March to January.

Specimen Cited: Gorumara, Goutam & AP Das 1888, dated 14. 06. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Nepal to Bhutan, NE India, Bangladesh, Myanmar, China, Thailand, Laos, Vietnam, Cambodia, Malaysia.

DENDROBIUM Sw., Nova Acta Regiae Soc. Sci. Upsal., ser. 2, 6: 82. 1799, nom. cons.

Dendrobium amoenum Wall. *ex* Lindl., Gen. Sp. Orchid. Pl. 78. 1830; Hook. *f.*, Fl. Brit. Ind. 5: 738. 1890; King *et* Pantl. in Ann. Roy. Bot. Gard. (Calcutta) 8: 49. t 69. 1898; Hara *et al.*, Enum. Fl. Pl. Nepal 1: 38. 1978; Das *et* Chanda in Trans. Bose Res. Inst. 51(4): 111. 1987; Hajra *et al.*, Fl. Sikkim 1: 56. 1996; Pears *et* Cribb, Fl. Bhutan 3(3): 405. 2002. *Callista amoena* (Wall. *ex* Lindl.) Kuntze, Revis. General Pl. 2: 654. 1891.

Plant epiphytic or lithophytic, 20 – 45 cm tall. Stem tufted erect or pendent, slender, grooved, blackish green; internodes 2 – 5 cm, with dry, papery, tubular old leaf sheath. Leaves 5 – 10, arising alternate from nodes, sessile; lamina elliptic-ovate, lanceolate, acute to acuminate, 5 – 10 × 0.5 – 2 cm. Inflorescence lateral, on old leafless stem, arising from nodes, 2 – 4-flowered on a short panicle; rachis short, 3 – 5 mm, membranous sheathed; peduncle to 1.2 cm; floral bracts small, 5 – 8 mm,

ovate, acuminate, membranous. Flowers showy, scented, 3 – 4 cm across, sepals and petals white, often flushed with pink; pedicel and ovary 1 – 1.5 cm; sepals similar, oblong-lanceolate, obtuse to sub-acute, $2 - 2.5 \times \pm 0.6$ cm, lateral sepals jointed at base to form a conical mentum to 6 mm; petals ovate, wider than sepals; lip 3-lobed, $2 - 2.5 \times 1 - 1.5$ cm, white with central olive-green densely hairy patch, margins undulate.

Flowers & Fruits: April to November.

Specimen Cited: Gorumara, Goutam & AP Das 1889, dated 14. 06. 2009.

Local Distribution: All over the Forest; abundant.

General Distribution: India, Bangladesh, Myanmar.

ERIA Lindley, Bot. Reg. 11: ad t. 904. 1825, nom. cons.

Eria lasiopetala (Willd.) Ormerod in Opera Botanica 124: 22. 1995; Pears *et* Cribb, Fl. Bhutan 3(3): 376. 2002. *Aerides lasiopetala* Willd., Sp. Pl. ed. 4(1): 130. 1805. *Dendrobium albidotomentosum* Blume, Bijdr.: 345. 1825. *Octomeria flava* Wall. ex Lindl., Gen. Sp. Orchid. Pl. 65. 1830. *Eria flava* Lindl., Gen. Sp. Orchid. Pl. 65. 1830; Hook.f., Fl. Brit. Ind. 5: 8011. 1890; Prain, Beng. Pl. 2: 1013. 1903. *Pinalia albidotomentosum* (Bl.) Kuntze, Revis. Gen. Pl. 2: 678. 1891.

Plants lithophytic or epiphytic, turning black when dried. Pseudobulbs tufted, contiguous, cylindrical, $5 - 15 \times 0.2 - 0.5$ cm. Leaves 2, sub-terminal, sub-sessile; lamina narrowly elliptic to ovate-lanceolate, acute, $5 - 15 \times 2.5 - 4.5$ cm, thick, coriaceous. Inflorescence arising from apex of pseudobulb, between leaves, laxly 2 – 6-flowered; floral bracts linear lanceolate, 3 – 5 mm. Flowers 2.5 – 3 cm across, white, lip with lateral lobes dark purple and mid lobe yellow; pedicel and ovary 5 – 10 mm; sepals sub-similar, $1.5 - 2 \times 0.5 - 0.7$ cm; dorsal sepal elliptic-lanceolate, sub-acute; lateral sepals falcate-lanceolate, acute, adnate to the column foot; petals oblong lanceolate, acute, $1.5 - 2 \times 0.5 - 1$ cm; lip 3 lobed; lateral lobes divaricate, erect, rounded; mid-lobe oblong or subsquare, acute, deflexed with two large and few intermediary undulate yellow lamellae; column ± 5 mm. Capsule obovoid cylindrical.

Flowers & Fruits: February to September.

Specimen Cited: Dhupjhora, Goutam & AP Das 1836, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, China, Myanmar, Thailand, Laos, Vietnam, Cambodia.

GOODYERA R. Br. in Aiton, Hortus Kew., ed. 2, 5: 197. 1813.

Goodyera procera (Ker Gawl.) Hook. f., Exot. Fl. 1(3): t. 39. 1823 & Fl. Brit. Ind. 6: 111. 1890; Prain, Beng. Pl. 2: 1027. 1903; King *et* Pantling in Ann. Roy. Bot. Gard. (Calcutta) 8: 282, t. 278. 1898; Hara, Fl. E. Himal. 436. 1966; Hara *et al.*, Enum. Fl. Pl. Nepal 1: 44. 1978; Das *et* Chanda in Trans. Bose Res. Inst. 51(4): 115. 1987; Hara *et al.*, Fl. Sikkim 1: 76. 1996; Pears *et* Cribb, Fl. Bhutan 3(3): 92. 2002. *Neottia procera* Ker Gawl. in Bot. Reg. 8: t. 639. 1822. *Orchiodes procerum* (Ker Gawl.) Kuntze, Revis. General Pl. 2: 675. 1891.

Plant to 90 cm; stem leaved for $\frac{1}{4}$ below and sheathed for $\frac{3}{4}$ above; leaves 5 – 8, $10 - 15 \times 4 - 5$ cm, acute, 5 veined, mid vein distinct, petiolate; petioles lower shorter upper longer, to 4 cm, tubular at base; lower sheath longer, larger and tubular, upper smaller and not tubular but triangular attached to one side of peduncle. Inflorescence dense, to 20 cm, flowering down to upwards, successively, lowest ovary becomes fruit when upper ones flower; peduncle and rachis pubescent; floral bracts hairy and ciliate, exceeding ovary, acute, 9 – 10 mm; flowers ± 5 mm across, ovary glabrous only warty, 6 – 7 mm; sepals pubescent externally, white, greenish at base; lateral sepals spreading little, reflexed

little, 3.5×1.5 mm; dorsal sepal boat-shaped, forming wing like appearance with petals; petals thin, lathery, white, 3×1 mm; lip white, thick, simple hypochile hairy inside, light Br., adnate to column base, 3.5×3 mm, deflexed; column 2.5 mm; anther brick red at maturity; fruit not twisted, 1 cm, globose green.

Flowers & Fruits: April to August.

Specimen Cited: Gorumara, Goutam & AP Das 1893, dated 14. 06. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Bangladesh, China, Myanmar, Sri Lanka, Japan, Thailand, Laos, Vietnam, Cambodia, Indonesia, Philippines.

PAPILIONANTHE Schlechter, Orchis 9: 78. 1915.

Papilionanthe teres (Roxb.) Schltr. in Orchis 9:78, t.12.1915; Hara *et al.*, Fl. Sikkim 1: 98. 1996; Pears *et* Cribb, Fl. Bhutan 3(3): 536. 2002. *Dendrobium teres* Roxb., Fl. Ind. ed. 1832, 3: 485. 1832. *Vanda teres sensu* Lindl., Gen. Sp. Orchid. Pl. 217. 1833, non Roxb. 1932; Hook.f., Fl. Brit. Ind. 6: 49. 1890; Prain, Beng. Pl. 2: 1021. 1903.

Plant scrambling, monopodial epiphyte. Stems branched, erect and stout, 0.5 – 3 m, terete, 3.5 – 4.5 mm wide, covered with ridged, tubular leaf-sheathes. Leaves obliquely borne, 4 – 10 cm apart, slightly curved, fleshy, jointed, terete and linear, obtuse, 5 – 15 cm \times 3 – 4 mm. Inflorescence laxly 3 – 5-flowered, borne leaf-opposed; peduncle 5 – 10 cm, stout and woody, sub-erect; floral bracts broadly ovate, obtuse, 4 – 5 \times 1 – 1.5 mm. Flowers large and showy, 5 – 8 cm across, pedicel and ovary 2 – 3 cm; sepals white; dorsal sepal broadly ovate, obtuse, 3.3 – 3.7 \times 2.8 – 3 cm; lateral sepals obliquely ovate-oblong, obtuse, slightly smaller than dorsal; petals white tinged with pink, broadly oblong to sub-orbicular, rounded, margins undulate, 3 – 4.5 \times 2.7 – 3.5 cm; lip deep purplish-pink above, base and spur yellowish Br. with dark dotted lines; 3-lobed; lateral lobes erect and embracing column, sub-obovate, rounded; mid-lobe 2 – 2.5 cm, spreading, deeply bilobed at apex; spur conical, compressed, \pm 2 cm long; column erect, 7 – 8 mm. Fruits ridged, cylindrical.

Flowers & Fruits: May to December.

Specimen Cited: Medlajhora, Goutam & AP Das 0251, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

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

PHAIUS Loureiro, Fl. Cochinch. 2: 517, 529. 1790.

Phaius tankervilleae (Banks) Bl., Mus. Bot. 2: 177. 1856; Hara *et al.*, Fl. Sikkim 1: 101. 1996; Pears *et* Cribb, Fl. Bhutan 3(3): 305. 2002. *Limnodorum tankervilleae* Banks *ex* L'Heritier, Sert. Angl.: 28. 1789. *Phaius veratifolius* Wall. *ex* Lindl., Gen. Sp. Orchid. Pl. 127. 1831.

Plants 0.5 – 1.2 m. Pseudobulb ovoid-conic, 5 – 10 \times 2 – 5 cm. Leaves 4 – 6, arising from pseudobulb clothing it, petiolate to 10 – 20 cm, elliptic-lanceolate, weakly plicate, acuminate, 25 – 70 \times 5 – 15 cm. Inflorescences arising from top of pseudobulb above leaves, laxly 7 – 18-flowered; peduncle laxly sheathed, stout, 30 – 50 cm; floral bracts persistent, ovate lanceolate, 4 – 5 \times 0.7 – 1.2 cm. Flowers widely opening, large and showy, 9 – 12 cm across; pedicel and ovary glabrous, 3 – 4 cm; sepals and petals more or less alike, pale to dark brownish yellow inside, white outside, sub-similar, oblong-elliptic or lanceolate, acute to acuminate, 4 – 6 \times 1 – 1.5 cm; lip rolled, spurred, yellowish purple to pinkish purple, basally whitish, apically darker, shallowly 3 lobed, margin faintly undulate, recurved, apex bilobed, truncate or apiculate; spur slightly curved, white, conic, 0.5 – 1.5 cm, apex obtuse or often bilobed; column 2 cm. Fruit ellipsoid.

Flowers & Fruits: February to May.

Specimen Cited: Dhupjhora, Goutam & AP Das 1830, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: Nepal, India, Sri Lanka, China to SE Asia to Pacific Islands, Australia.

PHOLIDOTA Lindl. *ex* Hook. *f.*, *Exot. Fl.* 2: ad t. 138. 1825.

Pholidota articulata Lindl., *Gen. Sp. Orchid. Pl.* 38. 1830; Hook. *f.*, *Fl. Brit. Ind.* 5: 844. 1890; Hara *et al.*, *Fl. Sikkim* 1: 102. 1996; Pears *et* Cribb, *Fl. Bhutan* 3(3): 349. 2002. *Pholidota khasyana* Rchb. *f.* in *Bonplandia* 4: 329. 1856. *Coelogyne articulata* (Lindl.) Rchb. *f.* in *Walpers, Ann. Bot. Syst.* 6: 238. 1861. *Pholidota griffithii* Hook. *f.*, *Icon. Pl.*: t. 1881. 1889 & *Fl. Brit. Ind.* 5: 842. 1890. *P. obovata* Hook. *f.*, *Fl. Brit. Ind.* 5: 845. 1890.

Plant epiphytic. Pseudobulbs superposed, connected to each other at end to end or new pseudobulb borne on the top of previous one, some times branched, cylindrical, sheathed basally, 3 – 8 × 0.6 – 1 cm. Leaves 2, at apex of new pseudobulb, petiolate portion hidden within sheathes; lamina obovate-elliptic to oblong, 5 – 12 × 1.5 – 3 cm, veins plicate, acute to acuminate. Inflorescence syanthus, borne at apex of new pseudobulb, between the leaves, 10 – 25 flowered; peduncle wiry, 1.5 – 3.5 cm; rachis slightly zigzag, 3 – 7 cm; floral bracts deciduous during flowering, narrowly ovate oblong, papery, 0.5 – 1 × 0.3 – 0.6 cm. Flowers greenish to creamy white, widely opening, 0.9 – 1.2 cm across; sepals uniformly creamy white; dorsal sepal oblong to ovate-elliptic, concave, obtuse, 4 – 7 × 2 – 3 mm; lateral sepals ovate, oblique, slightly wider than dorsal sepal, acute; petals uniformly creamy white, oblong lanceolate, obtuse to acute, slightly smaller than sepals; lip creamy white with yellow hypochile and linings, broadly oblong in outline, constricted at the middle; hypochile boat shaped, 5-yellow-keeled, 3 – 5 × 2 – 4 mm; epichile transversely elliptic, 2-lobed, margin crisped/papillose, whitish; column stout, winged. Fruit ellipsoid.

Flowers & Fruits: April to October.

Specimen Cited: Medlajhora, Goutam & AP Das 0251, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Nepal, Bhutan, China, Myanmar, Thailand, Cambodia, Indonesia, Laos, Malaysia, Vietnam.

RHYNCHOSTYLIS Bl., *Bijdr.* 285 [“Rynchostylis”], 434. 1825.

Rhynchostylis retusa Bl., *Bijdr.*: 286, t. 49. 1825; Hook. *f.*, *Fl. Brit. Ind.* 6: 32. 1890; Prain, *Beng. Pl.* 2: 1020. 1903; Hara *et al.*, *Fl. Sikkim* 1: 109. 1996; Pears *et* Cribb, *Fl. Bhutan* 3(3): 552. 2002. *Epidendrum retisum* L., *Sp. Pl.* 2. 953. 1753. *Aerides undulatum* Sm. in *Rees, Cycl. (Addenda)* 39: *Aerides* no. 12. 1819. *Epidendrum hippium* Buch.-Ham. *ex* Don, *Prodr. Fl. Nepal* 32. 1825. *Sarcanthus guttatus* Lindl. in *Bot. Reg.* 17: t. 1443. 1831.

Epiphytic. Stems ascending, usually 4 – 15 cm, 1 – 1.5 cm across, enclosed in old leaf bases. Leaves broadly lorate, 20 – 35 × 2 – 4 cm, unequally bilobed at apex. Inflorescences 1 to 3, pendulous, 25 – 40 cm, densely many flowered; rachis 18 – 30 cm, thick; floral bracts reflexed, broadly ovate, 3 – 5 mm. Flowers scentless, 2 – 2.5 cm across, sepals and petals white with pink spotted, lip purplish pink, apex white, spur white; pedicel and ovary 8 – 11 mm; dorsal sepal elliptic, 8 – 12 × 4 – 5 mm, obtuse; lateral sepals obliquely oblong, obtuse, 7 – 14 × 4 – 5 mm, base adnate to column foot; petals narrowly oblong, 7 – 8 × 2 – 3 mm, obtuse; lip often conduplicate, oblong-spatulate, rounded, apiculate, 8 – 12 × 5 – 7 mm, spurred; spur laterally compressed, rounded; column 3 – 4 mm, foot 1 – 2 mm. Capsule obovoid.

Flowers & Fruits: May to December.

Specimen Cited: Medlajhora, Goutam & AP Das 0251, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: General Distribution : Nepal, Bhutan, India, Myanmar, Sri Lanka, China, Cambodia, Laos, Malaysia, Thailand, Indonesia, Philippines, Vietnam.

VANDA Jones ex R. Br., Bot. Reg. 6: ad t. 506. 1820.

Vanda cristata Lindl., Gen. Sp. Orchid. Pl. 216. 1831; Hook. f., Fl. Brit. Ind. 6: 53. 1890; King et Pantling in Ann. Roy. Bot. Gard. Cal. 8: 216-287. 1898; Hajra et al., Fl. Sikkim 1: 118. 1996; Pears et Cribb, Fl. Bhutan 3(3): 574. 2002. *Aerides cristata* (Wall. ex Lindl.) Wall. ex Hook. f., Fl. Brit. India 6: 53. 1890. *Vanda striata* Rchb. f., Xenia Orchid. 2: 137. 1868.

Epiphytic orchid. Stems 15 – 20 cm, covered by old leaf sheaths. Leaves distichous, overlapping; lamina thickly coriaceous, apex obliquely 2 or 3-dentate, 7 – 15 × 0.7 – 1.2 cm. Inflorescences 1 to 3, borne from axils of lower leaves, 2 – 4-flowered; rachis weakly zigzag; floral bracts ovate, obtuse to acute, 3 – 5 × 1.5 – 2 mm. Flowers thickly textured, widely opening, 4 – 5 cm across; pedicel and ovary 2 – 3 cm, yellowish green; sepals and petals uniformly pale yellowish green; dorsal sepal oblong ovate, 2 – 2.5 × 0.5 – 0.8 cm, obtuse; lateral sepals lanceolate, sub-acute, ± similar to dorsal; petals falcate oblong, sub-acute, narrower than sepals; lip golden cream white, fleshy, saccate basally, striped with dark violet purple to red Br., 3-lobed; lateral lobes erect, short, ovate triangular, obtuse; mid-lobe broadly oblong, apex keeled beneath, bifurcated into two horn-like processes; column white, 5 mm; anther cap yellow. Fruit cylindrical-obovoid.

Flowers & Fruits: March to July.

Specimen Cited: Dhupjhora, Goutam & AP Das 1845, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, S China, N Vietnam.

ZEUXINE Lindl., Orchid. Scelet. 9. 1826 [“Zeuxina”], nom. cons.

Zeuxine nervosa (Wall. ex Lindl.) Benth. ex Clarke in Jour. Linn. Soc. Bot, 25: 73. 1889; Pears et Cribb, Fl. Bhutan 3(3): 111. 2002. *Monochilus nervosus* Wall. ex Lindl., Gen. Sp. Orchid. Pl. 487. 1840. *Haplochilus nervosus* (Wall. ex Lindl.) Dietrich, Syn. Pl. 5: 172. 1852. *Zeuxine formosana* Rolfe, Ann. Bot. (Oxford) 9: 258. 1895.

Plants terrestrial, 10 to 30 cm. Rhizome stem-like, prostrate. Stem erect glabrous. Leaves 6 – 8, scattered, shortly petiolate; sheath tubular; lamina elliptic, ovate, acute, 2.5 – 7 × 1.5 – 2.3 cm, slightly fleshy, coriaceous, green, midrib whitish. Inflorescence terminal, laxly 10 – 20-flowered, Peduncles densely pubescent; floral bracts green, ovate-lanceolate, acuminate, 8 – 10 × 3 – 4 mm, pubescent, equaling ovary. Rachis hairy. Flowers resupinate, only lateral sepals and lip open, green, lip white; pedicel and ovary 8 – 10 mm, pubescent. Sepals green, pubescent outside; dorsal sepal ovate, concave, acute, 4.5 – 5 × 4 – 4.5 mm; lateral sepals oblong-ovate, 5.5 – 6.5 × 3.5 – 4 mm; petals green below flushed white apically white, ovate, obtuse, oblique, 5 – 7 × 3 – 3.5 mm, glabrous; lip white, Y-shaped, 6 – 7 mm; hypochile saccate, with 3 parallel calli, green; epichile broad, 2-lobed; lobes diverging, sub-quadrate to sub-orbicular.

Flowers & Fruits: January to March.

Specimen Cited: Dhupjhora, Goutam & AP Das 1844, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Bangladesh, Sri Lanka, Cambodia, Laos, Taiwan, China, Japan, Thailand, Vietnam, Philippines.

Eudicots - Eudicotyledon**Peripheral Eudicots - Periphäre Eudicotyledonen****Unassigned to order - Ohne Ordnungseinteilung****Order 24: Ranunculales Dumort. (1829)****Menispermaceae** Juss. Gen. Pl. 284. 1789; *nom. cons.*

Key to the genera:

- 1a. Main basal veins and their outer branches leading directly to margin 2
 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, sometimes forming
 a terminal thyrse *Stephania*
 3b. Flowers and fruits in a simple cymes, sometimes racemelike *Cissampelos*

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

Cissampelos pareira L., Sp. Pl. 1031. 1753; 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* L. var. *hirsuta* (Buch.–Ham. ex DC.) Forman in Kew Bull. 22: 356. 1968.

Woody vines. Branches slender, striate, usually densely pubescent. Petioles shorter than lamina; leaf blade cordate-rotund to rotund, 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:* Murti, Goutam & AP Das 0032, dated 05. 02. 2009.*Local Distribution:* All over the forests; common.*General Distribution:* Pantropical in Asia.**STEPHANIA** Lour., 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 (Roxb.) Miers, Ann. Mag. Nat. Hist., ser. 3 18: 14. 1866; Contrib. Bot. 3: 217. 1817; 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* Roxb., Fl. Ind. 3: 840. 1832. *Stephania rotunda* Lour., Fl. Cochinch. 608. 1790.

Local 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 thyrses 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: Murti, Goutam & AP Das 0098, dated 07. 02. 2009.

Local Distribution: All over the forest areas; common.

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

Note: Undergroun stem used as medicin.

Stephania japonica (Thunb. ex Murray) Miers, Ann. Mag. Nat. Hist. ser. 3, 18: 14. 1866; Kanai in Hara, Fl. E. Himal. 1: 95. 1966; Hook. f. et Thom. in Hook. 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* Thunb. ex Murray, Syst. Veg., ed. 14: 892. 1784.

Local name: Chhoto Bhuin kumra.

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 thyrses; female flowers similar to male; perianth in female flowers symmetric. Fruits suborbicular, red on ripening.

Flowers & Fruits: May to December.

Specimen Cited: Bichhabhanga, Goutam & AP Das 0518, dated 23. 07. 2009.

Local Distribution: All over the forest areas; common.

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

Note: Under ground stem and arial branch used as medicin.

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

Tinospora cordifolia (Willd.) Miers in Ann. Mag. Nat. Hist., ser. 2 7: 35, 38. 1851. *Menispermum cordifolium* Willd., Sp. Pl. 4: 826. 1806. *Tinospora cordifolia* (Willd.) Hook. f. et Thom., Fl. Indica. 184. 1855; Hook. f. et Thom. in Hook. 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.

Local 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: Budhuram, Goutam & AP Das 0551, dated 24. 07. 2009.

Local Distribution: All over the forest areas; abundant.

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

Note: Often cultivated as medicinal plants.

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

Pericampylus glaucus (Lam.) Merr., Interpr. Rumph. Herb. Amboin. 219. 1917; 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* Lam., 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: Murti, Goutam & AP Das 0254, dated 10. 02. 2009.

Local Distribution: All over the forest areas; common.

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

Papaveraceae Juss., 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 L., Sp. Pl. 1: 508. 1753.

Argemone mexicana L., Sp. Pl. 1: 508. 1753; Hara, Fl. E. Himal. 1: 103. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 402. 1984; Hook. *f. et* Thoms. in Hook. *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 in Hist. Nat. Veg. 7: 26. 1839. *Argemone spinosa* Gaterau, Descr. Pl. Montauban 99. 1789.

Local name: Shiyal Kanta.

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 Br..

Flowers & Fruits: February to July.

Specimen Cited: Medlajhora, Goutam & AP Das 0294, dated 10. 02. 2009.

Local Distribution: In open areas; less common.

General Distribution: Throughout India. Native of tropical America.

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

Fumaria indica (Hassk.) Pugsley, J. L. Soc. Bot. 44: 313. 1919; Long in Grierson *et* Long, Fl. Bhut. 1(2): 384. 1984; *Fumaria vaillantii* Loisel var. *indica* Hassk., Fl. Ind. 56: 443. 1873; *Fumaria parviflora sensu* Wight *et* Arn., Prodr. 1: 18. 1834; Prain, Beng. Pl. 1: 143. 1963; Sharma *et al.*, Fl. Ind. 2: 34. *Fumaria parviflora* var. *indica* (Hassk.) Parsa, Fl. Iran 2: 490. 1986. *Fumaria vaillantii* Loisel. in Desv., Jour. de Bot. 2: 358. 1809; 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: Dhupjhora Beat Office, Goutam & AP Das 0331, dated 21. 07. 2009.

Local Distribution: In open and moist places in Murti and Dhupjhora Beat office garden; common.

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

Ranunculaceae Juss., 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 (L.) DC., Syst 1: 167, 1817; 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* L., Sp. Pl. 1: 542. 1753. *Naravelia pilulifera* var. *yunnanensis* Y. Fei, Acta Bot. Yunnan. 19(4): 406. 1997.

Local name: Chhagalbanti.

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: Murti, Goutam & AP Das 0014, dated 05. 02. 2009.

Local Distribution: All over the forest areas; common.

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

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

Ranunculus sceleratus L., 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; 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.

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: Gorati Beel, *Goutam & AP Das 0026*, dated 05. 02. 2009.

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 Salisb. in W. Hooker Parad. Lond. 2(1): t. 73. 1807.

Key to the genera

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

DILLENIA L., 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 Roxb., Pl. Corom. 1: 21. t. 20. 1795; Clarke in Hooker *f.*, Fl. Brit. Ind. 1: 38. 1872; Fl 1: 156. 1993; Grierson *et* Long, Fl. Bhut. 1(2): 355. 1984. *Colbertia augusta* Wall. ex G. Don, Gen. Hist. 1: 77. 1831. *Colbertia coromandelina* DC., Syst. Nat. 1: 435. 1817. *Dillenia augusta* Roxb., Fl. Ind. 2: 652. 1832. *Dillenia hainanensis* Merr., Lingnan Sci. J. 13: 64. 1934.

Local name: Tertiary.

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: Dhupjhora, *Goutam & AP Das 0695*, dated 14. 02. 2008.

Local Distribution: All over the forests; abundant.

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

Note: Leaves are good fodder.

Dillenia indica L., Sp. Pl. 1: 535. 1753. Grierson & Long, Fl. Bhut. 1(2): 355. 1984; *Dillenia elongata* Miq., Fl. Ned. Ind. 1(2): 12. 1858. *Dillenia indica* f. *elongata* (Miq.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 79. 1868.

Local 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: Dhupjhora, Goutam & AP Das 0666, dated 13. 02. 2008.

Local Distribution: All over the forests; abundant.

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

Note: Fruits are edible and also good fodder.

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

Tetracera sarmentosa (L.) Vahl, Symb. Bot. 3: 70. 1794. *Seguiera asiatica* Lour., Fl. Cochinch. 1: 341. 1790. *Tetracera asiatica* (Lour.) Hoogl. in Fl. Males. Bull. 1(4): 143. 1951. *Tetracera levinei* Merr. in Philipp. J. Sci. 13(3): 147. 1918. *Delima sarmentosa* L., Gen. Pl., ed. 5, App. 1754.

Evergreen woody climbers up to 20m. Leaves simple, alternate, lamina orbicular, 4 – 9 x 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: Gorumara, Goutam & AP Das 0696, dated 14. 02. 2008.

Local Distribution: All over the forests; common.

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

Order 27: Caryophyllales Perleb (1826)

clade of ‘core caryophyllids’:

Amaranthaceae Juss., Gen. Pl. 87. 1789, *nom. cons.*

Key to the Genera:

- 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 *Amaranthus*
 4.a. Fruit a red berry, indehiscent *Deeringia*
 4.b. Fruit a utricle or capsule, dehiscent by a lid *Celosia*
 5.a. Inflorescences heads or complex thyrsoid; anthers 1 loculed *Alternanthera*
 5.b. Inflorescences spikes; anthers 2 loculed 6
 6.a. Pseudostaminodes fringed or long fimbriate *Achyranthes*
 6.b. Pseudostaminodes triangular or rectangular 7
 7.a. Tepals of perfect flowers light green, glabrous; yellow, villous in imperfect ... *Pupalia*
 7.b. Tepals densely puberulous abaxially, pink *Aerva*
 8.a. Plants covered with glandular hairs *Dysphania*
 8.b. Plants covered with vesicular hairs, occasionally glabrous *Chenopodium*

ACHYRANTHES L., 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*

Achyranthes aspera L., Sp. Plant. 204. 1753; Hara, Fl. E. Himal. 1:76. 1996; Hook. *f.* in Hook. *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.Br., Prodr. Fl. Nov. Holl. 417. 1810. *Achyranthes canescens* R. Br., Prodr. Fl. Nov. Holl. 417. 1810.

Local 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: Murti, Goutam & AP Das 0102, dated 07. 02. 2009.

Local Distribution: In open areas and roadsides, common.

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

Note: Plants has good medicinal values.

Achyranthes bidentata Bl., Bijdr. 545. 1826; Hook. *f.*, Fl. Brit. Ind. 4:730. 1885; 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* Lam., Encycl. 1: 545. 1785.

Local name: Bon 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 Br., shiny. Seeds brownish, oblong.

Flowers & Fruits: August to November.

Specimen Cited: Murti, Goutam & AP Das 0113, dated 07. 02. 2009.

Local Distribution: Road side and other open areas; abundant.

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

ALTERNANTHERA Forssk., 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 3
- 3a. Stamens 3; midvein of tepals not spiny at apex *A. sessilis*
- 3b. Stamens 5; midvein of tepals spiny at apex *A. pungens*

Alternanthea philoxeroides (Mart.) Griseb. in Abh. Koen. Ges. Wiss. Goett. Phys. Cl. 24: 36.1983; Bora *et al.*, Flor. Div. Ass., 275. 2004. *Bucholzia philoxeroides* Mart., Beitr. Amarantac. 107. 1825; Nova Acta Leop. 13: 315.1826. *Achyranthes paludosa* Bunbury, Proc. Linn. Soc. London 1: 109. 1841.

Local name: Jol Chhenchi.

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: Gorati Beel, Goutam & AP Das 0172, dated 08. 02. 2009.

Local Distribution: Beel margins; abundant.

General Distribution: India; native of tropical Brazil.

Note: Used as vegetable.

Alternanthera paronychioides St. Hill, Voy. Bres. 2 (2): 39. 1833; Panda *et al.*, Fl. Sambalp. 308. 2004. *Achyranthes chacoensis* (Mor.) Standley in Jour. Wash. Acad. Sci. 5: 74. 1915. *Alternanthera ficoidea* (L.) R.Br., Prodr. Fl. Nov. Holl. 417. 1810. *Gomphrena ficoidea* L., Sp. Pl. 225. 1753. *Illecebrum ficoideum* L., Sp. Pl. (ed. 2) 1: 300. 1762.

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 Br., obcordate.

Flowers & Fruits: January to December.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0068*, dated 06. 02. 2009; Gorati Beel, *Goutam & AP Das 0650*, dated 12. 02. 2008.

Local Distribution: On moist soil along the beel margins; less common.

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

Alternanthera pungens HBK, Nov. Gen. Sp. 2: 206. 1818; Long in Grierson *et* Long, Fl. Bhut. 1(2): 228. 1984 ; Datta *et* Majumdar in Bull. Bot. Soc. Beng. 20 (2): 50. 1966. *Telanthera pungens* (HBK) Moq. in Prodr. 13(2): 371. 1849. *Achyranthus repens* L., Sp. Pl. 1: 205. 1753. *Achyranthes nivea* Aiton in Hort. Kew. 1: 286. 1789. *Alternanthera echinata* Sm., Cycl. 39 (Suppl.): 10. 1818. *Alternanthera repens* (L.) Kuntze, Revis. Gen. Pl. 2: 536 – 540. 1891.

Annual herbs. Stem diffuse, creeping, much branched, up to 30 cm, densely rigidly hairy. Leaf blade ovate to elliptic – obovate, 2 – 4 x 0.5 – 1.5 cm, unequal in each pair, glabrous to slightly pilose, base acuminate, apex obtuse. Heads sessile, axillary, white, globose to oblong. Bracts lanceolate, spiny at apex; bracteoles lanceolate, acuminate, without spines. Tepals unequal, rigid after anthesis, midvein stretching into spines; central segment elliptic, compressed. Stamens 5. Style very short. Utricles Br., broadly ellipsoid.

Flowers & Fruits: May to September.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0436*, dated 22. 07. 2009.

Local Distribution: Beel margins.

General Distribution: Naturalized in India, native to South America; Bhutan, Myanmar, Thailand, China, Australia, and United States.

Alternanthera sessilis (L.) R.Br. *ex* DC., Cat. Pl. Hort. Mon sp. 4: 77. 1813; Hook. *f.*, Fl. Brit. Ind. 4: 731. 1885; Hara, Fl. East. Himal. 1: 77. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 228. 1984. *Gomphrene sessilis* L., Sp. Pl. 1: 225. 1753. *Achyranthes sessilis* (L.) Besser, Cat. Jard. Bot. Krzemieniec 12. 1810. *Alternanthera nodiflora* R. Br., Prodr. Fl. Nov. Holl. 417. 1810. *Alternanthera triandra* Lam., Encycl. 1: 95. 1785. *Achyranthes triandra* Roxb., Fl. Ind. 1: 678. 1820. *Achyranthes villosa* Blanco, Fl. Filip. 189. 1837. *Allaganthera forskalli* Mart., Pl. Hort. Erlang. 69. 1814. *Alternanthera angustifolia* R.Br., Prodr. Fl. Nov. Holl. 417. 1810. *Alternanthera denticulata* R.Br., Prodr. Fl. Nov. Holl. 417. 1810.

Local name: Chhenchi sag.

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: Khunia, *Goutam & AP Das 0222*. dated 04. 07. 2006: *Murti, Goutam & AP Das 0542*. dated 19. 12. 2006.

Local Distribution: All over the forests.

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

Note: Used as vegetable.

AMARANTHUS L., 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* (L.) Costea, Sida 19: 984 2001. *Amaranthus blitum* L., Sp. Pl. 1: 990. 1753; Hook. f., Fl. Brit. Ind. 4: 721. 1885; Prain, Beng. Pl. 2: 871.1903. *Amaranthus lividus* L., Sp. Pl. 1: 990. 1753; 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* (L.) Moench, Methodus 359. 1794. *Amaranthus oleraceus* L., 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: Dhupjhora, Goutam & AP Das 0424, dated 22.07.2009.

Local Distribution: Dhupjhora Beat Office.

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

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

Local name: Kanta notey.

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: Murti, Goutam & AP Das 0330. dated 17. 12. 2006: Khunia, Goutam & AP Das 0124. dated 02. 07 2006.

Local Distribution: In most of the open areas; abundant.

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

Note: Used as vegetable.

Amaranthus viridis L., Sp. Pl. ed. 2: 1405. 1753; Hook. f., Fl. Brit. Ind. 4: 720. 1885; Prain, Beng. Pl. 2: 651. 1903; Long in Grierson *et* Long, Fl. Bhut. 1(2): 224. 1984; Bora *et al.*, Flor. Div. Ass., 277. 2003. *Pyxidium viride* (L.) Moq. in DC., Prodr. 13(2): 274. 1849. *Amaranthus polystachyus* Willd., Sp. Pl. 4: 385. 1805. *Galliaria adscendens* Bubani, Fl. Pyren. 1: 186. 1897. *Amaranthus fasciatus* Roxb., Fl. Ind. ed. 1832 3: 609. 1832. *Amaranthus gracilis* Desf. ex Poirat, Encycl., Suppl. 1(1): 312. 1810. *Amaranthus gracilis* Desf., tabl. Ecole Bot. 43. 1804.

Local 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: Dhupjhora, Goutam & AP Das 0664. dated 24. 03. 2007; *Specimen Cited:* Khunia, Goutam & AP Das 0131. dated 02. 07. 2006.

Local Distribution: In most of the open areas; abundant.

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

Note: Used as vegetable.

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

Celosia argentea L., Sp. Pl. 1: 205. 1753; Hook. f., Fl. Brit. Ind. 4: 714. 1885; 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* Nieuwl., Amer. Midl. Nat. 3: 279. 1914. *Celosia pallida* Salisb., Prodr. Stirp. Chap. Allerton 145. 1796.

Local name: Morog data.

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: Dhupjhora, Goutam & AP Das 0019, dated 05. 02. 2009.

Local Distribution: Found only in Dhupjhora Beat area; rare.

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

Note: Young plants edible as vegetable.

DEERINGIA R.Br., Prodr. Fl. Nov. Holl. 413. 1810.

Deeringia amaranthoides (Lam.) Merr., Interpr. Rumph. Herb. Amboin. 211. 1917; 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* Lam., Encycl. Meth. B. 1: 548. 1785. *Celosia baccata* Retz., Observ. Bot. 5: 23. 1788. *Cladostachys amaranthoides* (Lam.) K.C.Kuan, Fl. Xizangica 1: 645. 1983. *Deeringia indica* Retz. ex Blume, Bijdr. 542. 1826.

Local name: Hare lorong sag.

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: Murti, Goutam & AP Das 0241. dated 16. 12. 2006; Khunia, Goutam & AP Das 0231. dated 26. 06. 2006; Dhupjhora, Goutam & AP Das 0582. dated 22. 03. 2007.

Local Distribution: All over the forest margins.

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

Note: Young plants used as vegetable.

PUPALIA Juss., Ann. Mus. Natl. Hist. Nat. 2: 132. 1803.

Pupalia lappacea (L.) A. Juss., Ann. Mus. Hist. Nat. Paris 2:132.1803; Hook. 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* L., Sp. Pl. 204.1753. *Pupalia atropurpurea* (Lam.) Moq. 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; rachis densely pubescent; 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 Br., very small, smooth.

Flowers & Fruits: June to November.

Specimen Cited: Khunia, Goutam & AP Das 0181. dated 03. 07. 2006; Murti, Goutam & AP Das 0284. dated 16. 12. 2006.

Local Distribution: Road side, open garden and Dhupjhora Beat Office.

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

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

Aerva sanguinolenta (L.) Bl., 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* L., Sp. Pl. ed. 2: 294. 1762. *Achyranthes scandens* Roxb., Fl. Ind. 1: 676. 1820. *Aerva sanguinea* Miq. in DC., Prodr. 13(2): 3. 1849. *Aerva scandens* (Roxb.) Wall., Icon. Pl. Orient. 2: t. 724. 1840; Prain, Beng. Pl. 2: 874.1903.

Local 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: Dhupjhora, Goutam & AP Das 0093, dated 07. 02. 2009.

Local Distribution: Dhupjhora Beat Office.

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

Note: Often cultivated as medicinal plants.

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

Key to the Species:

1.a. Plants up to 2 – 3 m; lower leaves to 20 cm; inflorescence pendulous *C. giganteum*

1.b. Plants usually smaller; lower leaves less than 8 cm; inflorescence panicles *C. album*

Chenopodium album L., Sp. Pl. 1: 219. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 3. 1886; 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* Lam., Fl. Franç. 3: 248. 1779. *Chenopodium browneanum* Schult., Syst. Veg. 6: 275. 1820.

Local name: Bethua.

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: Murti, Goutam & AP Das 0072, dated 06. 02. 2009.

Local Distribution: In open sparse herbaceous vegetation, mostly along road-sides; less common.

General Distribution: Tropical America and common in tropics.

Note: Young plants edible.

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

Local name: Boro Bethua.

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: Murti, Goutam & AP Das 0066, dated 06. 02. 2009.

Local Distribution: In forest villages; common.

General Distribution: Cultivated widely in tropical Asia, America.

Note: Young plants edible.

DYSPHANIA R.Br., Prodr. Fl. Nov. Holl. 411. 1810.

Dysphania ambrosioides (L.) Mosy. *et* Clemants in Ukrayins'k. Bot. Zhurn. 59: 382. 2002. *Chenopodium ambrosioides* L., Sp. Pl. 219. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 4. 1886, Hara, Fl. E. Himal. 76. 1966; Long in Grierson *et* Long, Fl. Bhut. 1(2): 218. 1984; Prain, Beng. Pl. 2: 657. 1903; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 170. 1982; *Ambrina ambrosioides* Spach, Hist. Nat. Veg. 4: 297. 1836; *Chenopodium integrifolium* Vorosch., Bot. Zhurn. 27: 42. 1942; *Chenopodium suffruticosum* Willd., 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: Dhupjhora, Goutam & AP Das 0145, dated 08. 02. 2009.

Local Distribution: Road side marshy land.

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

Caryophyllaceae Juss., Gen. Pl. 299. 1789; *nom. cons.*

Key to the Genera :

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

DRYMARIA Willd. *ex* Schult. in Roem. *et* Schult., Syst. Veg. 5: 31. 1819.

Drymaria cordata (L.) Willd. *ex* Roem. *et* Schult., Syst. Veg. 5: 406.1819; Hook. *f. et* Thomson in Hook. *f.*, Fl. Brit. Ind. 1: 244. 1874; Grierson in Grierson *et* Long, Fl. Bhu. 1(2): 215.1984; Prain, Beng. Pl. 1: 238.1903. *Holosteum cordatum* L., Sp. Pl. 1: 88. 1753. *Drymaria diandra* Blume, Bijdr. 62. 1825; Mizushima in Hara, Fl. East. Himal. 1: 80. 1966; Sharma *et al.*, Fl. Ind. 2:533. 1993. *Holosteum diandrum* Sw., Prodr. Veg. Ind. Occ. 27. 1788. *Stellaria adenophora* León, Fl. Cuba 2: 154. 1950. *Drymaria procumbens* Rose, Contr. U. S. Natl. Herb. 1: 304. 1895.

Local Name: Abhijalo.

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: Dhupjhora, Goutam & AP Das 0030, dated 05. 02. 2009.

Local Distribution: Throughout forests.

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

Note: Plants has good medicinal values.

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

Polycarpon prostratum (Forssk.) Asch. *et* Schw. in F. Ost. Bot. Zoitschr. 39: 128. 1889. Sharma *et al.*, Fl. Ind. 2: 553. 1993; Grierson in Grierson *et* Long, Fl. Bhu. 1(2): 216. 1984. Guha Bakshi, Fl. Mur. Dist. 57. 1984. *Alsine protrata* Forssk., Fl. Aegypt. – Arab. 207. 1775. *Hapalosia loeflingiae* Wight *et* Arn., Prodr. Fl. Ind. Orient. 358. 1834. *Polycarpon loeflingiae* (Wight *et* Arn.) Benth. *et* Hook. *f.*, Gen. Pl. 1: 153. 1862; Hook. *f. et* Thomson in Hook. *f.*, Fl. Brit. Ind. 1: 245. 1874; Prain, Beng. Pl. 1: 238.1903. *Polycarpon indicum* (Retz.) Merr., Philipp. Jour. Sci. 10(5): 302-303. 1915. *Loeflingia indica* Retz., 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 Br., cylindric, reticulate.

Flowers & Fruits: February to June.

Specimen Cited: Gorati Beel, *Goutam & AP Das 0414*, dated 22. 07. 2009.

Local Distribution: Beel margins.

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

STELLARIA L., 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 (L.) Vill., Hist. Pl. Dauphiné 3: 615. 1789; Mizushima in Hara, Fl. East. Himal. 1: 82. 1966; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 207. 1984; Prain, Beng. Pl. 1: 237. 1903. *Alsine media* L., Sp. Pl. 272. 1753. *Stellaria apetala* Ucria *ex* Roem., Pl. Linn. Op. Arch. I (1): 68. 1796. *Stellaria vulgaris* Raunk., Bot. Studier 13, 22. 1934.

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

Flowers & Fruits: March to November.

Specimen Cited: Dhupjhora, *Goutam & AP Das 0053*, dated 05. 02. 2009.

Local Distribution: Throughout forests.

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. Bhut. 1(2): 208. 1984. *Alsine uliginosa* (Murray) Britt. in Mem. Torrey Bot. Club 5(10): 150. 1894. *Alsine uliginosa* (Murray) 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: Gorumara, *Goutam & AP Das 0712*, dated 14. 02. 2008.

Local Distribution: All over the forests.

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

Stellaria wallichiana Benth. 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* (L.) Vill., Hist. Pl. Dauph 3: 615. 1789, p.p.; Hooker *f. et Thomson* in Hook. *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: Dhupjhora, Goutam & AP Das 0363, dated 21. 07. 2009.

Local Distribution: Beat office garden and road side forests.

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

'Succulent' clade:

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

Key to the genera:

1a. Branch with 6 ribs, broadly triangular *Cereus*

1b. Branch spreading, basally flattened *Opuntia*

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

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

Local name: Sij

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 exerted. Fruit orange yellow, subglobose.

Flowers & Fruits: March to June.

Specimen Cited: Dhupjhora, Goutam & AP Das 0020, dated 05. 02. 2009.

Local Distribution: Dhupjhora, Murti.

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

Note: Commonly planted in forest villages; rarely escaped.

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

Opuntia dillenii (Ker Gawler) Haworth, Suppl. Pl. Succ. 79. 1819; Long in Grierson *et Long*, Fl. Bhut. 1(2): 233. 1984. *Cactus dillenii* Ker Gawler, Bot. Reg. 3: t. 255. 1818.

Local name: Fani Manasha

Shrubs sprawling to erect, up to 3 m. Trunk short. Larger, terminal joints green to gray-green, obovate to elliptic-obovate, 10–40 × 7–20 cm. Spines 2 - 20 per areole on most areoles, spreading, basally flattened. Leaves subulate, deciduous. Flowers 5–10 cm in diam. Sepaloids greenish with yellow

margin, broadly deltoid-obovate to obovate, mucronate. Petaloids spreading, bright yellow, obovate to cuneate-obovate, entire, apex rounded to emarginate. Filaments yellow. Style yellow; stigmas 5, pale green. Fruit purple, turbinate to obovoid, fleshy at maturity.

Flowers & Fruits: January to October.

Specimen Cited: Budhram, Goutam & AP Das 1020, dated 15. 02. 2011.

Local Distribution: Budhram, Dhupjhora, Murti.

General Distribution: India, widely naturalized in Tropical zones.

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

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

Key to the species:

- 1a. Leaves alternate to subopposite; petiole short *P. oleracea*
1b. Leaves opposite; petiole absent *P. quadrifida*

Portulaca oleracea L., Sp. Pl. 1: 445. 1753; Hook. *f. et* Thom. in Hook. *f.*, Fl. Brit. Ind. 1: 246. 1874; Hara, Fl. East. Himal. 1: 79. 1966; 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* Schltld., Bot. Zeitung (Berlin) 11(38): 667. 1853. *Portulaca consanguinea* Schltld., Linnaea 24: 693. 1851. *Portulaca marginata* Kunth, Nov. Gen. Sp. 6: 72. 1823. *Portulaca latifolia* Hornem., 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: Dhupjhora, Goutam & AP Das 0057, dated 07. 02. 2009.

Local Distribution: Murti, Dhupjhora and Gorumara Beat Office Garden.

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

Portulaca quadrifida L., Syst. Nat., ed. 12, 2: 328. 1767; Prain, Beng. Pl. 1: 240. 1903.

Annual herbs. Stems articulated, prostrate, rooting at nodes. Leaves opposite; petiole absent; lamina flat, ovate to ovate-elliptic, slightly narrowed toward base, entire, obtuse to acute. Flowers solitary, surrounded by involucre of 4 to 5 bracts. Sepals obovate-oblong. Petals 4, yellow, oblong to broadly elliptic. Stamens numerous. Ovary ovoid. Stigma 4 lobed. Capsule globose.

Flowers & Fruits: Round the year.

Specimen Cited: Murti, Goutam & AP Das 1057, dated 07. 09. 2011.

Local Distribution: Murti, Dhupjhora and Gorumara Beat Office Garden.

General Distribution: Probably native to Africa, now pantropical.

‘Third’ clade:

Molluginaceae Bartl. *et* H.L. Wendl. Beitr. Bot. 2: 158. 1825 ; *nom. cons.*

GLINUS L., 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 L., Sp. Pl. 463. 1753; Bora *et al.*, Flor. Din. Ass. 169. 2003; Grierson *et Long*, Fl. Bhut. 1(2): 195. 1984. *Mollugo lotoides* (L.) Kuntze, Revis. Gen. Pl. 1: 264. 1891. *Molluga hirta* Thunb., Prodr. Pl. Cap. 24. 1794; Clarke in Hook. *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* (L.) C.B. Clarke in Hook. *f.*, Fl. Brit. India 2(6): 662. 1879. *Glinus dictamnoides* Burm. *f.*, Fl. Indica 113. 1768. *Mollugo glinus* A. Rich., 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 Br., reniform.

Flowers & Fruits: March to July.

Specimen Cited: Dhupjhora, Goutam & AP Das 0083, dated 06. 02. 2009; Murti, Goutam & AP Das 0129, dated 07. 02. 2009.

Local Distribution: Moist open soil on river bed; abundant.

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

Local name: Gima.

Rosette herbs with many radiating prostrate branches, 10–30 cm, pilose to subglabrous. Leaves in pseudowhorls of 3–6; leaf blade spatulate-oblong 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-Br., subreniform, granulose.

Flowers & Fruits: January to June.

Specimen Cited: Dhupjhora, Goutam & AP Das 0021, dated 05. 02. 2009.

Local Distribution: Moist soil in gardens and river beds; common.

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

Note: Edible as vegetable.

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

Key to the Genera:

- 1.a. Small tree *Nyctanthes*
 1.b. Climbing shrubs or herbs 2

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

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

Boerhavia diffusa L., Sp. Pl. 1: 3. 1753; Grierson *et* Long, Fl. Bhut. 1(2): 194. 1984; Prain, Beng. Pl. 1: 533. 1903.

Local name: Punarnaba

Perennial herb, stems up to 50 cm, diffuse. Leaves opposite, ovate elliptic to broadly ovate, 3 – 5 x 2 – 3cm, 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: Dhupjhora, Goutam & AP Das 0017, dated 05. 02. 2009.

Local Distribution: In most of the open areas and road sides; abundant.

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

Note: Plants has medicinal values.

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

Key to the Species:

- 1.a. Leaves sparsely pubescent; bracts oblong to elliptic, as long as flowers;
perianth tube distinctly angled *B. glabra*
1.b. 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, Fl. Bhut. 1(2): 194. 1984; Prain, Beng. Pl. 2: 863.1903. *Bougainvillea brachycarpa* Heimerl, Bot. Jahrb. Syst. 11: 88. 1889.

Local 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: Dhupjhora, Goutam & AP Das 0051, dated 05. 02. 2009.

Local Distribution: Murti and Dhupjhora Beat Office.

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

Note: Widely cultivated as garden plants.

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

Local 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: Dhupjhora, Goutam & AP Das 0048, dated 05. 02. 2009.

Local Distribution: Dhupjhora Beat Office.

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

Note: Widely cultivated as garden plants.

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

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

Local name: Sandhya malati.

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: Gorumara, Murti and Dhupjhora, Goutam & AP Das 0034, dated 05. 02. 2009.

Local Distribution: Dhupjhora Beat Office and Gardens.

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

Note: Widely cultivated.

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

Nyctanthes arbor-tristis L., Sp. Pl. 1: 6. 1753; Clarke in Hook. *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* Bl., Mus. Bot. 1: 282 1851. *Nyctanthes tristis* Salisb., Prodr. Stirp. Chap. Allerton 11 1796. *Scabrita triflora* L., Mant. Pl. 1: 37 1767.

Local name: Shefali.

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 – January.

General Distribution: India, cultivated in tropical area.

Flowers & Fruits: September to December.

Specimen Cited: Murti, Goutam & AP Das 0047, dated 05. 02. 2009.

Local Distribution: Planted in forest villages.

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

Note: Widely cultivated.

Droseraceae Salisb. in Hook., *Parad. Lond.* t. 95. 1808 ('Drosereae').

DROSERA L., *Sp. Pl.* 1: 281. 1753.

Drosera burmanni 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* (Rchb. f.) Diels, *Pflanzenr.* IV, 112: 76. 1906. *Drosera dietrichiana* Rchb. f., *Beitr. Syst. Pflanzenk.* 73. 1871.

Local name: Surja Shisir.

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: Murti, Goutam & AP Das 0111, dated 07. 02. 2009.

Local Distribution: All over the riverine grass land and khunia grass land.

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

Note: Carnivorous plants of this region.

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

TAMARIX L., *Sp. Pl.* 1: 270. 1753.

Tamarix dioica Roxb. *ex* Roth, *Nov. Pl. Sp.* 185. 1821; Dyer in Hook. *f.*, *Fl. Brit. Ind.* 1: 249. 1874; Prain, *Beng. Pl.* 1: 162. 1963; Shetty *et* Pandey in Sharma *et al.*, *Fl. Ind.* 3: 24. 1993. Long in Grierson *et* Long, *Fl. Bhut.* 1(3): 636. 1987.

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: Medlajhora, Goutam & AP Das 0186, dated 09. 02. 2009.

Local Distribution: Riverine Grassland.

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

Note: Mainly found in river bed.

Plumbaginaceae Juss., Gen. Pl. 92. 1789 ('Plumbagines'); *nom. cons.*

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

Plumbago zeylanica L., Sp. Pl. 1: 151. 1753; Clarke in Hook. *f.*, Fl. Brit. Ind. 3: 480. 1882; Fl. East Himal. 249. 1966; Enn. Fl. Pl. Nep. 3: 61. 1982; Rae *et* Aitken in Grierson *et* Long, Fl. Bhut. 2(2): 570. 1999. *Plumbago scandens* L., Sp. Pl. ed. 2, 215. 1762. *Findlaya alba* Bowdich, Exc. Madeira 258. 1825.

Local name: Sada chita

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-Br., ellipsoid.

Flowers & Fruits: September to February.

Specimen Cited: Dhupjhora, Goutam & AP Das 0727, dated 14. 02. 2008.

Local Distribution: Khunia, Dhupjhora.

General Distribution: Pantropical.

Note: Cultivated as medicinal plants.

Polygonaceae Juss., 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 (L.) Mill., 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 *P. barbatum*
- 3b. Annual herb 4
- 4a. Peduncles glandular hairy or glandular *P. lapathifolium*
- 4b. Peduncles not glandular hairy and glandular 5
- 5a. Apex of ocrea usually with green leaflike wing *P. orientale*
- 5b. Apex of ocrea without wing 6
- 6a. Perianth punctuate *P. hydropiper*
- 6b. Perianth not punctuate *P. chinense*

Persicaria chinensis (L.) Gross in Engl. Bot. Jahrb. Syst. 49(2): 269. 277 & 315. 1913; Grierson *et* Long, Fl. Bhut. 1(1): 163. 1983. *Polygonum chinense* L., Sp. Pl. ed. 1, 1: 363. 1753; Hook. *f.*, Fl. Br. Ind. 5: 44. 1886; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 175. 1982. *Persicaria chinensis* var. *ovalifolia* (Meisn.) Hara, Fl. E. Him. 71. 1966; 2: 22. 1971; Hara *et al.*, Enum. Fl. Pl. Nepal 3: 175. 1982. *Polygonum chinense* var. *ovalifolia* Meisn. *sensu* Hook. *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, Br..

Flowers & Fruits: Throughout the year.

Specimen Cited: Bichhabhanga, Goutam & AP Das 0395, dated 22.07.2009.

Local Distribution: All over the forests.

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

Persicaria strigosa (R.Br.) Nakai, Rigakkwai 24: 299. 1926. *Polygonum strigosum* R.Br., Prodr. Fl. Nov. Holl. 420. 1810. *Polygonum bodinieri* Lév *et* Vaniot in Bull. Acad. Int. Géogr. Bot. 11: 343. 1902. Prain, Beng. Pl. 2: 888. 1963. *Truellum strigosum* (R.Br.) Soják in Preslia 46: 149. 1974. *Tracaulon strigosum* (R. Br.) 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 Br..

Flowers & Fruits: August to October.

Specimen Cited: Medlajhora, Goutam & AP Das 0421, dated 22.07.2009.

Local Distribution: Throughout the Beel Margin.

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

Persicaria barbata (L.) Hara, Fl. E. Him. 1: 70. 1966. *Polygonum barbatum* L., Sp. Pl. 362. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 37. 1886; Prain, Beng. Pl. 2: 663. 1903. *Polygonum rivulare* Roxb. Fl. Ind. 2: 290. 1824. *Polygonum kotoshoense* Ohki, Bot. Mag. (Tokyo) 39: 362. 1925. *Persicaria omerostroma* (Ohki) Sasaki, List Pl. Formos. 170. 1928.

Erect stout herbs. Lamina sessile, 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: Medlajhora, Goutam & AP Das 0415, dated 22.07.2009.

Local Distribution: Throughout the Beel Margin.

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

Persicaria hydropiper (L.) Delarbre, Fl. Auvergne ed. 2: 518. 1800. *Persicaria hydropiper* (L.) Spach, Hist. Veg. 10: 536. 1841; Hara, Fl. East. Himal. 2: 23. 1971; Grierson *et* Long, Fl. Bhut. 1(1): 162. 1983. *Polygonum hydropiper* L., Sp. Pl. 1: 361. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 39. 1886; Prain, Beng. Pl. 2: 664. 1903. *Persicaria hydropiper* (L.) Opiz, Seznam 72. 1852. *Polygonum schinzii* Schust., Bull. Herb. Boissier 2(8): 711. 1908.

Local name: Bishjhar.

Slender erect herbs. Lamina sessile, 3 – 7 x 1.5 – 2.5 cm, elliptic, acuminate, base acute, scabrous along the nerves, nerves many, slender. Ocrea 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: Gorati Beel, Goutam & AP Das 0130, dated 07. 02. 2009.

Local Distribution: Throughout the Beel Margin.

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

Note: Extract of this plant used to catching fish.

Persicaria lapathifolia (L.) Delarbre, Fl. Auvergne ed. 2: 519. 1800. *Persicaria lapathifolia* (L.) Gray, Nat. Arr. Br. Pl. 2: 270. 1821; Grierson *et* Long, Fl. Bhut. 1(1): 161. 1983. *Polygonum lapathifolia* L., Sp. Pl. 360. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 35. 1886. *Polygonum nodosum* Pers., 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; ocrea 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-Br., shiny, broadly ovoid, biconcave.

Flowers & Fruits: June to December.

Specimen Cited: Murti, Goutam & AP Das 0074, dated 06. 02. 2009.

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 (L.) Spach, Hist. Nat. Vég. 10: 537 1841. *Persicaria orientalis* (L.) Assenov, Fl. Reip. Pop. Bulgar. 3: 250. 1966; Grierson & Long, Fl. Bhut. 1(1): 161. 1983. *Polygonum orientale* L., Sp. Pl. 1: 362. 1753. Hook. *f.*, Fl. Brit. Ind. 5: 30. 1886; Prain, Beng. Pl. 2: 663. 1903. *Persicaria tibetica* Rendle, J. Bot. 428. 1900. *Polygonum orientale* var. *pilosum* (Roxb. *ex* Meisn.) Meisn., Prodr. 14(1): 123. 1856. *Polygonum pilosum* Roxb. *ex* Meisn., 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-Br., shiny.

Flowers & Fruits: June to August.

Specimen Cited: Murti, Goutam & AP Das 0041, dated 05. 02. 2009.

Local Distribution: Murti River bank.

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

POLYGONUM L., 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. Br., Prodr. Fl. Nov. Holl. 420. 1810 (“*Plebejum*”); Hook. *f.*, Fl. Brit. Ind. 5: 27. 1886; Prain, Beng. Pl. 2: 855. 1903; Grierson *et* Long, Fl. Bhut. 1(1): 170. 1983; Guha Bakshi, Fl. Mur. Dist. 274. 1984. *Avicularia indica* Didrich., Bot. Not. 1850: 187. 1850. *Polygonum herniarioides* Spreng., Syst. Veg. 2: 256. 1825.

Local name: Ratoful.

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

Flowers & Fruits: October to March.

Flowers & Fruits: June to November.

Specimen Cited: Murti, Goutam & AP Das 0081, dated 06. 02. 2009.

Local Distribution: Riverine sandy lands.

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

Polygonum pubescens Bl., Bijdr. Fl. Ned. Ind. 2: 532. 1925; Steward in Contr. Gray Herb. 88: 62. 1930. *Persicaria pubescens* (Bl.) Hara in Jour. Jap. Bot. 17(6): 335. 1941; Hara, Fl. East. Himal. 73: 1966. *Polygonum burbatum sensu* Willd. in Roxb. Fl. Ind. 2: 289. 1832 *non* L.; Grierson *et* Long, Fl. Bhut. 1(1): 162. 1983. *Polygonum flaccidum* Meisn., Prodr. 14(1): 107. 1856; Hook. *f.*, Fl. Brit. Ind. 5: 39. 1886; Prain, Beng. Pl. 2: 664. 1903. *Polygonum hispidum* Buch.-Ham. *ex* Don, Prodr. Fl. Nepal. 71. 1825. *Polygonum flaccidum* var. *hispidum* (Buch.-Ham. *ex* Don) Hook. *f.*, Fl. Brit. India 5: 40. 1886.

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: Murti, Goutam & AP Das 0062, dated 07. 02. 2009.

Local Distribution: Riverine lowland and all over the beel margins.

General Distribution: India, Malaya and Archipelago.

RUMEX L., 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 L., Mant. Pl. 2: 226. 1771; Hook. *f.*, Fl. Brit. Ind. 5: 59. 1886; Prain, Beng. Pl. 2: 665. 1903. Grierson *et* Long, Fl. Bhut. 1(1): 174. 1983. *Rumex klotzschianus* Meisn., Prodr. 14(1): 57. 1856. *Rumex dentatus* subsp. *klotzschianus* (Meisn.) Rechard *f.* in Beib. Bot. Jahr. 49(2): 19. 1932.

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-Br., shiny, ovoid, sharply trigonous.

Flowers & Fruits: May to August.

Specimen Cited: Gorati Beel, Goutam & AP Das 0040, dated 05. 02. 2009.

Local Distribution: Along the beel margins; common.

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

Rumex maritimus L., Sp. Pl. 335. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 59. 1886; Prain, Beng. Pl. 2: 665. 1903. *Lapathum minus* Lam., Fl. Franç. 3: 4. 1778. *Rumex aureus* Mill., Gard. Dict. (ed. 8) no. 7 no. 7. 1768. *Rumex fueginus* Philip, Anales Univ. Chile 91: 493-494. 1895. *Rumex trisetifer* Stokes *sensu* Grierson *et* Long, Fl. Bhut. 1(1): 174. 1983.

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: Gorati Beel, Goutam & AP Das 0050, dated 05. 02. 2009.

Local Distribution: Throughout the beel margins; abundant.

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

Order 29: Saxifragales Dumort. (1829)

possible subclass 1:

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

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

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

Local 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: Dhupjhora, Goutam & AP Das 0223, dated 09. 02. 2009.

Local Distribution: Semi-naturalized in forest villages; common.

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

Note: Cultivated as medicinal plants.

possible subclass 3:

Rosids:

Order 30: Vitales Juss. ex Bercht. & J.Presl (1820)

Vitaceae Juss., Gen. Pl. 267. 1789 ('Vites').

Key to the genera

- 1a. Plants climbers; tendrils present 2
- 1b. Plants shrubs or trees; tendrils absent *Leea*
- 2a. Tendrils unbranched 3
- 2b. Tendrils 2 – 3 furcate *Cayratia*
- 3a. Inflorescence a loose thyrse or panicle, base subtended by a tendril *Ampelocissus*
- 3b. Inflorescence a loose dichasium, corymbose cyme, or umbel, base without tendrils 4
- 4a. Inflorescence leaf-opposed *Cissus*
- 4b. Inflorescence usually axillary or pseudo-axillary *Tetrastigma*

CAYRATIA Juss. in Cuvier, Dict. Sci. Nat. 10: 103. 1818, nom. cons.

Cayratia japonica (Thunb.) Gagnep., Notul. Syst. (Paris) 1: 349. 1911.

Herbaceous vines. Branchlets terete, with longitudinal ridges; tendrils 2- or 3-furcate. Leaves pedately 5-foliolate to 3-foliolate; stipules caducous; leaflets with lateral veins 5–9 pairs; central leaflet elliptic to elliptic-lanceolate, base cuneate, dentate, acute to acuminate; lateral leaflets elliptic or narrowly so. Compound dichasium axillary. Calyx cupular, papillose or nearly glabrous, margin entire or undulate. Petals triangular-oval. Anthers oval. Lower part of ovary adnate to disk. Berry globose.

Flowers & Fruits: March to July.

Specimen Cited: Murti, Goutam & AP Das 0786, dated 11.05.2008.

Local Distribution: All over the forests.

General Distribution: Bhutan, India, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam; Australia.

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

Key to the species

- 1a. Small tree2
- 1b. Shrubs3
- 2a. Branchlets almost glabrous *L. guineensis*
- 2b. Branchlets longitudinal ridges obtuse *L. indica*
- 3a. Abaxial leaflet surface pubescent with dense peltate glands *L. aequata*
- 3b. Abaxial leaflet surface pubescent without peltate glands 4
- 4a. Leaves simple to 1–3-pinnate, blade large and broadly ovate *L. macrophylla*
- 4b. Leaves pinnate, blade ovate-oblong *L. asiatica*

Leea asiatica (L.) 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* L., Mant. Pl. 1: 124. 1767. *Leea herbacea* Buch.-Ham., Trans. Linn. Soc. London 14(1): 228-229. 1823; Prain, Beng. Pl. 1: 340. 1963. *Phytolacca asiatica* L., Sp. Pl. 1: 441. 1753.

Erect shrubs. Branchlets terete with longitudinal ridges. Leaves pinnate; stipules large and obovate; simple lamina 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: Gorumara, Goutam & AP Das 0375, dated 21.07.2009.

Local Distribution: All over the forests.

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

Leea aequata L., 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* Roxb. ex Horn., Hort. Bot. Hafn. 1: 231. 1813. *Leea hispida* Gagnep., Notul. Syst. (Paris) 1: 229. 1910.

Small trees, up to 5m. Leaves 1 to 2 pinnate; stipules cuneate to lanceolate; laminae 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: Dhupjhora, Goutam & AP Das 0386, dated 21.07.2009.

Local Distribution: All over the forests.

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

Leea guineensis G. Don, Gen. Hist. 1: 712. 1831; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 163. 1991.

Small trees. Branchlets terete, almost glabrous. Leaves 2 to 3-pinnate; glabrous; leaflets oval elliptic to long and roundly lanceolate, 5–18 × 2.5–7.5 cm, base broadly cuneate, margin with acute teeth, apex acuminate. Inflorescences a corymboselike compound dichasium. Pedicel very short. Calyx tube cupulate; sepal triangular, glabrous. Petals 5, elliptic, red. Stamens 5. Ovary ovate; stigma expanded slightly. Berry subglobose.

Flowers & Fruits: April to September.

Specimen Cited: Dhupjhora, Goutam & AP Das 0386, dated 21.07.2009.

Local Distribution: All over the forests.

General Distribution: Bangladesh, Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam; Africa, Madagascar.

Leea indica (Burm.) Merrill, Philipp. J. Sci. 14: 245. 1919; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 164. 1991. *Staphylea indica* Burm., Fl. Indica, 75. 1768;

Erect shrubs to small trees. Branchlets terete, longitudinal ridges obtuse, glabrous. Leaves 2 to 3-pinnate, glabrous; stipules broadly obovate, apex rounded, glabrous; leaflets elliptic to elliptic-lanceolate, 6–30 × 3–8 cm, base rounded, or rarely broadly cuneate, toothed, acuminate to caudate. Inflorescences opposite to leaves, compound dichasial or umbelliform. Involucre elliptic-lanceolate, shortly acute and acuminate, glabrous, deciduous. Petals elliptic, glabrous. Stamens 5; anthers elliptic. Ovary globose.

Flowers & Fruits: April to August.

Specimen Cited: Bichhabhanga, Goutam & AP Das 0386, dated 21.07.2009.

Local Distribution: Murti, Dhupjhora, Gorumara, Bichhabhanga, Budhuram.

General Distribution: Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Australia, Pacific islands.

Leea macrophylla Roxb. *ex* Horn., 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* Wall. *ex* G. Don, Gen. Hist. 1: 713. 1831. *Leea robusta* Roxb., Fl. Ind., ed. 1820 2: 468. 1824. *Leea integrifolia* Roxb., 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 lamina 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 oblate, 6-seeded.

Flowers & Fruits: October to December.

Specimen Cited: Gorumara, Goutam & AP Das 0442, dated 22.07.2009.

Local Distribution: All over the forests.

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

AMPELOCISSUS Planch., Vigne Amér. Vitic. Eur. 8: 371. 1884, *nom. cons.*

Ampelocissus sikkimensis (Lawson) Planch. in J. Vigne Amer. Vitic. Eur. 8: 375. 1884; Singh *et al.* Flora India 5: 317. 2000; *Vitis sikkimensis* Lawson in Hook. *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: Dhupjhora, Goutam & AP Das 0519, dated 23.07.2009.

Local Distribution: All over the forests.

General Distribution: Tropical Asia and America.

TETRASTIGMA (Miq.) Planch. in Candolle *et* Candolle, Monogr. Phan. 5: 320, 423. 1887.

Key to the species

- 1a. Stem flat *T. planicaule*
- 1a. Stem terete 2
- 2a. Leaves pedately 5 foliolate; tendrils biforked *T. serrulatum*
- 2b. Leaves palmately 3 to 5 foliolate; tendrils unbranched *T. campylocarpum*

Tetragstigma campylocarpum (Kurz) Planchon in Candolle *et* 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: Dhupjhora, Goutam & AP Das 0376, dated 21.07.2009.

Local Distribution: All over the forests.

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

Tetragstigma planicaule (Hook. *f.*) Gagnep., Notul. Syst. (Paris) 1: 319. 1910. Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(1): 156. 1991. *Vitis planicaulis* Hook. *f.*, Bot. Mag. 94: t. 5685. 1868.

Woody, robust lianas. Stem flat. Branchlets terete to slightly flat with longitudinal ridges, glabrous; tendrils unbranched. Leaves palmately 5-foliolate; leaflets elliptic-lanceolate, lanceolate to ovate-lanceolate, 9–15 × 2.5 – 6 cm, glabrous, base cuneate, teeth inconspicuous to fine, acuminate to acute. Inflorescence umbelliform, axillary. Buds oval. Calyx shallow and saucer-shaped. Petals ovate-triangular, sparsely papillose. Filaments filiform; anthers yellow and abortive in female flowers. Disk well developed, 4-lobed. Ovary broadly coniform, base papillose; stigma 4-lobed. Berry globose.

Flowers & Fruits: April to October.

Specimen Cited: Dhupjhora, Goutam & AP Das 1316, dated 21.07.2011.

Local Distribution: Dhupjhora, Murti, Gorumara.

General Distribution: India, Laos, Sri Lanka, Vietnam.

Tetrastigma serrulatum (Roxb.) Planch. in DC., Monogr. Phan. 5: 432. 1887; Hara in Fl. E. Him. 1: 201. 1966; 2: 80. 1971; 3: 82. 1975; Hara *et al.* Enum. Fl. Pl. Nepal 2: 95. 1979; Long *et Ray* in Grierson *et Long*, Fl. Bhutna 2(1): 155. 1991. *Cissus serrulata* Roxb., Fl. Ind. ed. Carey, 1: 432. 1820. *Vitis capreolata* Don, Prodr. Fl. Nep. 188. 1825; Lawson in Hook.f., Fl. Brit. India 1: 659. 1875.

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: Dhupjhora, Goutam & AP Das 0391, dated 21.07.2009.

Local Distribution: All over the forests.

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

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

Local 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: Murti, Goutam & AP Das 0461, dated 23.07.2009.

Local Distribution: Cultivated in Murti and Dhupjhora forest villages.

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

Cissus repens Lam., *Encycl.* 1: 31. 1783; Long *et* Rae in Grierson *et* Long, *Fl. Bhut.* 2(1): 159. 1991. *Cissus cordata* Roxb., *Fl. Ind.* 1: 425. 1820. *Cissus glauca* Roxb., *Fl. Ind.* 1: 406. 1820. *Vitis repens* (Lamarck) Wight *et* 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: Gorumara, Goutam & AP Das 0384, dated 21.07.2009.

Local Distribution: All over the 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.: Fabidées ou Eurosidiées I)

Order 32: Celastrales Link (1829)

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

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

Celastrus paniculatus Willd., *Sp. Pl.* 1: 1125. 1798. Long *et* Rae in Grierson *et* Long, *Fl. Bhut.* 2(1): 122. 1991; Prain, *Beng. Pl.* 1: 329. 1963. *Ceanothus paniculatus* Roth, *Nov. Pl. Sp.* 154. 1821. *Celastrus alnifolius* Don, *Prodr. Fl. Nepal.* 190. 1825. *Diosma serrata* Blanco, *Fl. Filip.* 168. 1837. *Celastrus paniculatus* Willd., *Sp. Pl.* 1: 1125. 1797.

Large deciduous twining shrubs; bark pale Br., 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: Murti, Goutam & AP Das 0539, dated 23.07.2009.

Local Distribution: Through out forests.

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

Order 33: Oxalidales Bercht. *et* Presl (1820)

Elaeocarpaceae Juss. *ex* DC., *Prodr.* 1: 519. 1824 ('Elaeocarpeae'); *nom. cons.*

ELAEOCARPUS L., *Sp. Pl.* 1: 515. 1753.

Elaeocarpus floribundus Bl., *Bijdr.* 120. 1825; Dyer in Hook.*f.*, *Fl. Brit. Ind.* 1: 401. 1874; Miller in Grierson *et* Long, *Fl. Bhut.* 2(1): 170. 1991. *Elaeocarpus rigidus* Ridl. in J. Straits Branch Roy.

Asiat. Soc. 54: 28 1910. *Elaeocarpus ramsoii* Kunth in Fedd. Repert. 44: 131. 1938. *Elaeocarpus floribundus* var. *tahanensis* (Hend.) Ng, in Tree Fl. Malaya 4: 88. 1989. *Elaeocarpus lobbianus* Turcz. in Bull. Soc. Imp. Naturalistes Moscou 31(1): 235. 1858.

Local name: Jalpaai

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: Dhupjhora, Goutam & AP Das 0085, dated 06. 02. 2009.

Local Distribution: Commonly panted in forest villages.

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

Oxalidaceae R.Br. 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 L., 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. corymbosa*

Oxalis corniculata L., Sp. Pl. 435. 1753; Hook. *f.*, Fl. Brit. Ind. 1: 436. 1874; Hara, Fl. East. Himal. 1:168. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 77. 1979; FI 4: 242. 1997; Fl. West Bengal, 1:373. 1997; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 1(3): 742.1987.

Local name: Amruli/ 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 Br. to brownish red, ovoid-oblong, transversely ridged.

Flowers & Fruits: February to October.

Specimen Cited: Dhupjhora, Goutam & AP Das 0706, dated 14. 02. 2008.

Local Distribution: Throughout the forests.

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

Note: Plants are edible.

Oxalis latifolia H B K., Nov. Gen. Sp. 5:184, t. 467. 1821; Hara, Fl. East Himal. 1: 168. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2:77. 1979; Long *et* Rae 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 Br. calli. Petals purplish pink with darker veins, obcordate. Ovary pubescent.

Flowers & Fruits: March to December.

Specimen Cited: Murti, Goutam & AP Das 0675, dated 13. 02. 2008.

Local Distribution: Garden.

General Distribution: Tropical India; SE Asia, Africa.

Oxalis corymbosa DC., Prodr. 1:696. 1824; Hara, Fl. East. Himal. 1: 168. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 2:77. 1979; Long *et* Rae 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; 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 Br. calli. Petals purplish pink with darker veins, obcordate. Ovary pubescent.

Flowers & Fruits: March to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0680, dated 14. 02. 2008.

Local Distribution: Murti and Dhupjhora Beat office Gardens.

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

BIOPHYTUM DC., Prodr. 1: 689. 1824.

Biophytum sensitivum (L.) DC., Prodr. 1: 690. 1824; Hook. *f.*, Fl. Brit. Ind. 1: 436. 1874; Hajra *et al.*, 4: 238. 1997. *Oxalis sensitiva* L., 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: Bichha bhanga, Goutam & AP Das 0579, dated 25.07.2009.

Local Distribution: Roadside open vegetation; common.

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

Order 34: Malpighiales Juss. ex Bercht. *et* Presl (1820)

Clusiaceae Lindl., Nat. Syst. ed. 2. 74. 1836 (*nom. alt. prop.* Lindl. vs. Guttiferae); *nom. cons.*

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

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

Local name: Nageswar.

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: Murti, Goutam & AP Das 0065, dated 07. 02. 2009.

Local Distribution: Planted in forest village near Tourist lodge.

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

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

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

Bergia ammannioides Roxb. [Hort. Beng. 34. 1814, *nom nud.*] ex Roth, Nov. pl. Sp. 219. 1821; Roxb., Fl. Ind. 2: 457. 1832, "*ammanoides*"; Dyer in Hook.f., Fl. Brit. Ind. 1: 251. 1874. *Elatine ammannioides* (Roxb. ex Roth) Wight *et* Arn., prodr. 41. 1834. *Bergia ammannioides* Roxb. ex Roth var. *pentandra* Wight, Ill. India. Bot. 54, t. 25a. 1840. Sharma *et al.*, Fl. Ind. 3: 33. 1993. *Elatine ammannioides* Wight *et* Arn., Prodr. Fl. Ind. Orient. 41. 1834. *Bergia pentandra* Cambess. ex Guillemin *et* Berger Perrot, Fl. Seneg. Tent. 42. 1831. Prain, Beng. Pl. 1: 243. 1903.

Annual herbs. Stem branched at base; branches erect or obliquely ascending, densely glandular hairy. Stipules 2-fid, lobes lanceolate, margin lacinate-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 Br., narrowly ovoid.

Flowers & Fruits: September to January.

Specimen Cited: Murti, Goutam & AP Das 0144, dated 08. 02. 2009.

Local Distribution: Planted in forest village.

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

Euphorbiaceae Juss., Gen. Pl. 384. 1789 ('Euphorbiae'); *nom. cons.*

Key to the genera

- 1a. Plants usually dioecious; stamens 15–250 *Mallotus*
 1b. Plants evergreen; stamens 3–15 2

- 2a. Lamina palmately lobed 3
 2b. Lamina not palmately lobed 4
 3a. Filament branched; Perianth monochlamydous **Ricinus**
 3b. Filament simple; perianth into distinct calyx & corolla **Jatropha**
 4a. Inflorescence cyathia **Euphorbia**
 4b. Inflorescence racemose 5
 5a. Raceme terminal; lamina lanceolate **Croton**
 5b. Raceme axillary; leaves ovate to ovate – elliptic 6
 6a. Fruiting calyx accrescent **Baliospermum**
 6b. Fruiting calyx not accrescent 7
 7a. Style column 4-5 lobed 8
 7b. Style column 1-3 lobed 9
 8a. Stipules linear **Antidesma**
 8b. Stipule ovate **Glochidion**
 9a. Stipules caducous **Balakata**
 9b. Stipules triangular **Acalypha**

GLOCHIDION Forster *et* Forster, Char. Gen. Pl. 57. 1775, *nom. cons.*

Glochidion acuminatum Muell. Argov., in Linnaea 32: 68. 1863; Hook. *f.* in Fl. Brit. India 5: 323. 1887; Kitamura in Hara Enum. Fl. Pl. Nepal 3: 196. 1982; Long in Grierson *et* Long, Fl. Bhutan 1(3): 779. 1987.

Local Name: Lalikaath

Tree evergreen medium size 6 – 10 m, with pubescent drooping branchlets. Leaves alternate; lamina 4 – 13 x 2 – 4 cm, lanceolate, entire, acuminate pinnately veined, greenish above, pale and hoary pubescent beneath. Flowers in axillary dense fascicles. Sepals 6; unequal, obovate greenish. Petals 0; male flowers with 3 anthers; styles connate, columnar, column 4-5 lobed, lobes erect, short. Fruits globose, with persistent style.

Flowers & Fruits: April to October.

Specimen Cited: Budhram, Goutam & AP Das 0144, dated 08. 02. 2009.

Local Distribution: Budhram, Gorumara.

General Distribution: India; Nepal, Bhutan, China.

ANTIDESMA Burm. *ex* L., Sp. Pl. 2: 1027. 1753.

Antidesma acidum Retz., Observ. Bot. 5: 30. 1789. Long in Grierson *et* Long, Fl. Bhutan 1(3): 778. 1987. Prain, Beng. Pl. 2: 939. 1903.

Shrubs, up to 6 m. Stipules linear; lamina obovate to elliptic-oblong, 5–13 × 2.5–5 cm, base acute to obtuse, entire, rounded to acute, sometimes mucronate. Inflorescences terminal to axillary. Male flowers: pedicels 1mm; cupular to globose, 4 lobed; disk cushion-shaped; stamens 2; rudimentary ovary terete. Female flowers: pedicels 1.5 mm; cupular to nearly urceolate, 4 – 5 lobed; ovary glabrous; stigmas 3 or 4. Drupes ellipsoid; style terminal to slightly subterminal.

Flowers & Fruits: May to October.

Specimen Cited: Budhuram, Goutam & AP Das 0144, dated 08. 02. 2009.

Local Distribution: Budhuram, Gorumara.

General Distribution: Bangladesh, Bhutan, Cambodia, India, Indonesia, Laos, Myanmar, Nepal, Thailand, Vietnam.

ACALYPHA L., 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 Burm. f., Fl. Ind.: 303, t. 61, fig. 1. 1768; Hook. f., Fl. Brit. Ind. 5: 417. 1887; Grierson et Long, Fl. Bhutan 1(3): 797. 1987. *Ricinocarpus hispidus* (Burm. f.) Kuntze, Revis. Gen. Pl. 2: 618. 1891.

Local name: Morog jhunti.

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: Dhupjhora, Goutam & AP Das 0585, dated 25.07.2009.

Local Distribution: Dhupjhora Beat Office.

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

Acalypha indica L., Sp. Pl.: 1003. 1753; Drury, Useful Pl. Ind.: 10. 1873; Hook. f., Fl. Brit. Ind. 5: 416. 1887; Prain, Beng. Pl. 2: 948. 1903. *Ricinocarpus indicus* (L.) Kuntze, Revis. Gen. Pl. 2: 618. 1891. *Acalypha chinensis* Benth., Fl. Hongk.: 303. 1861.

Local name: Mukta jhuri.

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: Bichhbhanga, Goutam & AP Das 0544, dated 23.07.2009.

Local Distribution: Beat office area.

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

BALIOSPERMUM Bl., Bijdr. 603. 1826.

Baliospermum solanifolium (Burm.) Suresh in Regnum Veg. 119: 106. 1988. *Croton solanifolius* Burm., Fl. Malab. 6. 1769. *Jatropha montana* Willd., Sp. Pl. 4: 563. 1805; Long in Grierson *et* Long, Fl. Bhutan 1(3): 811. 1987. *Croton solanifolius* (Burm.) Geiseler, Croton Monogr.: 74. 1807 (*non* J. Burm. 1769). *Baliospermum axillare* Bl., Bijdr.: 604. 1826; Prain, Beng. Pl. 2: 946. 1903. *Croton polyandrus* Roxb., Fl. Ind. ed. 2. 3: 682. 1832. *Baliospermum indicum* Decne. in Jacquem., Voy. Inde: 154, t. 155. 1841. *Baliospermum moritzianum* Baill., Étude Euphorb.: 395. 1858. *Baliospermum montanum* (Willd.) Müll.-Arg. in DC. Prodr. 15(2): 1125. 1866; *Baliospermum polyandrum* (Roxb.) 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 × 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: Dhupjhora, Goutam & AP Das 0661, dated 13. 02. 2008.

Local Distribution: Rarely found but all over the forests margins.

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 L., Sp. Pl. 2: 1004. 1753.

Croton bonplandianus Baill. in Adansonia 4: 339. 1864; Guha Bakshi, Fl. Mur. Dist. 283. 1984; Panda & 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* (Baill.) Kuntze, Revis. Gen. Pl. 2: 610. 1891.

Local 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: Bichhabhanga, Goutam & AP Das 0504, dated 23.07.2009.

Local Distribution: Throughout the forest margins.

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

JATROPHA L., Sp. Pl. 2: 1006. 1753, *nom. cons.*

Jatropha curcas L., Sp. Pl. ed. 1: 1006. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 383. 1887; Long in Grierson *et* Long, Fl. Bhutan 1(3): 790. 1987. *Curcas indica* Rich., Hist. Fis. Cuba, Bot. 11: 208. 1850. *Jatropha acerifolia* Salisb., Prodr. Stirp. Chap. Allerton 389. 1796.

Local name: Sada Varendra.

Erect, bushy, reddish, 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 connate. Capsules oblong, 3 – lobed.

Flowers & Fruits: June to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0319, dated 21.07.2009.

Local Distribution: Cultivated in forest villages.

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

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

Ricinus communis L., Sp. Pl. 2: 1007. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 457. 1887; Long in Grierson *et* Long, Fl. Bhutan 1(3): 808. 1987; Prain, Beng. Pl. 2: 946. 1903. 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* L., Sp. Pl. 2: 1005. 1753. *Ricinus africanus* Mill., Gard. Dict. ed. 8: 5. 1768. *Ricinus communis* L., Sp. Pl. 2: 1007. 1753.

Local name: Reri.

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, perianth-5; stamens-5; female flower with 5-perianth, carpel-3. Fruits schizocarpic with 3 one seeded cocci.

Flowers & Fruits: January to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0371, dated 21.07.2009.

Local Distribution: Cultivated in village areas and naturalized in Murti River bank.

General Distribution: Tropical India and Africa.

BALAKATA Esser, Blumea 44: 154. 1999.

Balakata baccata (Roxb.) Esser, Blumea 44: 155, map 1. 1998. *Sapium baccatum* Roxb., Fl. Ind. ed. 2, 3: 694. 1832; Hook. *f.*, Fl. Br. India 5: 470. 1888; Long in Grierson *et* Long, Fl. Bhutan 1(3): 812. 1987; Prain, Beng. Pl. 2: 954. 1903. *Sapium populifolium* Wight, Icon. Pl. Ind. Orient. 5, 2: tab. 1950, fig. 2. 1853. *Excoecaria affinis* Griff., Not. Pl. As. 4: 486. 1854, nom. superfl. *Stillingia paniculata* Miq., Fl. Ned. Ind., Eerste bijv.: 183, 461. 1861. *Excoecaria baccata* (Roxb.) Müll.-Arg. in DC., Prodr. 15, 2: 1211. 1866. *Carumbium baccatum* (Roxb.) Kurz, Fl. Burm. 2: 412. 1877.

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: Murti, Goutam & AP Das 0231, dated 09. 02. 2009.

Local Distribution: All over forests.

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

EUPHORBIA L., 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 Spreng., 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* Lam., 1788 (*nom. Illeg.*); Hook. *f.*, Fl. Brit. Ind. 5: 252. 1887; Haines, Bot. Bihar & Orissa pt. II: 148. 1921; Prain, Beng. Pl. 2: 925. 1903. *Chamaesyce heyneana* (Spreng.) Soják, Cas. Nár. Mus., Odd. Prír. 140: 169. 1972.

Annual, prostrate, spreading herbs; stem glabrous, internodes ribbed, stipules lacinate. 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: Dhupjhora, Goutam & AP Das 0717, dated 14. 02. 2008.

Local Distribution: Dhupjhora, Murti, Gorumara.

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

Euphorbia hirta L., 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. Bhutan1(3): 766. 1987. *Euphorbia pilulifera* *auct. non* L. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 250. 1887. *Euphorbia capitata* Lam., Encycl. 2: 422. 1788. *Euphorbia nodiflora* Steud., Nomencl. Bot. ed. 2, 1: 613. 1840. Prain, Beng. Pl. 2: 925. 1903.

Local name: Dudhali.

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: Dhupjhora, Goutam & AP Das 0382, dated 21.07.2009.

Local Distribution: Dhupjhora, Murti, Gorumara.

General Distribution: tropical and subtropical regions in both hemispheres.

Euphorbia hypericifolia L., Sp. Pl. 454. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 249. 1887; Prain, Beng. Pl., 2: 924. 1903; Guha Bakshi, Fl. Mur. Dist. 286. 1984. *Euphorbia parviflora* L., Syst. ed. 10, 2: 1047. 1759. *Chamaesyce hypericifolia* (L.) Millsp., Publ. Field Columb. Mus., Bot. Ser. 2: 302. 1909. *Ditritea obliqua* Raf.-Schmaltz, Sylva Tellur. 115. 1838. *Euphorbia indica* Lam., 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 exserted. Female flower exserted from involucre; ovary pubescent; styles free; stigma deeply 2 lobed. Capsule 3 angular-ovoid. Seeds ovoid-tetragonal.

Flowers & Fruits: January to May.

Specimen Cited: Dhupjhora, Goutam & AP Das 0713, dated 14. 02. 2008.

Local Distribution: Dhupjhora, Murti, Gorumara, Budhuram.

General Distribution: Tropical weed in Africa and Asia.

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

Mallotus philippensis (Lam.) Müll.-Arg. in Linnaea 34: 196. 1865; Hook. f., Fl. Brit. Ind. 5: 442. 1887. *Croton philippense* Lam., Encycl. 2: 206. 1786. *Croton punctatus* Retz. ('*punctatum*'), Obs. Bot. 5: 30. 1789. *Croton coccineus* Vahl, Symb. Bot. 2: 97. 1791. *Rottlera tinctoria* Roxb., Pl. Corom. 2: 36, t. 168. 1802. *Croton montanum* Willd., Sp. Pl. 4: 547. 1805. *Rottlera philippensis* (Lam.) Juss. ex Spreng. in Syst. Veg. (ed. 16) 3: 877. 1826. *Rottlera tinctoria* Roxb. var. *monstruosa* Ham. ex Dillwyn, Rev. Hortus Malab.: 22. 1839. *Rottlera aurantiaca* Hook. et Arn., Bot. Beech. Voy.: 270. 1841.

Local name: Sindure

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: Murti, Goutam & AP Das 0735, dated 14. 02. 2008.

Local Distribution: All over forests.

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

Hypericaceae Juss., Gen. Pl. 254. 1789 ('Hyperica').

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

Hypericum japonicum Thunb. in Syst. Veg. ed. 14: 702. 1784. *Hypericum nervatum* Hance in Ann. Bot. Syst. 2: 188. 1851. *Hypericum chinense* Osbeck, Dagb. Ostind. Resa 244. 1757. *Brathys orysetum* Bl., Mus. Bot. 2: 20. 1856. *Hypericum japonicum* Murray, Syst. Veg. ed. 14: 702. 1784; Dyer in Hook.f., Fl. Brit. Ind. 1: 256. 1874; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 62. 1979; Sharma *et al.*, 3: 69. 1993; Grierson *et Long*, Fl. Bhut. 1(2): 376. 1984.

Annula 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 ovaoid.

Flowers & Fruits: throughout the year.

Specimen Cited: Murti, Goutam & AP Das 0095, dated 07. 02. 2009.

Local Distribution: Murti, Dhupjhora, Gorumara, Khunia.

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

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

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

Passiflora foetida L., Sp. Pl. 959. 1753; Prain, Beng. Pl., 1: 512. 1903. *Dysosmia hircina* Sweet ex Roem., Fam. Nat. Syn. Monogr. 2: 150. 1846. *Passiflora balansae* Chodat, Bull. Herb. Boissier 2: 744. 1902. *Passiflora hirsuta* Lodd., Bot. Cab. 2(4): , t. 138. 1818. *Passiflora variegata* Mill., Gard. Dict. (ed. 8) no. 8 no. 8. 1768.

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: Murti, Goutam & AP Das 0112, dated 07. 02. 2009.

Local Distribution: Throughout the Forests.

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

Phyllanthaceae Agardh, Theoria Syst. Pl. Fam. Phan. 249. 1858 ('Phyllanthae').

Key to the genera

- 1a. Leaves 3-foliolate; plant with red or reddish juice **Bischofia**
- 1b. Leaves simple; plant without red juice 2
- 2a. Flowers with petals and disk **Bridelia**
- 2b. Flowers without petals 3
- 3a. Flowers without disk **Sauropus**
- 3b. Flowers with a prominent, usually fleshy disk..... 4
- 4a. Male flowers with prominent pistillode **Flueggea**
- 4b. Male flowers without pistillode **Phyllanthus**

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

Bridelia retusa (L.) Juss., Euphorb. Gen.: 109, t. 7, f. 22. 1824; Prain, Beng. Pl., 2: 927. 1903; *Clutia retusa* L., Sp. Pl.:1042. 1753. *Clutia spinosa* Roxb., Pl. Corom. 2: 38, t. 172. 1802. *Bridelia spinosa* (Roxb.) Willd., Sp. Pl. 4: 979. 1806. *Bridelia retusa* (L.) Spreng., Syst. Veg. 3: 48. 1826, pro comb. nov.; *Bridelia squamosa* (Lam.) Gehrman, Bot. Jahrb. Syst. 41, Beibl. 95: 30. 1908. *Bridelia cambodiana* Gagnep., Bull. Soc. Bot. France 70: 432. 1923. *Bridelia pierrei* Gagnep., 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 x 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 Br.; pistillate flowers reddish to Br.. 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: Dhupjhora, Goutam & AP Das 0575, dated 25.07.2009.

Local Distribution: Throughout the Forests.

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

FLUEGGEA Willd., Sp. Pl. 4: 637, 757. 1805.

Flueggea virosa (Roxb. ex Willd.) Voigt, Hort. Suburb. Calc.: 152. 1845. Long in Grierson & Long, Fl. Bhutan 1(3): 775. 1987; *Phyllanthus virosus* Roxb. ex Willd., Sp. Pl. 4: 578. 1805. *Xylophylla obovata* Willd., Enum. Hort. Berol.: 329. 1809. *Flueggea microcarpa* Blume, Bijdr.: 580. 1825; Prain, Beng. Pl. 2: 931. 1903. *Securinega virosa* (Roxb. ex Willd.) Baill., Adansonia 6: 334. 1866; *Securinega microcarpa* (Bl.) Müll.-Arg. in DC., Prod. 15, 2: 434. 1866. *Securinega obovata* (Willd.) Müll.-Arg. in DC., Prod. 15, 2: 449. 1866. *Flueggea obovata* (Willd.) Wall. ex Vill., 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: Dhupjhora, Goutam & AP Das 0704, dated 14. 02. 2008.

Local Distribution: Throughout the Forests.

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

SAUROPUS Bl., Bijdr. 595. 1826.

Sauropus quadrangularis (Willd.) Müll.-Arg. in Linnaea 32: 73 1863; Hook. f., Fl. Br. Ind. 5: 335. 1887; Long in Grierson et Long, Fl. Bhutan 1(3): 783. 1987; Prain, Beng. Pl. 2: 932. 1903. *Phyllanthus quadrangularis* Willd., Sp. Pl. 4: 585. 1805. *Phyllanthus rhamnoides* Roxb., Fl. Ind. 3: 663. 1832, *nom. illeg., non Willd.*. *Ceratogynum rhamnoides* Roxb. ex Wight, Icon. Pl. Ind. Orient. 5: t. 1900. 1852. *Sauropus ceratogynum* (Roxb. ex Wight) Baill., Étude Euphorb.: 635. 1858. *Phyllanthus leschenaultia* Müll.-Arg. var. *tenellus* Wall. ex Müll.-Arg., Linnaea 32: 38. 1863. *Sauropus rigidus* Thwaites, Enum. Pl. Zeyl.: 284. 1864. *Sauropus compressus* Müll.-Arg. in DC, Prodr. 15, 2: 243. 1866. *Sauropus quadrangularis* (Willd.) Müll.-Arg. var. *puberulus* Kurz, Forest Fl. Burma 2: 350. 1877. *Sauropus pubescens* Hook. f., Fl. Brit. Ind. 5: 335. 1887. *Sauropus compressus* Müll.-Arg. var. *compressus*: Chakraborty et Gangopau in 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: Dhupjhora, Goutam & AP Das 0366, dated 21.07.2009.

Local Distribution: Throughout the Forests.

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

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

Key to 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. fraternus*

Phyllanthus amarus Schum. et Thonn., Kongl. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd. 4: 195. 1829; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 198. 1982. *Phyllanthus niruri auct. non L.*, Hook. f., Fl. Brit. Ind. 5: 298. 1887; Hara, Fl. East. Himal. 181. 1966. *Phyllanthus nanus* Hook. f., Fl. Brit. India 5: 298. 1887. *Diasperus nanus* (Hook. 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: Gorumara, Goutam & AP Das 0431, dated 22.07.2009.

Local Distribution: Throughout the Forests.

General Distribution: pantropical weed possibly originating in the Americas

Phyllanthus urinaria L., Sp. Pl. 2: 982. 1753; Hook. f., Fl. Brit. Ind. 5: 293. 1887; Long in Grierson *et Long*, Fl. Bhutan 1(3): 772. 1987; Prain, Beng. Pl. 2: 935. 1903. Haines, Bot. Bihar & Orissa pt. II: 125. 1921. *Diasperus urinaria* (L.) Kuntze, Revis. Gen. Pl. 2: 601. 1891. *Phyllanthus cantoniensis* Horn., Enum. Pl. Hort. Hafn. 29. 1807.

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: Gorumara, Goutam & AP Das 0464, dated 23.07.2009.

Local Distribution: Throughout the Forests.

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

Phyllanthus fraternus Webster in Contr. Gray. Herb. 176: 53. 1955; & in J. Arnold Arbor. 38: 308. 1957. *Phyllanthus niruri auct non L.* Sp. Pl. 2: 982. 1753, Hook. f., Fl. Brit. Ind. 5: 298 1887; Prain, Beng. Pl. 2: 936. 1903. 1887. *Phyllanthus fraternus* subsp. *togoensis* Brunel *et 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: Gorumara, Goutam & AP Das 0508, dated 23.07.2009.

Local Distribution: Throughout the Forests.

General Distribution: Pantropical, Native to South America.

Phyllanthus virgatus Froster *f.*, Fl. Ins. Austrl. Prodr. 65. 1786. (*ut virgata*) Airy Shaw, Kew. Bull. 26: 325. 1972; Guha Bakshi, fl. Mus. Dist. 294.1984. *Phyllanthus simplex* Retz., Obs. Bot. 5: 29. 1789; (Var. *genurinus*); Hook. *f.*, Fl. Brit. Ind. 5: 295. 1887; Prain, Beng. Pl. 2: 936. 1903. *Phyllanthus simplex* var. *virgatus* (Froster *f.*) Müll.-Arg., Linnaea 32: 32. 1863 and in Candolle, prodr. 15(2): 391. 1866. *Diasperus virgatus* (Forst.) 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: Murti, Goutam & AP Das 0419, dated 22.07.2009.

Local Distribution: Throughout the Forests.

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

Phyllanthus emblica L., Sp. Pl. 2: 982. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 289. 1887; Long in Grierson *et* Long, Fl. Bhutan 1(3): 772. 1987. Prain, Beng. Pl. 2: 933. 1903. *Emblica officinalis* Gaertn., Fruct. 122-123, Pl. 108, f. 2. 1790. *Emblica officinalis* Gaertn., Fruct. Sem. Pl. 2: 122. 1790. *Emblica arborea* Raf.-Schmaltz, Sylva Tellur. 91. 1838.

Local 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: Murti, Goutam & AP Das 0490, dated 23.07.2009.

Local Distribution: Murti and Dhupjhora Forest Village and planted in Murti River bed.

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

Phyllanthus reticulatus Poir. in Lam., Encycl. Méth. 5: 298. 1804; Hook. f., Fl. Brit. Ind. 5: 288. 1887; Long in Grierson *et* Long, Fl. Bhutan 1(3): 772. 1987; Prain, Beng. Pl. 2: 935. 1903. *Kirganelia reticulata* (Poir.) Baill., Étude Gén. Euphorb.: 613. 1858. *Cicca reticulata* (Poir.) Kurz, Forest Fl. Burma 2: 354. 1877. *Anisonema reticulatum* (Poir.) Juss., Euphorb. Gen. 4. 1824. *Diasperus reticulatus* (Poir.) Kuntze, Revis. Gen. Pl. 2: 600. 1891.

Small trees, up to 4 m. Stipules lanceolate to linear oblong. Lamina elliptic, 3 – 4 x 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: Dhupjhora, Goutam & AP Das 0444, dated 22.07.2009.

Local Distribution: Throughout the Forests.

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

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

SALIX L., Sp. Pl. 2: 1015. 1753.

Salix tetrasperma Roxb., Pl. Corom. 1: 66, pl. 97: 66. 1795. Long in Grierson *et* Long, Fl. Bhutan 1(3): 868. 1987; Prain, Beng. Pl. 2: 989. 1903. *Pleiarina tetrasperma* (Roxb.) N. Chao & G.T. Gong in Jour. 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: Murti, Goutam & AP Das 0270, dated 10. 02. 2009.

Local Distribution: Murti River Banks under Murti Forest Beat; less common.

General Distribution: India: tropical parts; Indonesia, Malaysia, Myanmar, Pakistan, Philippines, Thailand, Vietnam.

Violaceae Lam. *et* DC., Fl. Franc. ed. 3. 5: 801. 1805.

VIOLA L., Sp. Pl. 2: 933. 1753.

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

Common name: Pansy

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: Dhupjhora, Goutam & AP Das 0186, dated 09. 02. 2009.

Local Distribution: Dhupjhora, - an escape.

General Distribution: India: native to Europe.

Note: Common garden annual during winter.

Order 35: Fabales Bromhead (1838)

Fabaceae Rchb.f., Consp. Regni Veg. 149. 1828 (*nom. alt.* vs. Leguminosae *nom. cons. prop.*).

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 *Aeschynomene*
- 5b. Inflorescences usually scorpioid-cymose, congested; bracts scarious,
caducous *Smithia*
- 6a. Climbing or weak plants or trees or tall shrub 7
- 6b. Erect subshrubs *Crotalaria*
- 7a. Style flattened 8
- 7b. Style generally terete 12
- 8a. Flowers generally resupinate *Clitoria*
- 8b. Flowers not resupinate 9
- 9a. Flowers mostly adapted to birds or bats for pollination 10
- 9b. Flowers mostly adapted to bees for pollination *Pueraria*
- 10a. Trees; stems with prickles *Erythrina*
- 10b. Climbers or trees; if trees, then stems without prickles 11
- 11a. Legume with many seeds, 2-valved *Mucuna*
- 11b. Legume samaroid with 1 apical seed *Butea*
- 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 sepaloïd or petaloïd	<i>Tamarindus</i>
21b. Bracteoles not sepaloïd or petaloïd	<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	<i>A. precatorius</i>
1b. Seeds uniformly dark brown to almost black, compressed	<i>A. pulchellus</i>

Abrus pulchellus Wall. ex Thwaites, Enum. Pl. Zeyl. 91. 1859. Long in Grierson *et* Long, Fl. Bhutan 1(3): 665. 1987; Prain, Beng. Pl. 1: 369. 1903.

Large, slender, climbing, lianas. Leaves paripinnate, alternate; leaflets 6 – 10 paired, opposite; blades suboblong to obovateoblong, 0.5 – 3.5 × 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-Br., elliptic to ovoid.

Flowers & Fruits: April to August.

Specimen Cited: Dhupjhora, Goutam & AP Das 0114, dated 07. 02. 2009.

Local Distribution: On open bushes; rare.

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

Abrus precatorius L., Syst. Nat., ed. 12, 2: 472. 1767. Long in Grierson *et* Long, Fl. Bhutan 1(3): 665. 1987; Prain, Beng. Pl. 1: 369. 1903. *Abrus tunguensis* Lima, Broteria, Ser. Bot. 19: 127. 1921. *Glycine abrus* L., Sp. Pl. 2: 753. 1753.

Local name: Lalkunch

Large, slender, much branched, climbing, lianas. Leaves paripinnate; leaflets 8 – 12 paired, opposite; blades suboblong, 1 – 2 × 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: Khunia, Goutam & AP Das 0255, dated 10. 02. 2009.

Local Distribution: Khunia grass land.

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

PELTOPHORUM (Vogel) Bentham, J. Bot. (Hooker) 2: 75. 1840, nom. cons.

Peltophorum pterocarpum (Candolle) Backer ex Heyne, Nutt. Pl. Ned.-Ind., ed. 2, 2: 755. 1927; Grierson *et* Long, Fl. Bhut. 1(3): 621. 1987. *Inga pterocarpa* Candolle, Prodr. 2: 441. 1825.

Trees, up to 12 m. Young shoots and inflorescences ferruginous hairy; yellowish, small lenticels in old branches. Leaves 32–40 cm; petiole robust; leaflets 8–18 pairs, oblong-obovate, leathery, abaxially pale and adaxially deep green, base oblique, margin entire, apex rounded, mucronate. Panicles terminal, densely ferruginous puberulent; bracts caducous. Flower buds globose. Sepals ovate, outside ferruginous tomentose. Petals obovate, densely ferruginous pubescent at middle of both surfaces. Filaments ca. 1.2 cm; anthers sagittate at base. Ovary stalked, hairy; style filiform; stigma discoid, 3-lobed. Legume winged, compressed.

Flowers & Fruits:

Specimen Cited: Budhuram, Goutam & AP Das 0771, dated 12. 11. 2009.

Local Distribution: Cultivated.

General Distribution: Bhutan, India, Indonesia, Malaysia, Sri Lanka, China, Thailand, Vietnam; Australia; introduced in E Africa and many other tropical countries.

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

Adenantha pavonina L. Sp. Pl. 1: 384. 1753; Grierson *et* Long, Fl. Bhut. 1(3): 636. 1987; Prain, Beng. Pl. 1: 452. 1903. *Adenantha microsperma* Teijsmann *et* Binnendijk, Natuurk. Tijdschr. Ned.-Indië 27: 58. 1864.

Deciduous trees, up to 20 m. Branchlets puberulent. Petiole and rachis puberulent; pinnae 3–5 pairs; leaflets 4–7 pairs, alternate, oblong to ovate, 2.3–3.4 × 1.4–2.4 cm, both surfaces puberulent, both ends rounded-obtuse. Racemes simple, axillary or terminal. Flowers yellow, small, fragrant, shortly pedicellate. Calyx less than 5–8 mm. Petals oblong, slightly connate at base. Stamens 3–4 mm. Ovary nearly sessile, villous; style filiform; stigma small. Legume narrowly oblong.

Flowers & Fruits: April to October.

Specimen Cited: Budhuram, Goutam & AP Das 0764, dated 12. 11. 2009.

Local Distribution: Cultivated.

General Distribution: India, Bhutan, China, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam.

ENTADA Adanson, Fam. Pl. 2: 318, 554. 1763, nom. cons.

Entada rheedii Spreng., Syst. Veg. 2: 325. 1825; Grierson *et* Long, Fl. Bhut. 1(3): 638. 1987; *Mimosa entada* L., Sp. Pl. 1: 518. 1753;

Woody climbers. Pinnae 2 pairs; leaflets 3–4 pairs in each pinna, opposite, obovate to elliptic-lanceolate, 3–7 × 1.6–3.5 cm, papery, abaxially glaucous, base rounded to broadly cuneate, apex acuminate to obtuse. Spikes solitary, axillary, 15–24 cm. Flowers male or bisexual. Calyx green, cup-shaped. Petals white, narrowly elliptic to lanceolate. Stamens white. Ovary glabrous. Legume slightly curved; epicarp and endocarp woody. Seeds brown, sub orbicular, flat.

Flowers & Fruits: March to October.

Specimen Cited: Budhuram, Goutam & AP Das 0763, dated 12. 11. 2009.

Local Distribution: Rarely found in Gorumara, Budhuram and Dhupjhora.

General Distribution: India, Nepal, Bhutan, China; tropical Asia; E Africa, Australia.

DERRIS Lour., Fl. Cochinch. 2: 423, 432. 1790, nom. cons.

Derris ferruginea Benth. in Miq., Pl. Jungh. 252. 1852; Grierson *et* Long, Fl. Bhut. 1(3): 657. 1987. *Robinia ferruginea* Roxb., Fl. Ind., ed. 1832, 3: 329. 1832, not Kunth (1823).

Lianas. Branchlets rust pubescent. Leaves 5–9 foliolate; leaflet blades elliptic to obovate-oblong, 7–12 × 2–5 cm, leathery, abaxially slightly rust puberulent, adaxially glabrous, base rounded, apex obtusely acuminate. Pseudopanicles axillary, 17–28 cm, densely rust puberulent. Pedicel slender. Flowers 0.8–1.3 cm. Calyx teeth minute. Corolla pale red to whitish. Ovary pubescent. Legume oblong to ligulate-oblong, leathery, flat.

Flowers & Fruits: April to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0863, dated 14. 02. 2010.

Local Distribution: Rarely found in Dhupjhora forests.

General Distribution: Bangladesh, India, China, Laos, Myanmar, Thailand, Vietnam.

SESBANIA Scopoli, *Intr. Hist. Nat.* 308. 1777, *nom. cons.*

Key to the species:

1a. Stipules triangular-lanceolate, ovary globose *S. sesban*

1b. Stipules obliquely lanceolate, ovary linear *S. sesban*

Sesbania sesban (L.) Merrill, *Philipp. J. Sci., C*, 7: 235. 1912; Grierson *et* Long, *Fl. Bhut.* 1(3): 662. 1987. *Aeschynomene sesban* L. *Sp. Pl.* 2: 714. 1753.

Perennial herbs, suffrutescent, up to 4 m. Branches glabrescent. Stipules triangular-lanceolate, 3–4 mm, caducous, pubescent. Leaves 22–38 foliolate; petiole and rachis appressed pubescent; leaflet blades oblong to linear, 1.3–2.5 cm × 2.7–5 mm, base obliquely rounded, apex rounded to retuse or mucronate. Racemes 5–10 flowered; bracts linear lanceolate, caducous, abaxially sparsely appressed pubescent. Calyx campanulate; teeth shortly triangular. Corolla yellow; wings oblong. Stamen 8–10 mm; anthers ellipsoid. Ovary glabrous; style ca. 5 mm, glabrous; stigma globose. Legume slightly curved at maturity.

Flowers & Fruits: July to October.

Specimen Cited: Dhupjhora, Goutam & AP Das 0868, dated 14. 02. 2010.

Local Distribution: Cultivated at Dhupjhora forest village.

General Distribution: Bangladesh, Cambodia, India, Indonesia, China, Laos, Malaysia, Pakistan, Thailand, Vietnam; SW Asia, N Australia.

Sesbania grandiflora (L.) Pers., *Syn. Pl.* 2: 316. 1807. *Robinia grandiflora* L., *Sp. Pl.* 2: 722. 1753;

Trees, up to 10 m. Branches terete with conspicuous leaf and stipule scars. Stipules obliquely lanceolate, caducous. Leaves 20–38 cm, 22–56 foliolate; stipels acerose; leaflet blades oblong, 1.7–4.5 × 0.8–1.5 cm, smaller at both ends of rachis than in middle, base rounded to broadly cuneate, apex obtuse to retuse, mucronate. Racemes 5–7 cm, pendulous, 2–4 flowered; bract and bracteoles ovate to ovate-lanceolate. Flowers 7–12 cm. Calyx green, campanulate. Corolla white; standard oblong-obovate to broadly ovate, reflexed at anthesis. Stamens 7–9 mm; anthers linear. Pistil linear; ovary stipitate. Legume linear, slightly curved.

Flowers & Fruits: September to April.

Specimen Cited: Dhupjhora, Goutam & AP Das 0872, dated 14. 02. 2010.

Local Distribution: Cultivated at forest villages throughout.

General Distribution: Probably native to Indonesia and Malaysia; Cultivated throughout.

INDIGOFERA L., *Sp. Pl.* 2: 751. 1753.

Indigofera linifolia (L. f.) Retzius, *Observ. Bot.* 4: 29. 1786; Grierson *et* Long, *Fl. Bhut.* 1(3): 663. 1987. *Hedysarum linifolium* L. f., *Suppl. Pl.* 331. 1782;

Perennial erect herbs, many branched. Stems usually 4 angled. Stipules narrowly triangular. Leaves simple or 1-foliate; stipels linear, glabrous; leaf or leaflet blade usually linear to elliptic, base narrowly cuneate, acuminate, mucronate. Racemes 1–1.5 cm; bracts ovate. Calyx teeth narrowly triangular. Corolla red; standard elliptic; wings and keel glabrous. Stamens 3–4 mm; anthers glabrous. Ovary with 1 ovule. Legume ovoid.

Flowers & Fruits: April to October.

Specimen Cited: Budhram, Goutam & AP Das 0756, dated 12. 11. 2009.

Local Distribution: Throughout the forests.

General Distribution: Afghanistan, Bhutan, India, China, Cambodia, Indonesia, Laos, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam; Africa, Australia.

ALYSICARPUS Necker *ex* Desvaux, J. Bot. Agric. 1: 120. 1813, *nom. cons.*

Alysicarpus vaginalis (L.) Candolle, Prodr. 2: 353. 1825; Grierson *et* Long, Fl. Bhut. 1(3): 681. 1987; *Hedysarum vaginale* L. Sp. Pl. 2: 746. 1753.

Perennial, erect herbs; up to 70 cm. Leaves 1-foliolate; leaf blade often ovate-oblong to oblong-lanceolate on upper stem, cordate, ovate orbicular on lower stem. Racemes axillary and terminal, 6–10 flowered. Calyx 5–6 mm. Corolla purplish blue, slightly longer than calyx; standard obovate. Ovary pubescent, 4–7 ovuled. Legume compressed, cylindrical.

Flowers & Fruits: September to November.

Specimen Cited: Budhuram, Goutam & AP Das 0781, dated 12. 11. 2009.

Local Distribution: Throughout the forests.

General Distribution: Bhutan, Nepal, India, China, Indonesia, Japan, Laos, Malaysia, Philippines, Sri Lanka, Thailand, Vietnam; E and W Africa, throughout Old World tropics; introduced in the Neotropics.

BUTEA Roxb. *ex* Willd., Sp. Pl. 3: 857, 917. 1802, *nom. cons.*

Butea buteiformis (Voigt) Grierson & D. G. Long, Notes Roy. Bot. Gard. Edinburgh 37: 346. 1979; Grierson *et* Long, Fl. Bhut. 1(3): 688. 1987; *Meizotropis buteiformis* Voigt, Hort. Suburb. Calcutt. 239. 1845 [“buteaeformis”];

Perennial shrubs. Stems erect or scandent. Petioles 10–18 cm; leaflets broadly ovate-elliptic, 18–42 × 12–36 cm, lateral veins 10–12 pairs, reticulate veins distinct abaxially, base rounded to truncate, apex acute. Racemes many flowered. Calyx 5–8 mm. Corolla orange-red; standard broadly elliptic, recurved; wings narrowly ovate, falcate; keel ovate. Legumes 5–10 × 2–2.5 cm, tomentose with brownish hairs.

Flowers & Fruits: April to October.

Specimen Cited: Bichhabhanga, Goutam & AP Das 0790, dated 23. 11. 2009.

Local Distribution: Cultivated in Bichhabhanga forest village.

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

PACHYRHIZUS Richard *ex* Candolle, Prodr. 2: 402. 1825, *nom. cons.*

Pachyrhizus erosus (L.) Urban, Symb. Antill. 4: 311. 1905; Grierson *et* Long, Fl. Bhut. 1(3): 691. 1987; *Dolichos erosus* L., Sp. Pl. 2: 726. 1753.

Robust vines. Root tubers 8–17 cm in diam. Leaflets rhombic to ovate, 6–16 × 3–16 cm, upper margin often somewhat lobed, lateral ones oblique. Racemes axillary, 15–28 cm; flowers 3–5 at nodes. Calyx campanulate. Corolla purplish; standard suborbicular, with yellow-green spot; wings falcate; keel subfalcate. Ovary yellowish hirsute; style curved. Legumes compressed, hirsute.

Flowers & Fruits: August to November.

Specimen Cited: Dhupjhora, Goutam & AP Das 0859, dated 14. 02. 2010.

Local Distribution: Rarely found in Dhupjhora forests.

General Distribution: Native to tropical America; widely cultivated in tropical regions.

SHUTERIA Wight *et* Arnott, Prodr. Fl. Ind. Orient. 207. Oct 1834, *nom. cons.*, not *Shutereia* Choisy (Aug 1834).

Shuteria hirsuta Baker in Hook. *f.*, Fl. Brit. India 2(4): 182. 1876; Grierson *et* Long, Fl. Bhut. 1(3): 695. 1987; *Shuteria ferruginea* (Kurz) Baker in Hook. *f.*, Fl. Brit. India 2: 182. 1876. *Pueraria ferruginea* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 232. 1874;

Herbs, up to 3 m. Stems twining, slender, many branched. Leaves pinnately 3 foliolate; stipules lanceolate, persistent; stipels small; leaflets ovate, 6–10 × 3.5–7 cm, membranous, base rounded, acuminate. Raceme axillary. Bracts lanceolate, hirsute, persistent; bracteoles linear, hairy, persistent. Calyx tubular, 5-lobed; upper 2 lobes nearly connate, triangular, lower 3 lanceolate, shorter than tube. Corolla purple; standard obovate; wings linear; keels slightly shorter than wings. Ovary hairy. Legume oblong, compressed, slightly curved.

Flowers & Fruits: July to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0894, dated 14. 02. 2010.

Local Distribution: Throughout the Dhupjhora and Murti forests.

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

CAJANUS Adanson, Fam. Pl. 2: 326, 529. 1763 [“Cajan”], *nom. cons.*

Cajanus scarabaeoides (L.) Thouars, Dict. Sci. Nat. 6: 617. 1817; Grierson *et* Long, Fl. Bhut. 1(3): 703. 1987; *Dolichos scarabaeoides* L., Sp. Pl. 2: 720. 1753;

Woody vines, trailing, up to 2 m. Stems slender. Leaves pinnately 3 foliolate; stipules small, ovate, hairy, deciduous; petiolules extremely short; leaflets papery, with glandular spots, basal veins 3; terminal leaflet elliptic to obovate-elliptic 1.4–4 × 1–2 cm; lateral leaflets smaller, obliquely elliptic to obovate. Raceme axillary, 1–5 flowered. Calyx campanulate, 5-lobed; lobes linear-lanceolate. Corolla yellow; standard obovate; wings narrowly elliptic, slightly curved; keels curved at apex. Ovules several. Legume oblong.

Flowers & Fruits: September to December.

Specimen Cited: Gorumara, Goutam & AP Das 0734, dated 30. 09. 2009.

Local Distribution: Gorumara.

General Distribution: Bangladesh, Bhutan, India, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam; Africa, Oceania.

FLEMINGIA Roxb. *ex* Aiton, Hort. Kew., ed. 2, 4: 349. 1812, *nom. cons.*, not Roxb. *ex* Rottler (1803).

Key to the Species:

- 1a. Inflorescence a thyrses *F. strobilifera*
- 1b. Racemes usually with many clustered flowers *F. macrophylla*

Flemingia strobilifera (L.) R. Br. *et* Aiton, Hort. Kew., ed. 2, 4: 349. 1812; Grierson *et* Long, Fl. Bhut. 1(3): 706. 1987; *Hedysarum strobiliferum* L., Sp. Pl. 2: 1053. 1753;

Erect shrubs, up to 3. Leaves simple; stipules linear-lanceolate, 1–2 cm, persistent; petiole densely hairy; leaf blade narrowly ovate to ovate-elliptic, 7–15 × 3–7 cm, thinly leathery, glabrous, base rounded or slightly cordate, entire, acuminate or acute. Inflorescence a thyrs; inflorescence axis 7–10 cm; each cymules enclosed by concave bract; papery to almost leathery, margin ciliate. Flowers small. Calyx pubescent; lobes ovate. Corolla longer than calyx; standard orbicular; wings narrower than keels. Legume elliptic, inflated.

Flowers & Fruits: February to November.

Specimen Cited: Gorumara, Goutam & AP Das 0736, dated 30. 09. 2009.

Local Distribution: Gorumara and Dhupjhora.

General Distribution: Bhutan, India, Indonesia, China, Cambodia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam.

Flemingia macrophylla (Willd.) Kuntze ex Merr. Philipp. J. Sci., C 5: 130. 1910; Grierson *et* Long, Fl. Bhut. 1(3): 707. 1987; *Flemingia macrophylla* (Willd.) Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 440. 1897. (*nom. inval.*) *Crotalaria macrophylla* Willd., Sp. Pl. 3: 982. 1802;

Erect shrubs, up to 2 m. Young branches densely villous. Leaves digitately 3 foliolate; stipules lanceolate, apex long acuminate, usually deciduous; petiole narrowly winged; leaflets papery; terminal leaflet broadly lanceolate to elliptic, 8–14 × 4–8 cm, glabrous, basal veins 3, base broadly cuneate, entire, acuminate; lateral leaflets smaller, oblique. Racemes usually with many clustered flowers; peduncle extremely short. Calyx campanulate; lobes linear-lanceolate, lower one longest. Corolla purple; standard oblong; wings narrowly elliptic; keel oblong. Ovary elliptic. Legume elliptic.

Flowers & Fruits: June to December.

Specimen Cited: Gorumara, Goutam & AP Das 0737, dated 30. 09. 2009.

Local Distribution: Rarely found in Gorumara Beat.

General Distribution: Bangladesh, Bhutan, India, China, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam.

ZORNIA Gmelin, Syst. Nat. 2: 1076, 1096. 1792.

Zornia gibbosa Span., Linnaea 15: 192. 1841; Grierson *et* Long, Fl. Bhut. 1(3): 712. 1987.

Perennial herbs, up to 50 cm. Stems slender, many branched. Stipules lanceolate, glabrous, a long auricle at base. Leaves 2 foliolate; leaflet blades ovate-oblong to lanceolate, 1–2.5 × 0.3–1 cm, base oblique, entire, acute. Inflorescences axillary spikes, sparsely 3–8 flowered; bracts 2, ovate, margin ciliate. Calyx 1–3 mm. Corolla yellow; standard with striations; wings and keels small. Legume usually longer than bracts.

Flowers & Fruits: April to September.

Specimen Cited: Dhupjhora, Goutam & AP Das 0896, dated 14. 02. 2010.

Local Distribution: Throughout the forests.

General Distribution: Bhutan, India, China, Japan, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand; Australia.

VICIA L., Sp. Pl. 2: 734. 1753.

Key to the species:

- 1a. Stipules lanceolate *V. hirsuta*
 1b. Stipules hastate *V. sativa*

Vicia hirsuta (L.) Gray, Nat. Arr. Brit. Pl. 2: 614. 1821; Grierson *et* Long, Fl. Bhut. 1(3): 725. 1987; *Ervum hirsutum* L., Sp. Pl. 2: 738. 1753;

Annual, climbing herbs, up to 1m. Stem slender. Leaves paripinnate; stipules lanceolate; leaflets 4–8 paired, linear to narrowly oblong, 4–13 × 1–3 mm, glabrous; tendrils branched. Raceme shorter than leaf, 2–6 flowered. Calyx campanulate. Corolla white or light purple; standard elliptic, as long as wings and longer than keel. Ovary sessile; ovules 2. Legume oblong-rhomboid.

Flowers & Fruits: February to August.

Specimen Cited: Dhupjhora, Goutam & AP Das 0902, dated 14. 02. 2010.

Local Distribution: Cultivation land of Dhupjhora forest village.

General Distribution: Afghanistan, Bhutan, India, China, Japan, Korea, Nepal, Pakistan, Russia, Turkmenistan; Africa, C and SW Asia, N Atlantic islands, Europe; introduced and naturalized elsewhere.

Vicia sativa L., Sp. Pl. 2: 736. 1753; Grierson *et* Long, Fl. Bhut. 1(3): 725. 1987;

Annual, decumbent or climbing, herbs, up to 1 m. Stem branched. Leaves paripinnate, 3–8 cm; stipules hastate, lanceolate; leaflets 2–7 paired, linear to oblong cuneate, 1–2.5 × 0.3–1 cm, hairy, acute; tendrils 2 to 3 branched. Flowers 1 or 2 in axillary fascicles. Calyx campanulate. Corolla blue-purple; standard long, subequaling or longer than wings; wings longer than keel. Ovary shortly stalked, linear. Legume black, linear-oblong, slightly curved.

Flowers & Fruits: January to September.

Specimen Cited: Murti, Goutam & AP Das 0839, dated 17. 12. 2009.

Local Distribution: Cultivation land of Murti and Dhupjhora forest village.

General Distribution: Afghanistan, Nepal, Bhutan, India, China, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; Africa, SW Asia, N Atlantic islands, Europe; widely introduced and naturalized elsewhere.

MELILOTUS (L.) Miller, Gard. Dict. Abr., ed. 4. 1754.

Key to the Species:

- 1a. Stipules subulate *M. albus*
 1b. Stipules lanceolate *M. indicus*

Melilotus albus Medikus, Vorles. Churpfälz. Phys.-Öcon. Ges. 2: 382. 1787.

Annual or biennial, erect herbs, up to 2 m. Stem terete, hollow, branched. Stipules subulate, entire; petiole shorter than leaflet; leaflets lanceolate to oblanceolate-oblong, 1.5–3 × 0.5–1 cm, margins shallowly serrate. Racemes 10–20 cm; many flowered. Corolla white; standard larger than wings and keel. Ovary narrowly ovate; ovules 2–4. Legume elliptic to oblong.

Flowers & Fruits: May to September.

Specimen Cited: Budhram, Goutam & AP Das 0752, dated 12. 11. 2009.

Local Distribution: Cultivation land of Budhram forest village.

General Distribution: Pantropical in Asia; Europe.

Melilotus indicus (L.) Allioni, Fl. Pedem. 1: 308. 1785; Grierson *et* Long, Fl. Bhut. 1(3): 728. 1987; *Trifolium indicum* L., Sp. Pl. 2: 765. 1753 [T. “M. indica”].

Annual herbs, up to 60 cm. Stems erect or ascending, terete. Stipules lanceolate, margin membranous; leaflets obovate-cuneate to narrowly oblong, 1.2–3 × 0.8–1 cm, lateral veins 7–9 pairs, base cuneate, serrulate toward apex, obtuse to truncate. Racemes slender, dense; flowers 15–25; bracts filiform. Corolla yellow; standard broadly ovate, equal to wings and keel. Ovary narrowly ovate; ovules 2. Legume olivegreen, globose.

Flowers & Fruits: March to June.

Specimen Cited: Bichhabhanga, Goutam & AP Das 0794, dated 23. 11. 2009.

Local Distribution: Cultivation land of Bichhabhanga and Budhram forest villages.

General Distribution: Bhutan, India, China, S and C Asia; Europe.

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

Key to the species

1a. Flowers in spikes *A. catechu*

1b. Flowers in heads, then rearranged in panicles *A. pennata*

Acacia catechu (L. f.) Willd., Sp. Pl. 4: 1079. 1806. Grierson *et* Long, Fl. Bhut. 1(2): 642. 1984; Prain, Beng. Pl. 1: 458.1903. *Mimosa catechu* L. f., Suppl. Pl. 439. 1782.

Local 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 × 1 – 1.5 mm. Spikes 1–4, axillary. Flowers white. Calyx campanulate. Petals lanceolate to oblanceolate. Stamens numerous. Ovary glabrous. Legume Br., dehiscent, apex rostrate. Seeds 3 –10.

Flowers & Fruits: April to September.

Specimen Cited: Murti, Goutam & AP Das 0320, dated 21.07.2009.

Local Distribution: Murti River bed.

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

Acacia pennata (L.) Willd., Sp. Pl. 4: 1090. 1806; Grierson *et* Long, Fl. Bhut. 1(2): 641. 1984; Prain, Beng. Pl. 1: 458.1903. *Mimosa pennata* L., Sp. Pl. 1: 522. 1753.

Large climbers, with copious, scattered prickles. Stipules lanceolate, cuspidate; petiolar glands subpulvinate; pinnae 10 – 20 pairs; leaflets 40 – 50 pairs, densely crowded, linear, 5 – 10 × 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 × 2 – 4 cm. Seeds black, 8 – 12, narrowly elliptic.

Flowers & Fruits: March to October.

Specimen Cited: Murti, Goutam & AP Das 0289, dated 10. 02. 2009.

Local Distribution: Throughout the Forests.

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

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

Key to the species

- 1a. Midvein of leaflets medial or eccentrically close to lower margin *A. procera*
- 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 *A. chinensis*
- 3a. Inflorescens 30 – 40 flowered corymbs..... *A. lebbeck*
- 3b. Inflorescens 10 – 15 flowered panicles *A. odoratissima*

Albizia chinensis (Osbeck) Merr. in Amer. J. Bot. 3: 575. 1916. Grierson *et* Long, Fl. Bhut. 1(2): 646. 1984; Prain, Beng. Pl. 1: 461.1903. *Mimosa chinensis* Osbeck, Dagb. Ostind. Resa, 233. 1757.

Local name: Kalosiris

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-Br.. Legume indehiscent. Seeds elliptic, flat.

Flowers & Fruits: March to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0394, dated 22.07.2009.

Local Distribution: Throughout the Forests.

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

Albizia lebbeck (L.) Benth. in London J. Bot. 3: 87. 1844 [“lebbek”]. Grierson *et* Long, Fl. Bhut. 1(2): 646. 1984; Prain, Beng. Pl. 1: 461.1903. *Mimosa lebbeck* L., Sp. Pl. 1: 516. 1753.

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, 2 – 5 × 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 Br..

Flowers & Fruits: May to September.

Specimen Cited: Dhupjhora, Goutam & AP Das 0649, dated 12. 02. 2008.

Local Distribution: Throughout the Forests.

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

Albizia odoratissima (L.f.) Benth. in London J. Bot. 3: 88. 1844. Grierson *et* Long, Fl. Bhut. 1(2): 644. 1984; Prain, Beng. Pl. 1: 461.1903. *Mimosa odoratissima* L. f., Suppl. Pl. 437. 1782.

Local name: Sada Siris

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: Dhupjhora, Goutam & AP Das 0545, dated 23.07.2009.

Local Distribution: Throughout the Forests.

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

Albizia procera (Roxb.) Benth. in London J. Bot. 3: 89. 1844. Grierson *et* Long, Fl. Bhut. 1(2): 645. 1984; Prain, Beng. Pl. 1: 461.1903. *Mimosa procera* Roxb., Pl. Corom. 2: 12. 1799.

Local name: Kalosiris

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 × 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: Lataguri, Goutam & AP Das 0693, dated 14. 02. 2008.

Local Distribution: Throughout Forest.

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

TEPHROSIA Pers., Syn. Pl. 2: 328. 1807, nom. cons.

Tephrosia candida DC., Prodr. 2: 249. 1825; Grierson *et* Long, Fl. Bhut. 1(2): 659. 1984; Prain, Beng. Pl. 1: 405.1903. 1(3): 659. 1987.

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

Flowers & Fruits: October to December

Specimen Cited: Dhupjhora, Goutam & AP Das 0208, dated 09. 02. 2009.

Local Distribution: Throughout riverine forest margins and often cultivated in forest villages.

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

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

Tamarindus indica L., Sp. Pl. 1: 34. 1753; Hook. *f.*, Hook. *f.*, Fl. Brit. India 2: 273. 1878; Grierson *et* Long, Fl. Bhut. 1(3): 636. 1987.

Local 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.

Specimen Cited: Murti, Goutam & AP Das 0244, dated 09. 02. 2009.

Local Distribution: Cultivated in forest villages.

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

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

Key to the Species:

- 1a. Liana *B. vahlii*
- 1b. Small tree 2
- 2a. Lamina lobes apex acuminate *B. acuminata*
- 2b. Lamina lobes apex round or acute 3
- 3a. Petals with white or purplish spots, Fertile stamens 5 *B. variegata*
- 3b. Petals pink. Fertile stamens 3 *B. purpurea*

Bauhinia acuminata L., Sp. Pl. 1: 376. 1753; Hook. *f.*, Fl. Brit. India 2(4): 277. 1878.

Local name: Swet Kanchan

Large shrubs up to 3 m. Young branches zigzag. Lamina ovate-cordate to cordate, 8 – 12 × 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: Dhupjhora, Goutam & AP Das 0677, dated 14. 02. 2008.

Local Distribution: Planted in Dhupjhora Beat Office.

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

Bauhinia purpurea L., Sp. Pl. 1: 375. 1753. Hook. *f.*, Fl. Brit. India 2(4): 278. 1878; Grierson *et* Long, Fl. Bhut. 1(3): 633. 1987; Prain, Beng. Pl. 1: 442. 1903.

Local name: Rakta Kanchan

Small trees, up to 10 m. Petiole 3 – 4 cm; lamina suborbicular, 10 – 16 × 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: Murti, Goutam & AP Das 0325, dated 21.07.2009.

Local Distribution: Throughout the Forests.

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

Bauhinia variegata L., Sp. Pl. 1: 375. 1753. Hook. f., Fl. Brit. India 2(4): 279. 1878; Grierson *et* Long, Fl. Bhut. 1(3): 634. 1987; Prain, Beng. Pl. 1: 442. 1903.

Local name: Kanchan

Small, deciduous, trees, up to 15 m. Lamina suborbicular to broadly ovate, 6 – 10 × 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: Murti, Goutam & AP Das 0311, dated 10. 02. 2009.

Local Distribution: Throughout the Forests.

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

Bauhinia vahlii Wight *et* Arnt., Prodr. 297. 1834; Baker in Hook. f. Fl. Brit. India 2:279. 1878; Hara in Fl. E.Him. 1:141. 1966; 3:57. 1957. 1975; Hara *et* Ohashi, Enum. Fl. Pl. Nepal 2: 108. 1979; Grierson & Long, Fl. Bhutan 1(3):634. 1987.

Local Name: Bharla

Liana, brown pubescent young shoot; tendrils circinate, in opposite pairs. Petioles to 2.5 cm long; lamina 10 - 17 x 16 - 24 cm, suborbicular, entire, lobed at apex, lobes rounded or obtuse, base cordate, pubescent, basally 10-13 nerved. Flowers in corymbose terminal, many-flowered. Bracteoles acuminate. Peduncles long to 13 cm, terate. Calyx 2 lobed, slender, pubescent. Corolla obovate, whitish, with distinct midvein, pubescent outside; fertile stamens 2 or 3; anthers red; ovary shortly stalked; style coiled. Pods to 28 cm long, oblong, brownish; seeds upto 12, oblong, brown.

Flowers & Fruits: July to November.

Specimen Cited: Murti, Goutam & AP Das 1371, dated 21. 02. 2011.

Local Distribution: Murti, Dhupjhora, Gorumara.

General Distribution: India; Bhutan.

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

Caesalpinia cucullata Roxb., Fl. Ind., ed. 1832, 2: 358. 1832. Hook. f., Fl. Brit. India 2(4): 274. 1878; Grierson *et* Long, Fl. Bhut. 1(3): 623. 1987; Prain, Beng. Pl. 1: 447. 1903.

Local name: Bhainse Kanta

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 × 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, exerted.

Ovary compressed; style slender; stigma truncate. Legume reddish Br., elliptic-oblong, indehiscent, winged along ventral suture.

Flowers & Fruits: Round the year.

Specimen Cited: Gorumara, Goutam & AP Das 0286, dated 10. 02. 2009.

Local Distribution: Throughout the Forests.

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

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

Key to the species:

1a. Leaflets 5 – 10 pairs; ovary linear *C. javanica* subsp. *nodosa*

1b. Leaflets 3 – 4 pairs; ovary oval *C. fistula*

Cassia javanica subsp. ***nodosa*** (Buch.-Ham. ex Roxb.) K. Larsen & S. S. Larsen, Nat. Hist. Bull. Siam Soc. 25(3–4): 205. 1975; Grierson *et* Long, Fl. Bhut. 1(2): 629. 1984. *Cassia nodosa* Buch.-Ham. ex Roxb., Fl. Ind. 2: 336. 1824; Prain, Beng. Pl. 1: 437.1903.

Local name: Radha chunda

Small, deciduous, trees. Leaves 20 – 25 cm; leaflets 5 – 10 pairs, 2 – 5 × 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: Murti, Goutam & AP Das 0122, dated 07. 02. 2009.

Local Distribution: Murti, Dhupjhora.

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

Note: Planted in village side.

Cassia fistula L., Sp. Pl. 1: 377. 1753. Grierson *et* Long, Fl. Bhut. 1(3): 628. 1987; Prain, Beng. Pl. 1: 437.1903.

Local name: Swarna jhuri

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 × 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: Dhupjhora, Goutam & AP Das 0142, dated 07. 02. 2009.

Local Distribution: Dhupjhora, Murti.

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

Note: Planted near forest villages.

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

Key to the species:

- 1a. Tree *S. siamea*
- 1b. Shrubs or under shrubs 2
- 2a. Several axillary racemes forming a terminal panicle *S. alata*
- 2b. Axillary racemes do not form panicle 3
- 3a. Racemes 2 – 3 flowered *S. tora*
- 3b. Racemes more than 3 flowers 4
- 4a. Legume flattened *S. occidentalis*
- 4b. Legume terete *S. sophera*

Senna alata (L.) Roxb., Fl. Ind., ed. 1832, 2: 349. 1832. *Cassia alata* L., Sp. Pl. 1: 378. 1753. Hook.f., Fl. Brit. India 2(4): 278. 1878; Grierson *et* Long, Fl. Bhut. 1(3): 629. 1987; Prain, Beng. Pl. 1: 434.1903.

Local name: Dadmari

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 × 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: Murti, Goutam & AP Das 0213, dated 09. 02. 2009.

Local Distribution: Throughout Forest margin of Murti.

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

Senna occidentalis (L.) Link, Handb. 2: 140. 1831. *Cassia occidentalis* L., Sp. Pl. 1: 377. 1753. Hook.f., Fl. Brit. India 2(4): 279. 1878; Grierson *et* Long, Fl. Bhut. 1(3): 631. 1987; Prain, Beng. Pl. 1: 437.1903.

Local name: Kalokasunda

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 × 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 Br., falcate, flattened. Seeds 30 – 40, flat, orbicular.

Flowers & Fruits: Round the year.

Specimen Cited: Dhupjhora, Goutam & AP Das 0162, dated 08. 02. 2009.

Local Distribution: Forest throughout.

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

Senna siamea (Lam.) Irwin *et* Barneby in Mem. New York Bot. Gard. 35: 98. 1982. *Cassia siamea* Lam., Encycl. 1: 648. 1785; Prain, Beng. Pl. 1: 438.1903.

Small trees, up to 15 m. Leaves 20 – 30 cm; leaflets 6 – 12 pairs, oblong to ovate-oblong, 3 – 7 × 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 Br. when mature. Seeds 10 – 30, light Br., ovoid.

Flowers & Fruits: May to October.

Specimen Cited: Dhupjhora, Goutam & AP Das 0127, dated 07. 02. 2009.

Local Distribution: Throughout Forest..

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

Senna sophera (L.) Roxb. Fl. Ind., ed. 2: 347. 1832. *Cassia sophera* L., Sp. Pl. 379. 1753; Hooker *f.*, Fl. Brit. Ind. 2: 262. 1878; Prain, Beng. Pl.1: 438. 1903. *Cassia purpurea* Roxb., Hort. Beng. 31. 1814, *nom.nud.* *Senna exculenta* Roxb., Fl. Ind. Ed. Carey 2: 346. 1832.

Local name: Chakanda

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 × 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: Murti, Goutam & AP Das 0193, dated 09. 02. 2009.

Local Distribution: Throughout Forest.

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

Senna tora (L.) Roxb., Fl. Ind., ed. 2: 340. 1832. *Cassia tora* L., Sp. Pl. 376. 1753; Hooker *f.*, Fl. Brit. Ind., 2: 265. 1878; Prain, Beng. Pl. 1: 438. 1903. *Cassia obtusifolia* L., Sp. Pl. 377. 1753.

Local name: Jhun jhuni

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, 2 – 5 × 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: Murti, Goutam & AP Das 0178, dated 09. 02. 2009.

Local Distribution: Throughout Forest.

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

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

Crotalaria alata Buch.-Ham. *ex* Don, Prodr. Fl. Nepal. 241. 1825; 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 × 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: Gorumara, Goutam & AP Das 0709, dated 14. 02. 2008.

Local Distribution: Gorumara, Murti, Dhupjhora, Bichhabhanga, Budhram, Khunia.

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

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

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

Local 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: Murti, Goutam & AP Das 0151, dated 08. 02. 2009.

Local Distribution: Murti, Dhupjhora, Gorumara.

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

DELONIX Raf. in Fl. Tellur. 2: 92. 1837.

Delonix regia (Bojer) Raf., 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.

Local 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 × 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 Br.. Seeds 20 – 40.

Flowers & Fruits: June to October.

Specimen Cited: Dhupjhora, Goutam & AP Das 0139, dated 07. 02. 2009.

Local Distribution: Planted in Dhupjhora and Murti Beat Offices.

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

DESMODIUM Desv. in Jour. Bot. Agric. 1: 122. 1813, *nom. cons.*

Key to the species:

- 1a. Leaves 3 foliolate 2
 1b. Leaves 1 foliolate *D. gangeticum*
 2a. Terminal leaflet blade obcordate to obovate *D. triflorum*
 2b. Terminal leaflet blade ovate to ovate-elliptic *D. laxiflorum*

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 × 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: Dhupjhora, Goutam & AP Das 0261, dated 10. 02. 2009.

Local Distribution: Throughout forests.

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

Desmodium gangeticum (L.) 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* L., Sp. Pl. 2: 746. 1753.

Erect, much branched, shrubs, up to 1 m. Leaves 1 foliolate; lamina narrowly elliptic-ovate, 5 – 12 × 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: Dhupjhora, Goutam & AP Das 0218, dated 09. 02. 2009.

Local Distribution: Throughout forests.

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 (L.) 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* L., Sp. Pl. 2: 749. 1753

Perennial, prostrate, herbs, up to 50 cm. Leaves 3 foliolate; terminal leaflet blade obcordate to obovate, 3 – 10 × 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: Murti, Goutam & AP Das 0154, dated 08. 02. 2009.

Local Distribution: Throughout forests.

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

LEUCAENA Benth. in Jour. Bot. (Hook.) 4: 416. 1842, *nom. cons.*

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

Small trees, up to 8 m. Stipules caducous, deltoid; leaflets 5 – 12 pairs, linear-oblong, 8 – 12 × 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: Lataguri, Goutam & AP Das 0448, dated 22.07.2009.

Local Distribution: Throughout the Forests.

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

URARIA Desv. in J. Bot. Agric. 1: 122. 1813.

Uraria picta (Jacq.) Desv. ex Candolle, Prodr. 2: 324. 1825; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 678. 1987. *Hedysarum pictum* Jacq., 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 × 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: Budhram, Goutam & AP Das 0608, dated 26.07.2009

Local Distribution: Throughout Forests.

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

MIMOSA L., 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* Wright ex Sauvalle, Anales Acad. Ci. Med. Habana 5: 405. 1868.

Local 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 × 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-Br.

Flowers & Fruits: March to October.

Specimen Cited: Khunia, Goutam & AP Das 0271, dated 10. 02. 2009.

Local Distribution: All over forests and Grasslands.

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

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

Local 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 Br., ovoid.

Flowers & Fruits: March to November.

Specimen Cited: Khunia, Goutam & AP Das 0110, dated 07. 02. 2009.

Local Distribution: Throughout forests.

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

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

Local 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 × 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: Gorumara, Goutam & AP Das 0407, dated 22.07.2009.

Local Distribution: Gorumara, Murti, Bichhabhanga.

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 Roxb., 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.

Local 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, $9 - 20 \times 8 - 25$ 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: Murti, Goutam & AP Das 0491, dated 23.07.2009.

Local Distribution: Murti and Dhupjhora forest villages.

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

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

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

Local name: Bandar chulkani.

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, $8 - 16 \times 7 - 10$ 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: Gorumara, Goutam & AP Das 0714, dated 14. 02. 2008.

Local Distribution: Throughout forests.

General Distribution: Widely distributed in the tropics.

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

Pueraria phaseoloides (Roxb.) 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* Roxb., Fl. Ind., ed. 1832, 3: 316. 1832.

Herbaceous vines. Stipules basifixed, ovate-lanceolate; stipels linear; leaflets broadly ovate to ovate-rhomboid, terminal one broader, $6 - 10 \times 5 - 9$ 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: Bichhabhanga, Goutam & AP Das 0583, dated 25.07.2009

Local Distribution: Bichhabhanga, Dhupjhora.

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

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

Aeschynomene indica L., Sp. Pl. 713. 1753; Baker in Hook. *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.

Under shrub, 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: Gorati, Goutam & AP Das 0121, dated 07. 02. 2009.

Local Distribution: Gorati Beel.

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

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

Samanea saman (Jacq.) Merrill, J. Wash. Acad. Sci. 6: 47. 1916; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(3): 647. 1987. *Mimosa saman* Jacq., 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: Dhupjhora, Goutam & AP Das 0215, dated 09. 02. 2009.

Local Distribution: Throughout Forests.

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

Polygalaceae Juss., Ann. Mus. Hist. Nat. Paris 14: 389. 1809 ('Polygaleae').

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

Polygala glomerata Lour., Fl. Cochinch. 426. 1790; Kit Tan in Grierson *et* Long, Fl. Bhut. 2 (1): 50. 1991. *Polygala chinensis* L., Sp. Pl. 2: 704. 1753; Clarke in Hook. *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: Dhupjhora, Goutam & AP Das 0323, dated 21.07.2009.

Local Distribution: Near Dhupjhora Watch Tower and Khunia grassland.

General Distribution: Pantropical.

Order 36: Rosales Bercht. & J. Presl (1820)

Cannabaceae Mill., Gard. Dict. Abr., ed. 4. 1754.

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

Cannabis sativa L., Sp. Pl. ed. 1. 1027. 1753; Hook. *f.*, Fl. Brit. Ind. 5: 487. 1888; Ohashi in Hara, Fl. E. Himal. 1: 53. 1966; Grierson *et* Long, Fl. Bhut. 1(1): 134. 1983; Prain, Beng. Pl. 2: 960. 1903. *Cannabis erratica* Sievers, Neueste Nord. Beytr. Phys. Geogr. Erd- Völkerbeschreib. 7: 174. 1793.

Local name: Bhang

Annual herbs, up to 1.5 m. Branchlets densely white pubescent. Stipules linear. Leaves alternate; petiole 2 cm; leaf blade abaxially whitish green, strigose; segments usually lanceolate to linear, 3 - 6 × 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, with sparse prostrate hairs; 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: Khunia, Goutam & AP Das 0123, dated 02. 07. 2006.

Local Distribution: Throughout the Forests.

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

Moraceae Gaudich., 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 Forst. *et* Forst., Char. Gen. Pl. 51. 1775, *nom. cons.*

Key to the species:

- 1a. Branchlets furrowed when dry ***A. chama***
- 1b. Branchlets terete when dry 2
- 2a. Lamina obovate; fruits subglobose, 1.5 – 3 cm in diameter, irregularly lobed, smooth ***A. lacucha***
- 2b. Lamina ovate to elliptic; fruits large, globose to oblong, 15 – 30 cm diameter, unlobed ***A. heterophyllus***

Artocarpus chama Buch.-Ham., Mem. Wern. Nat. Hist. Soc. 5: 331. 1826; Grierson *et* Long, Fl. Bhut. 1(1): 100. 1983.

Local Name: Lator

Trees up to 40m. Branchlets furrowed when dry, pubescence rust-colored. Stipules amplexicaul. Leaves spirally arranged; petiole brown, densely pubescent; lamina elliptic – oblong to ovate, 13 – 35 x 7 – 19 cm, abaxially densely rust-colored to grayish white pubescent but more densely so along veins, margin entire, acute to shortly acuminate. Inflorescences axillary, solitary. Male inflorescences ellipsoid to ovoid; bracts shield-shaped. Female inflorescences globose to ellipsoid; bracts peltate. Style exerted. In male flowers, filaments short; anthers ellipsoid. Fruiting syncarp yellow when young then rust-colored brown, globose. Drupes ellipsoid.

Flowers & Fruits: June to November.

Specimen Cited: Gorumara, Goutam & AP Das 1276, dated 21.07.2011.

Local Distribution: Gorumara, Dhupjhora, Budhuram.

General Distribution: Bangladesh, Bhutan, India, Laos, Malaysia, Myanmar, Thailand.

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

Local 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, 15 – 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: Dhupjhora, Goutam & AP Das 0904, dated 02. 07. 2010.

Local Distribution: Dhupjhora, Common.

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

Note: Fruits are edible.

Artocarpus lakoocha Roxb., Fl. Ind. 3: 524. 1832; Prain, Beng. Pl. 2: 971. 1903. *Artocarpus lacucha* Buch.–Ham., Mem. Wern. Soc. 5: 333, 1826; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 209. 1979; Grierson *et* Long, Fl. Bhut. 1(1): 100. 1983.

Local 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: Throughout the year.

Specimen Cited: Dhupjhora, Goutam & AP Das 1338, dated 27. 09. 2010.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

Note: Fruits are edible.

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

Key to the species:

- 1a. Male and female flowers on same plants 2
- 1b. Male and fertile female flowers on different plants 5
- 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 green; lamina base cuneate to obtuse *F. racemosa*
- 6b. Stipules yellow and white; lamina base very asymmetric *F. semicordata*

***Ficus racemosa* L.**, Sp. Pl. 2: 1060. 1753; Grierson *et* Long, Fl. Bhut. 1(1): 93. 1983.

Trees, up to 30 m; monoecious. Bark grayish brown, smooth. Stipules ovate-lanceolate. Leaves alternate; lamina elliptic-obovate to narrowly elliptic, 10 – 15 x 2.5 – 6 cm, base cuneate to obtuse, margin entire, acuminate to obtuse. Figs in a tumorlike aggregate on short branchlets of old stem, often axillary on leafy shoot, paired, reddish orange when mature, pearshaped, apical pore navel-like, flat; involucre bracts triangular-ovate. Male, gall, and female flowers within same fig. Male flowers sessile; calyx lobes 3 to 4; stamens 2. Gall and female flowers: pedicellate; calyx lobes linear, apex 3 to 4 toothed; style lateral; stigma clavate.

Flowers & Fruits: May to June.

Specimen Cited: Gorumara, Goutam & AP Das 0962, dated 08. 02. 2009.

Local Distribution: Gorumara, Budhram.

General Distribution: India, Indonesia, Myanmar, Nepal, New Guinea, Pakistan, Sri Lanka, Thailand, Vietnam; Australia.

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

Local name: Bot

Wide branching tree, up to 30m, branches forming additional propoots. 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 – 5cm; stipules ovate – lanceolate, 2 cm. Figs globose, 2 cm, solitary or in axillary pairs, sessile, pubescent, basal bracts 3, rounded.

Flowers & Fruits: Throughout the year.

Specimen Cited: Dhuphora, Goutam & AP Das 1328, dated 27. 09. 2010.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

Ficus semicordata Buch.–Ham. ex Sm. in Rees, Cycl. 14: *Ficus* no. 71. 1810; H. Ohashi in Hara, Fl. E. Himal. 1: 54. 1966; Grierson *et* Long, Fl. Bhut. 1(1): 90. 1983. *Covellia cunia* (Buch.–Ham. ex Roxb.) Miq. in London Jour. Bot. 7: 459. 1848. *Ficus cunia* Buch.-Ham. ex Roxb.. Fl. Ind. 3: 561. 1832; Prain, Beng. Pl. 2: 982.1903. *Ficus semicordata* var. *conglomerata* (Roxb.) Corner, Gard. Bull. Singapore 17: 449. 1960.

Trees, up to 9 m tall, 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 × 9 – 11 cm, papery, abaxially densely covered with stiff short hairs and small yellowish Br. 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; calyx lobes 3, red, oblanceolate, longer than stamens. Female flowers: calyx lobes 4 to 5; ovary ovoid-ellipsoid; style lateral, long; stigma cylindrical, shallowly 2-lobed. Achenes broadly ovoid.

Flowers & Fruits: Throughout the year.

Specimen Cited: Gorumara, Goutam & AP Das 1492, dated 29. 09. 2010.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

Ficus elastica Roxb. ex Horn., Hort. Bot. Hafn. Suppl.: 7. 1819; Grierson *et* Long, Fl. Bhut. 1(1): 94. 1983. *Visiania elastica* (Roxb. ex Horn.) Gasp., Nov. Gen. Fic. 9. 1844. *Ficus elastica* var. *benghalensis* Bl., Bijdr. 446. 1825.

Local name: Raber/ Labor.

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: Throughout the year.

Specimen Cited: Gorumara, Goutam & AP Das 1488, dated 29. 09. 2010.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

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

Creeping shrub, procumbent; young stem pubescent. Branchlets becoming reddish Br., 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: Gorumara, Goutam & AP Das 1521, dated 30. 09. 2010.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

Ficus hispida L. f., Suppl. 442. 1782; Hook. f., Fl. Brit. Ind. 5: 522. 1888; Prain, Beng. Pl. 2: 981. 1903; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 210. 1982; H. Ohashi in Hara, Fl. E. Himal. 1: 54. 1966; Grierson *et Long*, Fl. Bhut. 1(1): 89. 1983. *Covellia hispida* (L. f.) Miq., London Jour. Bot. 7: 462. 1848. *Covellia assamica* Miq., London Jour. Bot. 7: 464. 1848.

Local name: Dumur

Tree up to 10m; coarsely hairy; dioecious. Stipules usually 4 and decussate on leafless fruiting branchlets, ovatelanceolate. Leaves opposite, coriaceous, elliptic, 9–32x 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: Gorumara, Goutam & AP Das 1633, dated 30. 09. 2010.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

Note: Fig edible.

Ficus religiosa L., Sp. Pl. 1059. 1753; Hook. f., Fl. Brit. Ind. 5: 513. 1888; Prain, Beng. Pl. 2: 980. 1903; Ohashi in Hara, Fl. E. Himal. 1: 54. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 211. 1982; Grierson *et Long*, Fl. Bhut. 1(1): 94. 1983. *Urostigma religiosum* (L.) Gasp., Ficus 82, pl. 7 82. 1844. *Ficus peepul* Griff., Not. Pl. Asiat. 4: 393. 1854. *Ficus religiosa* var. *cordata* Miq. in Ann. Mus. Bot. Lugduno-Batavi 3: 287. 1867.

Local name: Pakur

Trees, up to 18 m tall, epiphytic when young, crown wide when mature. Branchlets grayish Br., sparsely pubescent when young. Stipules ovate, small, apex acute. Petiole slender, sometimes longer than leaf blade, articulate; leaf blade triangular-ovate, 8–16 × 8–10 cm, leathery, abaxially green, adaxially dark green and shiny, base broadly cuneate to cordate, margin entire, apex caudate with cauda. 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: Bichhabhanga, Goutam & AP Das 1721, dated 18. 12. 2010.

Local Distribution: Throughout the forests.

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

Ficus hederacea Roxb., Fl. Ind., ed. 1832, 3: 538. 1832; Prain, Beng. Pl. 2: 982. 1903; Ohashi in Hara, Fl. E. Himal. 1: 53. 1966; Grierson *et Long*, Fl. Bhut. 1(1): 98. 1983. *Ficus cantoniensis* Bodinier ex Lév, Mem. Real Acad. Ci. Barcelona 6: 148. 1907. *Ficus anabatos* Voigt, Hort. Suburb. Calcutt. 286. 1845. *Ficus longipes* Griff. in 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

× 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: Murti, Goutam & AP Das 1714, dated 16. 12. 2010.

Local Distribution: Gorumara, Bichhabhanga, very common.

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

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

Morus indica L., Sp. Pl. 986. 1753. *Morus longistylus* Diels, Notes Roy. Bot. Gard. Edinburgh 5(25): 293. 1912. *Morus australis* Poirat in Lam., Ency. 4: 380. 1796; Ohashi in Hara, Fl. E. Himal. 1: 55. 1966; Grierson *et* Long in Grierson *et* Long, Fl. Bhut. 1(1): 101. 1983. *Morus indica auct.non* L., Hook. f. in Hook. f., Fl. Brit. India 5: 492. 1888; Prain, Beng. Pl. 2: 968.1903.

Local name: Tut

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: Murti, Goutam & AP Das 0426, dated 17. 12. 2006.

Local Distribution: Throughout the study area, abundant.

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

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

Streblus asper Lour., Fl. Cochinch. 1: 615. 1790; Hook. f., Fl. Brit. Ind. 5: 489. 1888; Prain, Beng. Pl. 2: 969.1903; H. Ohashi in Hara, Fl. E. Himal. 1: 55. 1966; 1967; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 212. 1982; Grierson *et* Long, Fl. Bhut. 1(1): 102. 1983.

Local name: Seora

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: Murti, Goutam & AP Das 1709, dated 16. 12. 2010.

Local Distribution: Allover the forests.

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

Rhamnaceae Juss., Gen. Pl. 376. 1789 ('Rhamni'); *nom. cons.*

Key to the genera

- 1a. Fruit with longitudinal wings *Gouania*
 1b. Fruit without longitudinal wings 2
 2a. Leaves distinctly triplinerved, stipules often spinose *Ziziphus*
 2b. Leaves pinnately veined, stipules never spinose *Berchemia*

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

Key to the species

- 1a. Scandent or erect shrubs *Z. oenopolia*
 1b. Trees *Z. mauritiana*

Ziziphus rugosa Lam., Encycl. 3: 319. 1789; Long et Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 140. 1991; Prain, Beng. Pl. 1: 334. 1903.

Local name: Bonkul.

Small trees up to 10m, evergreen, spinose. Stipular spines 1 – 2, recurved; petiole short; lamina broadly ovate to broadly elliptic, 8–10 × 4.5–9cm, base subcordate to rounded, serrulate, rounded. Inflorescences to 20 cm. Flowers green, densely pubescent, few to 10 in terminal or axillary large cymose panicles. Sepals triangular, acute. Petals absent. Disk orbicular, rather thick, 5 lobed. Ovary globose. Drupe orange, turning black at maturity, obovoid-globose or subglobose.

Flowers & Fruits: March to June.

Specimen Cited: Murti, Goutam & AP Das 0687, dated 14. 02. 2008.

Local Distribution: Murti, Gorumara.

General Distribution: India, Laos, Myanmar, Sri Lanka, Thailand, Vietnam.

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

Local 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 subequaling 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: Gorumara, Goutam & AP Das 0705, dated 14. 02. 2008.

Local Distribution: Throughout Forests.

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

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

Local name: Bonkul.

Erect or scandent shrubs, spinose. Stipular spines 1, sometimes 2, one recurved and one erect; lamina ovate-oblong to ovate-lanceolate, $3 - 9 \times 2 - 4$ cm, papery, 3 veined at base, acute to acuminate, inconspicuously crenate, base \pm 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: Murti, Goutam & AP Das 0687, dated 14. 02. 2008.

Local Distribution: Riverine Forests.

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

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

Berchemia floribunda (Wall.) Brongn. in Ann. Sci. Nat. (Paris) 10: 357. 1827. *Berchemia floribunda* var. *oblongifolia* Chen et Chou in Bull. Bot. Lab. N. E. Forest. Inst., Harbin 5: 19. 1979. *Berchemia laxa* Wall., Numer. List 4257. 1831.

Scandent Shrubs. Stipules narrowly lanceolate, persistent; lamina abaxially dark Br. when dry, adaxially green, ovate or ovate-elliptic to elliptic, $4 - 10 \times 2 - 5$ 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 cylindric, undivided; stigma 2 to 3 lobed. Drupe red, cylindric-elliptic to ovoid-oblong; stone 2-loculed.

Flowers & Fruits: May to October.

Specimen Cited: Bichhabhanga, Goutam & AP Das 0476, dated 23.07.2009.

Local Distribution: All over the forests.

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

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

Gouania tiliifolia Lam., Encycl. 3: 4. 1789. *Gouania scandens* (Gaert.) R.B. Drum, in Fl. Zambes. 2: 435. 1966. *Gouania sieberiana* Schldtle ex C. Presl, Abh. Königl. Böhm. 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, $5 - 12 \times 2.5 - 5$ 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: Bichhabhanga, Goutam & AP Das 0420, dated 22.07.2009.

Local Distribution: Throughout Forests.

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

Rosaceae Juss., Gen. Pl. 334. 1789; *nom. cons.*

DUCHESNEA Sm. in Trans. Linn. Soc. London 10: 372. 1811.

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

Local name: Tara Ful

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: Murti, Goutam & AP Das 0137, dated 07. 02. 2009.

Local Distribution: Throughout forest ground cover.

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

Ulmaceae Mirb., Elém. Physiol. Vég. Bot. 2: 905. 1815; *nom. cons.*

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

Trema orientalis (L.) Bl., Mus. Bot. Lugd. Bot. 2: 62. 1856; Hook. f., Fl. Brit. Ind. 5: 484. 1888; Hara in Hara, Fl. E. Himal. 1: 52. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 207. 1982; Grierson *et* Long, Fl. Bhut. 1(1): 86. 1983; Prain, Beng. Pl. 2: 960.1903. *Celtis orientalis* L., Sp. Pl. 2: 1044. 1753. *Trema africana* Bl., Mus. Bot. 58. 1856.

Local name: Khorigachh.

Small trees or shrubs, up to 20 m. Bark gray, smooth. Branchlets grayish Br., pubescent. Stipules linear-lanceolate. Petiole pubescent; lamina 11 – 17 × 5 – 10 cm, leathery and fragile, abaxially grayish white to grayish green when dry, pubescent, and surface hairy, adaxially green to grayish green when dry, scabrous, and usually rugate, base cordate and oblique, margin denticulate, apex acuminate to acute; basally 3 veined. Male inflorescences pubescent. Tepals 5. Ovary rudimentary, compressed. Female flowers pedicellate; tepals 4 or 5, triangular-ovate. Drupes black when mature, globose to ovoid-globose, compressed, rugose; perianth persistent. Seed broadly ovoid, compressed.

Flowers & Fruits: March to October.

Specimen Cited: Murti, Goutam & AP Das Das 0413, dated 17. 12. 2006.

Local Distribution: Throughout the forests.

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

Urticaceae Juss., 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 6
 5a. Lamina 3-veined from base *Gonostegia*
 5b. Lamina with at least 2 major lateral veins arising clearly above base *Pouzolzia*
 6a. Lamina usually asymmetric *Elatostema*
 6b. Lamina symmetric *Boehmeria*

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

Shrubs, up to 70 cm. Leaves alternate; stipules lanceolate; petiole pubescent to glabrous; lamina ovate to sub-elliptic, 7 – 20 × 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: Dhupjhora, Goutam & AP Das 0622, dated 22. 03. 2009.

Local Distribution: Throughout the forests.

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

Boehmeria hamiltoniana Wedd., Ann. Sci. nat. ser. 4, 1: 199. 1854; Hook. *f.*, Fl. Brit. Ind. 5: 579. 1885; Tuyama in Hara, Fl. East. Himal. 1: 56. 1966; Grierson *et* Long, Fl. Bhut. 1(1): 127. 1983. *Boehmeria platyphylla* var. *hamiltoniana* (Wedd.) Wedd., 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 × 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: Gorumara, Goutam & AP Das 0754, dated 13. 09. 2009.

Local Distribution: Throughout the forests.

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

DENDROCNIDE Miq., Pl. Jungh. 1: 29. 1851.

Dendrocnide sinuata (Bl.) Chew, Gard. Bull. Sing. 121; 206. 1965; Hara, Fl. East. Himal. 3: 19. 1975; Grierson *et* Long, Fl. Bhut. 1(1): 111. 1983. *Urtica sinuata* Bl., Bijdr. Fl. Ned. Ind. 505. 1825. *Urtica crenulata* Roxb., Fl. Ind., ed. 1832 3: 591. 1832. *Laportea sinuata* (Bl.) Miq., Ann. Mus. Bot. Lugduno-Batavum 4: 301. 1869. *Laportea crenulata* Gaudich., Voy. Bonite, Bot. 498. 1826.

Local 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 × 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: Dhupjhora, Goutam & AP Das 0655, dated 23. 03. 2009.

Local Distribution: Throughout the forests

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

LAPORTEA Gaudich.-Beaupré, Voy. Uranie, Bot. 498. 1830, *nom. cons.*

Laportea interrupta (L.) Chew, Gard. Bull. Singapore 21(2): 200 – 201. 1965; Tuyama in Hara, Fl. E. Himal. 1: 60. 1966. *Urtica interrupta* L., Sp. Pl. 2: 985. 1753. *Fleurya interrupta* (L.) Wight, Icon. Pl. Ind. Or. 6: 10, t. 1975, 10. 1853; Prain, Beng. Pl. 2: 961. 1903. *Schychowskia interrupta* (L.) Wight, Contr. 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: September to November.

Specimen Cited: Dhupjhora, Goutam & AP Das 1655, dated 23. 09. 2010.

Local Distribution: Throughout the forests.

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

GONOSTEGIA Turcz., Bull. Soc. Imp. Naturalistes Moscou 19(2): 509. 1846.

Gonostegia hirta (Blume ex Hassk.) Miq., Ann. Mus. Bot. Lugduno – Batavi 4: 303. 1869; T. Tuyama in Hara, Fl. East. Himal. 1: 59. 1966. *Pouzolzia hirta* Blume ex Hasskal, Cat. Hort. Borger. 80. 1844; Hook. f., Fl. Brit. Ind. 5: 586. 1888; Prain, Beng. Pl. 2: 965. 1903; Grierson et Long, Fl. Bhut. 1(1): 129. 1983. *Utrica hirta* Blume, Brijdr. 495. 1825. *Gonostegia hirta* Miq., Ann. Mus. Bot. Lud. Bat. 4: 303. 1869. *Memoralis hirta* (Blume ex Hassk.) Wedd., 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: September to November.

Specimen Cited: Bichhabhanga, Goutam & AP Das 1355, dated 23. 03. 2010.

Local Distribution: Throughout the forests.

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

POUZOLZIA Gaudichaud-Beaupré, Voy. Uranie, Bot. 503. 1830.

Pouzolzia zeylanica (L.) Benn., Pl. Jav. Rar. 66 - 67. 1838; T. Tuyama in Hara, Fl. East. Himal. 1: 62. 1966; Grierson et Long, Fl. Bhut. 1(1): 130. 1983. *Parietaria indica* L., Mant. Pl. 128. 1767. *Urtica glomerata* Klein ex Willd., Sp. Pl. 4(1): 361. 1805. *Pouzolzia indica* (L.) Gaudich., Freyc., Voy. Bot. 503. 1826; Hook. f. in Hook. f., Fl. Brit. Ind. 5: 581. 1888; Prain, Beng. Pl. 2: 965. 1903. *Parietaria zeylanica* L., Sp. Pl. 2: 1052. 1753.

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, daxial surface glabrous; base cuneate to rounded, rarely subcordate, margin entire, apex subobtusely, 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-oblanceolate, puberulent, apex acute. Female perianth tube ellipsoid to rhombic, puberulent. Achenes white, light to dark yellow, ovoid.

Flowers & Fruits: September to April.

Specimen Cited: Khunia, Goutam & AP Das 0198, dated 04. 07. 2006.

Local Distribution: Throughout the forests.

General Distribution: Tropical sub tropical india, Bhutan, Sri lanka, Bangladesh, Myanmar and China.

PILEA Lindl., 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 microphylla (L.) Liebmann, Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd., ser. 5, 5(2): 302. 1851. *Parietaria microphylla* L., 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: Murti, *Goutam & AP Das 0732*, dated 17. 09. 2009.

Local Distribution: Murti, Dhupjhora.

General Distribution: Tropical India; S.E. Asia; native to tropical South America.

Pilea cordifolia Hook. f., Fl. Brit. Ind. 5: 558. 1888; Tuyama in Hara, Fl. E. Himal. 1: 61. 1966; Grierson *et* Long, Fl. Bhut. 1(1): 114. 1983.

Perennial herbs, stoloniferous, monoecious. Stems simple to branched, up to 40 cm, succulent, with galls on mid portion of internodes, glabrous, Stipules persistent, ovate-oblong, herbaceous, veinless; petioles unequal in length, sparsely puberulent; leaf blade abaxially pale green, obliquely ovate to elliptic, unequal, 7 – 12 × 4 – 6 cm, membranous, 3-veined, lateral veins many, base cordate to rounded, margin coarsely crenate-serrate, apex acuminate, acumen serrulate. Inflorescences solitary, male distal, a paniculate cyme; female inflorescence proximal, shorter. Male flowers reddish, pedicellate, stamens 4. Female flowers subsessile, 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: Dhupjhora, *Goutam & AP Das 0632*, dated 22. 03. 2009.

Local Distribution: Throughout the forests.

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

ELATOSTEMA Forst. *et* Forst., Char. Gen. Pl. 53. 1775, *nom. cons.*

Elatostema monandrum (Buch.-Ham. *ex* Don) Hara, Fl. East. Himal. 3: 21. 1975; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 203. 1982; Grierson *et* Long, Fl. Bhut. 1(1): 122. 1983. *Procris monandra* Buch.–Ham. *ex* Don, Prodr. Fl. Nepal. 61. 1825. *Elastotema surculosum* Wight, Icon. t. 2091, f. 4. 1853; Hook. f., Fl. Brit. Ind. 5: 572. 1888. *Elatostema diversifolium* Wedd., Prodr. 16(2): 189. 1868. *Elatostema laetum* Wedd., 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: September to November.

Specimen Cited: Dhupjhora, Goutam & AP Das 1255, dated 23. 10. 2009.

Local Distribution: Throughout the forests.

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

Order 37: Cucurbitales Juss. ex Bercht. & J.Presl (1820)

Cucurbitaceae Juss., Gen. Pl. 393. 1789; *nom. cons.*

Key to the genera

- 1a. Marginal segments of corolla fimbriate *Trichosanthes*
- 1b. Marginal segments of corolla not fimbriate 2
- 2a. Stamens 5 *Zanonia*
- 2b. Stamens 3 or 1 3
- 3a. Stamens united; leaf blade pedately compound *Cyclanthera*
- 3b. Stamens free; leaves not pedately compound 4
- 4a. Flowers small less than 1 cm in diam 5
- 4b. Flowers comparatively large, more than 2 cm in diam 6
- 5a. Male flowers without pistillode *Diplocyclos*
- 5b. Male flowers with pistillode *Mukia*
- 6a. Corolla campanulate *Coccinia*
- 6b. Corolla rotate 7
- 7a. Flowers with leaflike bract on pedicel *Momordica*
- 7b. Flowers without bract on pedicel 8
- 8a. Male flowers in racem to subumbell 9
- 8b. Flowers solitary *Citrullus*
- 9a. Fruit dry, fibrous inside *Luffa*
- 9b. Fruit fleshy, fibrous absent inside of fruits *Hodgsonia*

HODGSONIA Hook. *f. et* Thom., Proc. Linn. Soc. London 2: 257. 1854.

Hodgsonia heteroclita (Roxb.) Hook. *f. et* Thoms., Proc. Linn. Soc. London 2: 257. 1854; Mill. *et* Long in Grierson *et* Long, Fl. Bhutan 2(1): 263. 1991; Prain, Beng. Pl. 2: 516. 1903.

Trichosanthes heteroclita Roxburgh, Fl. Ind., ed. 1832, 3: 705. 1832.

Climber, up to 26m. Stem and branches glabrous. Petiole robust; lamina 15–26 × 14–23 cm, leathery, both surfaces glabrous, mostly 5-lobed; base truncate, acuminate. Male peduncle thick, glabrous; bracts oblong-lanceolate, fleshy; pedicels short, thick, glabrous or puberulent; calyx tube yellowish; segments triangular-lanceolate; corolla yellow outside, white inside. Female pedicels robust, short; ovary subglobose. Fruit reddish brown, compressed globose.

Flowers & Fruits: June to october.

Specimen Cited: Gorumara, Goutam & AP Das 0834, dated 12. 09. 2009.

Local Distribution: Gorumara, Dhupjhora.

General Distribution: Pantropical.

COCCINIA Wight *et* Arn., Prodr. Fl. Ind. Orient. 1: 347. 1834.

Coccinia grandis (L.) Voigt, Hort. Suburb. Calcutt. 59. 1845; Hara *et al.*, Enn. Fl. Pl. Nep. 2: 177. 1979. *Bryonia grandis* L., 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.

Local 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: Gorumara, Goutam & AP Das 0719, dated 12. 09. 2009.

Local Distribution: Throughout the forests.

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

DIPLOCYCLOS (Endl.) Post *et* Kuntze, Lex. Gen. Phan. 178. 1903 [“Diplocyclus”].

Diplocyclos palmatus (L.) Jeffrey in Kew Bull. 15: 352. 1962 ; Mill. *et* Long in Grierson *et* Long, Fl. Bhutan 2(1): 255. 1991. *Bryonia palmata* L., Sp. Pl. 1012. 1753, excl. syn. *Bryonia laciniosa* L., Sp. Pl. 1013. 1753. *Ilocania pedata* Merr., 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: September to November.

Specimen Cited: Dhupjhora, Goutam & AP Das 1105, dated 23. 07. 2009.

Local Distribution: Throughout the forests.

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

LUFFA Mill., Gard. Dict. Abr., ed. 4, [806]. 1754.

Key to the species

- 1a. Stamens 5; fruit smooth *L. aegyptiaca*
 1b. Stamens 3; fruit with 8–10 acute ribs *L. acutangula*

Luffa cylindrica (L.) Roem., Fam. Nat. Syn. Monogr. 2: 63. 1846. *Momordica cylindrica* L., Sp. Pl. 1009. 1753. *Momordica luffa* L., Sp. Pl. 1009. 1753. *Luffa pentandra* Roxb., Fl. Ind. Ed. 1832, 3: 712. 1832. *Luffa aegyptiaca* Mill., Gard. Dict. ed. 8, 4: 500. 1785; Dyer in Hook. *f.*, Fl. Brit. Ind. 2: 614. 1879; Mill. *et* Long in Grierson *et* Long, Fl. Bhutan 2(1): 256. 1991; Prain, Beng. Pl. 2: 520. 1903.

Local Name: Dhundol, Purul.

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: September to November.

Specimen Cited: Dhupjhora, Goutam & AP Das 1311, dated 23. 07. 2009.

Local Distribution: Throughout the forests.

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

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.

Local name: Jhinga.

Annual climber; stem sulcate-angular, pubescent. Tendrils large, 3 fid. Lamina membranous, 15 – 20 x 15 – 20 cm, palmately 5 - 7 lobed, median lobe broadly triangular, laterals smaller, dentate, acute. Male flowers in pedunculate raceme. Calyx tube campanulate, segments lanceolate, acuminate, slightly reflexed. Corolla yellow, rotate, segments obcordate, subglabrous; stamens 3, free, anthers puberulent. Female flowers: solitary; ovary terete, style short, stigmas 3, expanded. Fruits cylindrical, strongly ribbed. Seeds ovate, black.

Flowers & Fruits: September to November.

Specimen Cited: Gorumara, Goutam & AP Das 1104, dated 23. 07. 2009.

Local Distribution: Throughout the forests.

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

MOMORDICA L., Sp. Pl. 2: 1009. 1753.

Momordica charantia L., Sp. Pl. 1: 1009. 1753; Dyer in Hook. *f.*, Fl. Brit. Ind. 2: 616. 1879; Mill. *et* Long in Grierson *et* Long, Fl. Bhutan 2(1): 252. 1991; Prain, Beng. Pl. 2: 522. 1903. *Momordica indica* L., Herb. Amb. 24. 1754.

Local Name: Uchchhe.

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: Khunia, Goutam & AP Das 0113, dated 02.07. 2006.

Local Distribution: Throughout the study area, very common.

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

MUKIA Arn., Madras Jour. Lit. Sci. 12: 50. 1840.

Mukia maderaspatana (L.) Roem., *Fam. Nat. Syn. Monogr.* 2: 47. 1846; Mill. et Long in Grierson et Long, Fl. Bhutan 2(1): 258. 1991. *Cucumis maderaspatana* L., Sp. Pl. 1012. 1753. *Bryonia scabrella* L. f., Suppl. Pl. 424. 1781. *Mukia scabrella* (L. f.) Arn., Jour. Bot. (Hook.) 3: 276. 1841.

Annual scandent herbs, all parts densely yellow-br. hispid. Stems branched. Tendrils simple. Lamina rigid, ovate to ovate cordate, usually 3 – 5 lobed, 5 – 10 x 5 – 8 cm, 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: September to November.

Specimen Cited: Budhram, Goutam & AP Das III2, dated 23. 07. 2009.

Local Distribution: Throughout the forests.

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

TRICHOSANTHES L., 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 Roxb., Fl. Ind. 3: 703. 1832; Grierson in Grierson et Long, Fl. Bhut. 2 (1): 265. 1991. *Involucraria cordata* (Roxb.) Roem., *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 – 18 cm, minutely denticulate, apex 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: Budhram, Goutam & AP Das III6, dated 23. 07. 2009.

Local Distribution: Throughout roadside forests.

General Distribution: India, Laos, Malaysia, Myanmar, Singapore

Trichosanthes lepiniana (Naudin) Cogn. in DC., *Monogr. Phan.* 3:377. 1881; 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* Lour., Fl. Cochinch. 589. 1790; Hara et al., Enn. Fl. Pl. Nep. 2: 180. 1979. *Trichosanthes palmata* Roxb., Fl. Ind. 3: 704. 1832; Dyer in Hooker f., Fl. Brit. Ind. 1: 606. 1879.

Local 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 laciniate. 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: Budhram, Goutam & AP Das 1107, dated 23. 07. 2009.

Local Distribution: Throughout roadside forests.

General Distribution: India, Bhutan.

Core-Eudicots: Rosids: Eurosids (II)

Order 43: Myrtales Juss. ex Bercht. et Presl (1820)

Combretaceae R.Br., Prodr. 1: 351. 1810; *nom. cons.*

Key to the genera

- 1a. Trees ***Terminalia***
 1b. Woody lianas ***Combretum***

COMBRETUM Loef., 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 Jacq., Enum. Syst. Pl. 19. 1760; Clement in Grierson *et* Long, Fl. Bhutan 2(1): 306. 1991; Prain, Beng. Pl. 1: 482. 1903. *Poivrea alternifolia* (Pers.) Candolle, Prodr. 3: 17. 1828. *Gonocarpus jacquinii* Ham., Prodr. Pl. Ind. Occid. 39. 1825. *Combretum palmeri* Rose, Contr. U. S. Natl. Herb. 5: 136. 1898. *Combretum roxburghii* Spreng., Syst. Veg. 2: 331. 1825.

Combretum decandrum Roxb., Pl. Corom. 1: 43. 1796, not Jacq. (1760); Pentaptera Woody lianas. Branchlets reddish villosulous when young. Leaves opposite; lamina oblong-elliptic to obovate-oblong, 5 – 15 × 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: Murti, Goutam & AP Das 0372, dated 17.12.2006.

Local Distribution: Khunia, Murti, Gorumara, Dhupjhora, moderate.

General Distribution: India, Bhutan, China, Bangladesh, Nepal, Laos, Myanmar, Sri Lanka, Thailand, Vietnam.

Combretum indicum (L.) Filippis, Useful Pl. Dominica 277. 1998. *Quisqualis indica* L., Sp. Pl. ed. 2: 556. 1762; Clement in Grierson *et* Long, Fl. Bhutan 2(1): 309. 1991. *Quisqualis glabra* Burm.f., Fl. Indica 104. 1768. *Quisqualis grandiflora* Miq., J. Bot. Néerl. 1: 119. 1861. *Quisqualis indica* L., Sp. Pl., ed. 2, 1: 556. 1762.

Local name: Madhabilata.

Lianas up to to 8 m. Lamina mostly oblong-elliptic to elliptic, 5 – 16 × 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 Br. when ripe, sharply 5 ridged, apex mucronate.

Flowers & Fruits: November to May.

Specimen Cited: Gorumara, Goutam & AP Das 0705, dated 30. 09. 2009.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

TERMINALIA L., 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 (Roxb. ex Candolle) Wight et Arnott, Prodr. Fl. Ind. Orient. 314. 1834; Prain, Beng. Pl. 1:481.1903; *Pentaptera arjuna* Roxb. (Hort. Beng. 34.1814, *nom. nud.*) ex Candolle, Prodr. 3: 15. 1828.

Local name: Arjun.

Trees, trunk buttressed. Bark greenish-white. Leaves sub-opposite or alternate; lamina elliptic – oblong, 15 – 30 × 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: December to May.

Specimen Cited: Gorumara, Goutam & AP Das 0706, dated 30. 09. 2009.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

Terminalia bellirica (Gaertn.) Roxb., Pl. Coromandel 2: 54. 1805; Clarke in Hook. 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.

Local name: Bahera.

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 × 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: Murti, Goutam & AP Das 0376, dated 17.12.2006.

Local Distribution: Murti, Khunia, Budhram, Bichhabhanga abundant.

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.

Local name: Haritaki, Hartaki.

Large trees, up to 30 m. Leaves alternate to subopposite; petiole moderately stout; lamina elliptic, 7 – 16 × 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 Br. when ripe, ovoid, obtusely 5-ridged.

Flowers & Fruits: December to May.

Specimen Cited: Budhram, Goutam & AP Das 0778, dated 12. 11. 2009.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

Terminalia myriocarpa Van Heurck & Mueller Argoviensis, *Observ. Bot.* 215. 1871; Clement in Grierson et Long, *Fl. Bhutan* 2(1): 305. 1991.

Local 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 × 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, yellowish when dry.

Flowers & Fruits: August to February.

Specimen Cited:

Local Distribution: Khunia, Gorumara, Budhram, Common.

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 3
- 2a. Leaves leathery; stamens 10 – 12 ***Woodfordia***
- 2b. Leaves papery; stamens 30 to 120 ***Lagerstroemia***

- 3a. Aquatic floating herbs ***Trapa***
 3b. Marshy land or wet terrestrial herbs 4
 4a. Flowers usually 3 or more per axil ***Ammannia***
 4b. Flowers usually solitary ***Rotala***

AMMANNIA L., Sp. Pl. 1: 119. 1753.

Key to the species

- 1a. Petals absent *A. baccifera*
 1b. Petals present *A. multiflora*

Ammannia baccifera L., Sp. Pl. 120. 1753; C.B. Clarke in Hook. *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; Guha Bakshi, Fl. Mur. Dist. 131. 1984. *Ammannia indica* Lam., Tabl. Encycl. 1: 311. 1792. *Ammannia glauca* Wall. *ex* Wight *et* Arn., Prodr. Fl. Ind. Orient. 1: 305. 1834. *Ammannia baccifera* f. *glauca* (Wall. *ex* Wight *et* Arn.) 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: Budhram, Goutam & AP Das 1114, dated 23. 07. 2009.

Local Distribution: Budhram, Dhupjhora, Gorati, very common.

General Distribution: India, Bhutan, Nepal, Bangladesh, China, Malaysia, Philippines, Thailand, Vietnam, Afghanistan, Cambodia, Laos; tropical Africa, Australia, Caribbean islands.

Ammannia multiflora Roxb., Fl. Ind. 1: 447. 1820; Clarke in Hook. *f.*, Fl. Brit. Ind. 570. 1879; Prain, Beng. Pl. 1: 500. 1903; Panda *et* Das, Fl. Sambalp. 340. 2004. *Cryptotheca dichotoma* Blume, Bijdr. 1129. 1827. *Ammannia parviflora* DC., Prodr. 2: 77. 1825.

Annual, herbs. Stems with numerous short branches. Leaves opposite, narrowly elliptic or broadly linear to lanceolate-oblong, 2 – 3 cm × 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: Budhram, Goutam & AP Das 1108, dated 23. 07. 2009.

Local Distribution: Budhram, Dhupjhora, Gorati, very common.

General Distribution: India, Bhutan, China, Japan, Malaysia and Australia. tropics and subtropics of Africa and Australia.

LAGERSTROEMIA L., 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 L., Syst. Nat. ed. 10(2): 1076. 1759; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 276. 1991; *Lagerstroemia indica* var. *alba* Ram. Goyena, Fl. Nicarag. 410. 1909; *Lagerstroemia minor* Retz., Observ. Bot. 1: 20. 1779. Prain, Beng. Pl. 2: 504.1903.

Shrubs up to 7 m. Branchlets slender, 4 angled. Leaves semi sessile; lamina elliptic to oblong-obovate, mucronate, 3–7 × 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.

Flowers & Fruits: June to November.

Specimen Cited: Budhuram, Goutam & AP Das 0775, dated 12. 11. 2009.

Local Distribution: Budhuram, Gorumara.

General Distribution: Pantropical in Asia.

Lagerstroemia parviflora Roxb., 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.

Local name: Sidha.

Trees, up to 15 m. Petiole 1.2–1.5 cm; lamina ovate to oblong-elliptic, 5 – 12 × 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: Gorumara, Goutam & AP Das 0697, dated 11.09.2009.

Local Distribution: Throughout the forests.

General Distribution: Pantropical.

Lagerstroemia speciosa (L.) Pers., Syn. Pl. 2: 72. 1806. *Lagerstroemia hirsuta* (Lam.) Willd., Sp. Pl. 2: 1178. 1799; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2 (1): 276. 1991. *Adambe hirsuta* Lam., Encycl. 1: 39. 1783. *Lagerstroemia flos-reginae* Retzius, Observ. Bot. 5: 25 1788.

Local Name: Jarul.

Trees, up to 15 m. Petiole 1.2–1.5 cm; lamina elliptic to oblong-elliptic, 8–22 × 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 ca. 120, monomorphic. Ovary glabrous. Capsules oblong, 6 valved.

Flowers & Fruits: June to August.

Specimen Cited: Bichhabhanga, Goutam & AP Das 0787, dated 23. 11. 2009.

Local Distribution: Throughout the forests.

General Distribution: Pantropical in Asia.

ROTALA L., Mant. Pl. 2: 143, 175. 1771.

Key to the species

- 1a. Flowers in terminal spikes *R. rotundifolia*
- 1b. Flowers in axillary spikes 2
- 2a. Leaf margin translucent to opaque white; capsules 2 valved *R. indica*
- 2b. Leaf margin green; capsules 3 to 4 valved *R. densiflora*

Rotala densiflora (Roth) Koehne, Bot. Jahrd. Syst. 1(2): 164. 1880; Datta *et* Majumdar, Bull. Bot. Soc. Beng. 20(2): 89. 1966; Cook, Aqua. Wetl. Pl. Ind. 255. 1996. *Ammannia densiflora* Roth, Syst. Veg. 3: 394. 1818. *Ammannia pentandra* Roxb. Fl. Ind. 1: 488. 1820; Clark in Hook. *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: June to November.

Specimen Cited: Murti, Goutam & AP Das 0821, dated 17. 12. 2009.

Local Distribution: Gorati, Indong, Gorumara, moderate in riverine wetland.

General Distribution: India, Bangladesh, China, Vietnam, Laos, Thailand.

Rotala indica (Willd.) 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* Willd., 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: Gorati, Goutam & AP Das 1191, dated 19. 09. 2011.

Local Distribution: Gorati, Medlajhora.

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 (Buch. - Ham. ex Roxb.) Koehne, Bot. Jahrb. Syst. 1(2): 175. 1881; Islam, Fl. Majuli 137. 1990; Bora & Kumar, Flor. Div. Ass. 158. 2003. *Ammannia rotundifolia* Buch.-Ham. in Don Prodr. 220. 1825; Clarke in Hook. f., Fl. Brit. Ind. 2: 566. 1828; Prain, Beng. Pl. 1: 500. 1903.

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: Khunia, Goutam & AP Das 0043, dated 25. 06. 2006.

Local Distribution: Khunia, Gorumara.

General Distribution: India, Bhutan, Nepal, Bangladesh, Japan, Thailand, Laos, Myanmar, Vietnam.

WOODFORDIA Salisb., 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.

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 Br.

Flowers & Fruits: January to May.

Specimen Cited: Gorumara, Goutam & AP Das 0730, dated 12. 09. 2009.

Local Distribution: Throughout the study area, common.

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

TRAPA L., Sp. Pl. 1: 120. 1753.

Trapa natans L., Sp. Pl. 120. 1753. *Trapa bicornis* Osbeck, Dagb. Ostind. Resa 191. 1757. *Trapa chinensis* Lour., Fl. Cochinch. 1: 86. 1790. *Trapa natans* var. *incisa* Makino, Bot. Mag. (Tokyo) 1: 105. 1887-1892. *Trapa bispinosa* Roxb. var. *incisa* (Sieb. et Zucc.) Franchet et Savatier, Nakai, Fl. Kor. 2: 490. 1911. Clarke in Fl. Brit. Ind. 2: 590. 1879; Prain, Beng. Pl. 1: 508. 1903. *Trapa incise* Sieb. et Zucc., Fl. Jap. 134. 1843.

Local name: Pani fol.

Aquatic floating herbs. Petiole swollen distally. Floating lamina in rosettes, rhomboid, leaf blade glossy and dark green, rhombic – triangular, glabrous or sparsely pubescent on veins, adaxially glabrous, margin coarsely and sharply incised-dentate distally. Petals white, 7–10 mm. Fruit shortly rhombic, 2 – 4 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: Budhram, Goutam & AP Das 1118, dated 23. 07. 2009.

Local Distribution: Budhram, Dhupjhora Gorumara, Indong; abundant in stagnant wetland areas.

General Distribution: India, Bangladesh, China, Pakistan, Indonesia, Japan, Korea, Laos, Malaysia, Thailand, Philippines, Russia and Vietnam. Africa, Europe; naturalized in Australia and North America.

Melastomataceae Juss., 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 L., Sp. Pl. 1: 389. 1753.

Melastoma malabathricum L., Sp. Pl. 1: 390. 1753 ('malabathrica'); Clarke in Hook. *f.*, Fl. Brit. Ind. 2: 523. 1879; 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* Don, Mem. Wern. Nat. Hist. Soc. 4: 288. 1823. *Melastoma malabathricum* var. *normale* (Don) Srivastava, Novon 8(2): 203. 1998. *Melastoma normale* Don, Prodr. Fl. Nepal. 220. 1825. *Melastoma polyanthum* Bl., Flora 2: 481. 1831.

Local name: Futi.

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: Gorumara, Goutam & AP Das 0224, dated 09. 02. 2009.

Local Distribution: Gorumara, Murti, Dhupjhora.

General Distribution: Tropical Himalayas, India, China, Sri Lanka, Myanmar, Malaysia and Australia.

OSBECKIA L., Sp. Pl. 1: 345. 1753.

Osbeckia nepalensis Hook. *f.*, Exot. Fl. 1: , pl. 31. 1823; Clement in Grierson *et Long*, Fl. Bhutan 2(1): 295. 1991; Prain, Beng. Pl. 1: 495. 1903.

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: Gorumara, Goutam & AP Das 0517, dated 23.07.2009.

Local Distribution: Through out Forest.

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

Myrtaceae Juss., Gen. Pl. 322. 1789 ('Myrti'); *nom. cons.*

Key to the genera

- 1a. Fruit a capsule ***Eucalyptus***
 1b. Fruit not capsule 2

- 2a. Flowers solitary; Fruit a berry *Psidium*
 2b. Flowers in axillary or terminal cymes; fruits a drupe *Syzygium*

EUCALYPTUS L'Héritier, Sert. Angl. 18. 1789.

Eucalyptus tereticornis Sm., Spec. Bot. New Holland 4: 41 1795. *Eucalyptus insignis* Naudin, Descr. Emploi Eucalypt. 30. 1891. *Eucalyptus populifolia* Desf., Tabl. École Bot. ed. 3: 408. 1829. *Leptospermum umbellatum* Gaertn., 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 × 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: Dhupjhora Beat Office, Goutam & AP Das 0263, dated 10. 02. 2009.

Local Distribution: Dhupjhora Beat Offices and villages.

General Distribution: India, Bhutan, China; native to E and SE Australia.

PSIDIUM L., Sp. Pl. 1: 470. 1753.

Psidium guajava L., 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. 1: 495. 1903. *Guajava pumila* (Vahl) Kuntze, Revis. Gen. Pl. 1: 240. 1891. *Psidium pumilum* Vahl, Symb. Bot. 2: 56. 1791. *Myrtus guajava* (L.) Kuntze, Revis. Gen. Pl. 3(2): 91. 1898. *Psidium cujavus* L., Herb. Amb. 7. 1754.

Local name: Peyara.

Small tree, up to 5 m; branchlets finely pubescent. Leaves oblong-elliptic, 8 – 12 × 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: Murti village, Goutam & AP Das 0258, dated 10. 02. 2009.

Local Distribution: In the villages.

General Distribution: Native of tropical America, naturalized and cultivated in India.

SYZYGIUM P. Br. ex Gaertn., 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 (L.) 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 Prain, Beng. Pl. 1: 495. 1903. *Myrtus cumini* L., Sp. Pl. 471. 1753. *Eugenia jambolana* de Lam., Encycl. 3: 198. 1789. *Eugenia obovata* Poir., Encycl. Suppl. 3: 124. 1813.

Local name: Jaam.

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: Murti, Goutam & AP Das 0174, dated 08. 02. 2009.

Local Distribution: All over the forests.

General Distribution: India (tropical and subtropical regions), Sri Lanka, Malaya and Australia.

Syzygium jambos (L.) Alston, Handb. Fl. Ceylon 6(Suppl.): 115 1931. Long *et* Rae in Grierson *et* Long, Fl. Bhutan 2 (1): 280. 1991. Prain, Beng. Pl. 1: 495. 1903; *Eugenia jambos* L., Sp. Pl. 470. 1753. *Eugenia vulgaris* Baill., Hist. Pl. 6: 345. 1876. *Eugenia jambosa* Crantz, Inst. Rei Herb. 2: 201. 1766.

Local name: Golabjam.

Trees, up to 10 m. Stems broadly branched. Branchlets terete. Lamina lanceolate to ovate-lanceolate, 8 – 25 × 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: Dhupjhora, Goutam & AP Das 0252, dated 10. 02. 2009.

Local Distribution: In the forest villages and forests throughout.

General Distribution: India, Philippines; Malesia and SE Asia.

Onagraceae Juss., Gen. Pl. 317. 1789 ('Onagrae'); *nom. cons.*

LUDWIGIA L., 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 (L.) Hara in J. Jap. Bot. 28(10): 291. 1953; Raven in Reinwardtia 6(4): 387. 1963; Guha Bakshi, Fl. Mur. Dist. 135. 1984. *Jussiaea repans* L., Sp. Pl. 1: 388. 1753; Clarke in Hook. *f.*, Fl. Brit. Ind. 2: 587. 1879; Prain, Beng. Pl. 1: 368. 1903.

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 Br. ribs, cylindric.

Flowers & Fruits: June to November .

Specimen Cited: Gorati Beel, *Goutam & AP Das 0304*, dated 10. 02. 2009.

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 (Jacq.) 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) Raven, Kew Bull. 15: 476. 1962. *Jussiaea pubescens* L., Sp. Pl. (ed. 2) 1: 555. 1762. Chowdhery *et al.* in Hajra *et al.*, Materials for the Fl. Arunachal Prad.1: 504. 1996. *Oenothera octavulvis* Jacq., Enum. 19. 1760. *Jussiaea suffruticosa* L., Sp. Pl. 388. 1753; Clarke in Hook. *f.*, Fl. Brit. Ind.. 2: 587. 1879; Prain, Beng. Pl.1: 368. 1903.

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 Br., cylindric, terete. Seeds in 2 to more rows per locule, free.

Flowers & Fruits: June to February.

Specimen Cited: Medlajhora, *Goutam & AP Das 0307*, dated 10. 02. 2009.

Local Distribution: Lowland forests throughout.

General Distribution: India:throughout; Bhutan, China, S.E. Asia, tropical Africa.

Ludwigia perennis L., 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* L., Syst. Nat. ed. 12: 125. 1767. *Ludwigia parviflora* Roxb., Hort. Beng. 11. 1814,nom. nud. & Fl. Ind.1: 440. 1820; Clarke in Hook. *f.*, Fl. Brit. Ind.. 2: 588. 1879; Prain, Beng. Pl. 1: 368. 1903. *Jussiaea perennis* (L.) Brenan, Kew Bull. 1953: 163. 1953. *Jussiaea caryophyllea* Lam., 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 × 1 – 3 cm, subacute, base narrowly cuneate. Sepals 4, rarely 5, deltate. Petals yellow, elliptic. Stamens many. Stigma globose. Capsule often nodding, pale Br., oblanceoloid, terete. Seeds in 2 to more rows per locule, free.

Flowers & Fruits: Juli to April.

Specimen Cited: Medlajhora, *Goutam & AP Das 0346*, dated 21.07.2009.

Local Distribution: Medlajhora margin.

General Distribution: India: throughout; Bhutan, China, Sri Lanka, Madagascar, S. E. Asia, Malaysia to tropical Africa, Australia and New Caledonia.

Ludwigia prostrata Roxb., 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* (Roxb.) Lév., Feddes Repert. Spec. Nov. Regni Veg. 8: 138. 1910. *Nematopyxis prostrata* Miq., 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, $2 - 12 \times 0.3 - 2.5$ 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 Br., 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: Medlajhora, Goutam & AP Das 0287, dated 10. 02. 2009.

Local Distribution: Marshy low land areas.

General Distribution: India: tropicals; Bhutan, Nepal, China, Indonesia, Philippines, Sri Lanka.

Order 44: Brassicales Bromhead (1838)

Brassicaceae Lindl., Nat. Syst. ed. 2. 58. 1836 (*nom. alt.* vs. *Cruciferae nom. cons.*)

Key to the genera

- 1a. Basal leaves rosulate; fruit indehiscent **Cardamine**
- 1b. Basal leaves cauline; fruit dehiscent 2
- 2a. Cauline leaves entire **Brassica**
- 2b. Some cauline leaves coarsely dentate to pinnately divided **Rorippa**

BRASSICA L., Sp. Pl. 2: 666. 1753.

Brassica rapa L., Sp. Pl. 666. 1753; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 420. 1984. **Brassica chinensis** L., Cent. Pl. I: 19. 1755. **Brassica pekinensis** (Lour.) Rupr., Fl. Ingr. 96. 1860. **Brassica arvensis** Hablitz, Descr. Phys. Taur. 146. 1788.

Local 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, $10 - 30 \times 3 - 10$ cm, 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 Br., globose.

Flowers & Fruits: March to June.

Specimen Cited: Dhupjhora village, Goutam & AP Das 0173, dated 08. 02. 2009.

Local Distribution: Villages and crop fields.

General Distribution: India: widely cultivated.

CARDAMINE L., Sp. Pl. 2: 654. 1753.

Cardamine hirsuta L., 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** 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 Br..

Flowers & Fruits: March to August.

Specimen Cited: Dhupjhora Beat Office, Goutam & AP Das 0119, dated 07. 02. 2009.

Local Distribution: Dhupjhora Beat Office and Garden areas.

General Distribution: India: pantropical areas; Bhutan, China, Sri Lanka, Pakistan, Indonesia, Malaysia, Japan, Laos, New Guinea, Philippines, Thailand, Turkmenistan, Vietnam; SWAsia, Europe; naturalized in S Africa, Australia, North and South America.

RORIPPA Scopoli, Fl. Carniol. 520. 1760.

Rorippa benghalensis (DC.) Hara, Jour. Jap. Bot. 49: 132. 1974. *Nasturtium benghalense* DC., Syst. Nat. 2: 198. 1821. *Sinapis benghalensis* Roxb. ex DC., Syst. Nat. 2: 198. 1821 (prosyn.). *Nasturtium indicum* var. *benghalensis* (DC.) Hooker f. et Anderson in Hook. 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 Br..

Flowers & Fruits: March to May.

Specimen Cited: Garden, Goutam & AP Das 0107, dated 07. 02. 2009.

Local Distribution: Dhupjhora Beat Office and Garden areas.

General Distribution: India: tropical parts; Nepal, Bhutan, Bangladesh, Indo-china and Java, Thailand, Vietnam.

Capparaceae Juss., Gen. Pl. 242. 1789 ('Capparides'); *nom. cons.*

Key to the genera:

- 1a. Leaves compound, with 3 leaflets *Crateva*
 1b. Leaves simple *Capparis*

CAPPARIS L., Sp. Pl. 1: 503. 1753.

Key to the species:

- 1a. Inflorescences with 6–10 flowers *C. multiflora*
 1b. Inflorescences with 2 or 3 flowers *C. zeylanica*

Capparis multiflora Hook. f. et Thom. in Hook. f., Fl. Brit. India 1: 178. 1872; Grierson in Grierson et Long, Fl. Bhut. 1(2): 414. 1984.

Large shrubs to small trees, up to 6m. Branches terete, slender, spineless or sometimes with small stipular spines; cataphylls subulate. Lamina broadly lanceolate to oblong, 5–10 × 2.5–4 cm, base cuneate to abruptly contracted, entire, acuminate to abruptly acuminate. Inflorescences superaxillary

rows of 6–10 flowers. Sepals slightly unequal; sepals of outer whorl round, slightly larger; sepals of inner whorl round, ovate to obovate, margin membranous. Petals white, oblong. Stamens 10–12. Gynophore 6–10 mm; ovary ovoid; placentae 2; ovules several. Fruit globose.

Flowers & Fruits: January to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0504, dated 23.07.2009.

Local Distribution: Murti, Dhupjhora.

General Distribution: Bhutan, NE India, Myanmar, Nepal, Vietnam.

Capparis zeylanica L., Sp. Pl. ed. 2: 720. 1762. *Capparis acuminata* Roxb., Fl. Ind. 2: 566. 1824. *Capparis aeylanica* Roxb., 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 × 2 – 4 cm, 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: Murti, Goutam & AP Das 0241, dated 09. 02. 2009.

Local Distribution: Throughout the forests.

General Distribution: Tropical India; Bhutan, China, Nepal, Indonesia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam.

CRATEVA L., Sp. Pl. 1: 444. 1753.

Crateva religiosa Forster, Diss. Pl. Esc. 45. 1786; Grierson in Grierson *et* Long, Fl. Bhut. 1(2): 412. 1984.

Local name: Barna.

Large trees; up to 25m. Petiole with minute triangular glands near rachis; lamina 5 – 9 × 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 Br..

Flowers & Fruits: April to August.

Specimen Cited: Dhupjhora, Goutam & AP Das 0207, dated 09. 02. 2009.

Local Distribution: Throughout the forests.

General Distribution: India: tropical; Bhutan, Nepal, Sri Lanka, Cambodia, Indonesia, Myanmar, Thailand, Vietnam.

Caricaceae Dumort., Anal. Fam. Pl. 36. 1829 (*nom. cons. prop.* vs. Papayaceae).

CARICA L., Sp. Pl. 2: 1036. 1753.

Carica papaya L., Sp. Pl. 1036. 1753; Clarke in Hook. *f.*, Fl. Brit. Ind. 2: 599. 1879; Grierson *et* Long, Fl. Bhut. 2(1): 236. 1991. *Carica citriformis* Jacq., Ecl. Pl. Rar. 1: 101, t. 68-69, 1816. *Papaya*

carica Gaertn., Fruct. Sem. Pl. 2: 191, pl. 122, f. 2. 191. 1790. *Papaya edulis* Bojer, Hortus Maurit. 277. 1837. *Vasconcellea peltata* (Hook.f. et Arn.) DC., Prodr. 15(1): 416. 1864. *Papaya peltata* (Hook.f. et Arn.) Kuntze, Revis. Gen. Pl. 1: 253. 1891. *Carica peltata* Hook.f. et Arnot, Bot. Beechey Voy. 425. 1840.

Local name: Pnepu.

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: Murti village, Goutam & AP Das 0096, dated 07. 02. 2009.

Local Distribution: Panted in Villages.

General Distribution: A native of West Indies; widely cultivated in warmer areas.

Moringaceae R.Br. in Denham & Clapperton, Trav. N. and Central Afr. 238. 1826 ('Moringeae'); *nom. cons.*

MORINGA Adanson, Fam. Pl. 2: 318. 1763.

Moringa oleifera Lam., Encycl. 1: 398. 1785; Grierson *et* Long, Fl. Bhut. 1(2): 445. 1984. *Guilandina moringa* L., Sp. Pl. 1: 381. 1753. *Moringa zeylanica* Burm., Thes. Zeylan. 162, t. 75: 162. 1736. *Moringa moringa* (L.) Millspaugh, Field Mus. Nat. Hist., Bot. Ser. 1(7): 490. 1902. *Moringa pterygosperma* Gaertn., Fruct. Sem. Pl. 2: 314-315, pl. 147, f. 2: 314. 1791.

Local 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: Dhupjhora, Goutam & AP Das 0171, dated 08. 02. 2009.

Local Distribution: Cultivated at forest villages.

General Distribution: native to India; Tropical and sub-tropical parts of the world.

Order 45: Malvales Juss. *ex* Bercht. & J.Presl (1820)

Order: Malvales Juss. *ex* Bercht. & J.Presl (1820)

Bixaceae Kunth, Diss. Malv. etc. 17. 1822 ('Bixineae').

BIXA L., Sp. Pl. 1: 512. 1753.

Bixa orellana L., Sp. Pl. 512. 1753; Prain, Beng. Pl. 1: 230. 1903. *Bixa purpurea* Sweet, Hort. Brit. 33. 1826. *Orellana americana* (Poir.) Kuntze, Revis. Gen. Pl. 1: 44. 1891. *Orellana orellana* (L.) Kuntze, Revis. Gen. Pl. 3(2): 9. 1898.

Local name: Sindure

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-Br.

Flowers & Fruits: Throughout the year.

Specimen Cited: Dhupjhora, Goutam & AP Das 0106, dated 07. 02. 2009.

Local Distribution: Cultivate in forests Village.

General Distribution: India: native to tropical America; cultivated pantropically.

Dipterocarpaceae Bl., Bijdr. 1: 222. 1825 ('Dipterocarpeae').

SHOREA Roxb. ex Gaertn., Suppl. Carp. 47. 1805.

Shorea robusta Roxb. ex Gaertn. f., Suppl. Carp. 3: 48.t. 186. 1805; Clarke in Hook. f., Fl. Brit. Ind. 1: 306. 1874; Grierson *et* Long, Fl. Bhut. 1(2): 361. 1984.

Local name: Saal.

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: Murti forest, Goutam & AP Das 0648, dated 12. 02. 2008.

Local Distribution: Forests throughout.

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

Malvaceae Juss., 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. Fruit a schizocarp, sometimes berrylike, carpels separating into
separate 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 *Malvaviscus*
- 8a. Epicalyx absent *Sida*
- 8b. Epicalyx present 9
- 9a. Epicalyx lobes 6 *Alcea*
- 9b. Epicalyx lobes 3 *Malva*
- 10a. Seeds with cotton 11
- 10b. Seeds without cotton 12
- 11a. Flowers bright red..... *Bombax*
- 11b. Flowers pale yellow..... *Cieba*
- 12a. Flowers without petals; fruit apocarpous with separate follicles 13
- 12b. Flowers with petals; fruit syncarpous 15
- 13a. Follicle 2-seeded, compressed *Firmiana*
- 13b. Follicle many-seeded 14
- 14a. Branches glabrous; seeds winged..... *Pterygota*
- 14b. Branches tomentose; seeds wingless *Sterculia*
- 15a. Follicle spirally twisted; petals unequal *Helicteres*
- 15b. Follicle not spirally twisted; petals equal..... 16
- 16a. Flowers without staminodes *Melochia*
- 16b. Flowers with staminodes 17
- 17a. Seeds with long membranous wing *Pterospermum*
- 17b. Seeds wingless *Abroma*

FIRMIANA Marsili in Saggi Sci. Lett. Accad. Padova 1: 114, 116. 1786.

Firmiana colorata (Roxb.) R. Br. in Bennett *et* Brown, Pl. Jav. Rar. 235. 1844; Malick in Sharma *et* Sanjappa, Fl. India 3: 420. 1993. *Sterculia colorata* Roxb., Pl. Corom. t. 25. 1795; Mast. in Hook. *f.*, Fl. Brit. India 1: 359. 1874. *Sterculia rubicunda* Wall. *ex* Mast. in Hooker *f.*, Fl. Brit. India 1: 360. 1874.

Medium sized trees. Leaves 15-19 x 22-25 cm, 3lobed, base cordate, lobes acuminate; petiole 15 to 20 cm. Flowers unisexual, terminal paniced racemes; calyx tubular, reddish, tomentose outside; gynophore 1.5 – 2.5 cm; stamens 16, filaments connate into a cup around the pistillode; carpels 5, free, flattened; style short, curved. Follicle 4 – 6 cm long, compressed; seeds 2, compressed.

Flowers & Fruits: January to June.

Specimen Cited: Murti, Goutam & AP Das 0207, dated 09. 02. 2009.

Local Distribution: Khunia, Murti, Dhupjhora, Gorumara.

General Distribution: India: tropical; Bhutan, Nepal, Sri Lanka, Cambodia, Indonesia, Myanmar, Thailand, Vietnam.

GREWIA L., Sp. Pl. 2: 964. 1753.

Grewia serrulata DC., Prodr. 1: 510. 1824; Daniel *et* Chandra. in Sharma *et* Sanjappa, Fl. India 3: 509. 1993. *Grewia glabra* Bl., Bijdr. 115. 1825. *Grewia laevigata* sensu Mast. in Hook. *f.*, Fl. Brit. India 1: 389. 1874, non Vahl 1790.

Erect shrubs to small tree, branchlets slender, glabrous. Leaves 12 – 14 x 3 – 6 cm, elliptic, serrate, sharply acuminate. Peduncle 2 – 3 cm, slender, glabrous; sepals oblong, tomentose outside; petals ovate, white; gynandrophore densely hairy; stigma fimbriate. Drupelets globose, glabrous.

Flowers & Fruits: August to November.

Specimen Cited: Dhupjhora, Goutam & AP Das 0828, dated 09. 02. 2009.

Local Distribution: Dhupjhora, Murti, Gorumara.

General Distribution: Indo-Malesia and Tropical Africa.

CEIBA Miller, Gard. Dict. Abr., ed. 4, [287]. 1754.

Ceiba pentandra (L.) Gaertner, Fruct. Sem. Pl. 2: 244. 1791; Nayar *et* Biswas in Sharma *et* Sanjappa, Fl. India 3: 400. 1993. *Bombax pentandrum* L., Sp. Pl. 1: 511. 1753; Mast. in Hook. *f.*, Fl. Brit. India 1: 350. 1874. *Eriodendron pentandrum* (L.) Kurz, J. Asiat. Soc. Bengal, Pt. 2. Nat. Hist. 43: 113. 1874. *Ceiba pentandra* (L.) Gaertn. var. *indica* (DC.) Bakh. *f.*, Bull. Jard. Bot. Buitenz. ser.3, 6: 195. 1924.

Trees, up to 30 m; buttresses small or absent; main branches spreading horizontally; young branches spiny. Petiole 7–18cm, longer than leaflet blade; leaflets 5–9; blades oblong to lanceolate, 5–20 × 2–6 cm, glabrous, base acuminate, entire to very minutely toothed near apex, shortly acuminate. Flowers subterminal, solitary to 15 flowered fascicles. Calyx adaxially glabrous. Petals pink to white, obovate-oblong. Filaments on staminal tube varying in length; anthers reniform. Ovary glabrous; stigma rod-shaped, 5 lobed. Capsule oblong, fruiting pedicel 7–25 cm, endocarp leathery. Seeds globose.

Flowers & Fruits: March to May.

Specimen Cited: Dhupjhora, Goutam & AP Das 1007, dated 19. 02. 2010.

Local Distribution: Dhupjhora, Bichhabhanga.

General Distribution: Native to tropical America and possibly West Africa; now pantropical.

HELICTERES L., Sp. Pl. 2: 963. 1753.

Helicteres isora L., Sp. Pl. 2: 963. 1753; Mast. in Hook. *f.*, Fl. Brit. India 1: 365. 1874; Malick in Sharma *et* Sanjappa, Fl. India 3: 426. 1993;

Shrubs to small trees, up to 6 m. Branchlets stellate puberulent. Stipules linear, caducous; petiole puberulent; lamina broadly oblong-obovate to almost circular, 10–16 × 7–15cm, thinly leathery, base rounded to obliquely cordate, serrate, truncate with shortly acuminate tip and usually lateral lobes. Inflorescences axillary, usually 2 to 3 per axil, densely clustered. Flowers 3–4 cm in diam. Epicalyx lobes subulate. Sepals usually 4–5lobed, lobes triangular, 2lipped. Petals red or purple, unequal in length, upper 2 larger, obliquely falcate. Androgynophore curved at tip. Stamens 10; staminodes 5. Ovary slightly twisted after pollination. Capsule cylindrical, conspicuously spirally twisted, black when mature, with beak to 1 cm, densely. Seeds many, angular, wrinkled.

Flowers & Fruits: April to August.

Specimen Cited: Gorumara, Goutam & AP Das 0957, dated 09. 02. 2010.

Local Distribution: Budhuram, Gorumara, Khunia.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Indonesia, Malaysia, Thailand, Vietnam, Cambodia, Australia.

PTERYGOTA Schott *et* Endlicher, Melet. Bot. 32. 1832.

Pterygota alata (Roxb.) R. Br. in Bennett *et* Brown, Pterocymbium Jav. Rar., 234. Jun 1844; Malick in Sharma *et* Sanjappa, Fl. India 3: 455. 1993. *Sterculia alata* Roxb., Pl. Coromandel 3: 84. 1811 [“1819”]; Mast in Hook. *f.*, Fl. Brit. India 1: 360. 1874. *Sterculia heynei* Bedd., Fl. Sylv. t. 230. 1874.

Trees, up to 30 m. Stipules subulate, caducous; petiole 7–14 cm; lamina cordate to broadly ovate, 12–32 × 10–16 cm, both surfaces glabrescent, base cordate, entire, acute. Inflorescence axillary, paniculate, shorter than petiole. Flowers red; pedicels nearly absent. Calyx campanulate, lobes linear-lanceolate. Male flowers: androgynophore cylindrical cone-shaped, puberulent. Anthers 3–5 grouped into fascicles on androgynophore top; undeveloped carpels apparent. Female flowers: androgynophore very short. Ovary globose; ovules 40–50 per carpel, in 3 rows; styles 5, curved. Follicle woody, compressed globose, adaxially corklike. Seeds many, oblong, flat.

Flowers & Fruits: November to January.

Specimen Cited: Dhupjhora, Goutam & AP Das 0907, dated 09. 02. 2010.

Local Distribution: Dhupjhora, Gorumara.

General Distribution: India, Bangladesh, Bhutan, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

ABELMOSCHUS Medikus, Malvenfam. 45. 1787.

Abelmoschus moschatus Medik., Malv. 1: 46. 1787; Blumea 14: 90. 1966; Hara *et* Ohashi, Enn. Fl. Pl. Nep. 2: 66. 1979; Paul in Sharma *et* Sanjappa, Fl. India 3: 308. 1993. *Hibiscus abelmoschus* L., Sp. Pl. 696. 1753; Roxb., Fl. Ind. ed. 2, 3: 202. 1832; Dyer in Fl. Brit. Ind. 1: 347. 1874; J. Bom. Nat. Hist. Soc. 51: 781. 1953; *Bamia abelmoschus* (L.) R.Br. *ex* Wall., Cat. 52. 1829. *Abelmoschus betulifolia* Wall., Numer. List 87. 1829. *Abelmoschus ciliaris* Walp., Repert. Bot. Syst. 2: 308. 1843. *Hibiscus moschatus* (Medik.) Salisb., Prodr. Stirp. Chap. Allerton 387. 1796. *Hibiscus chinensis* Roxb., Hort. Beng. 51. 1814.

Local name: Muskdana.

Annual or perennial shrub. Stems glandular hairy. Lamina broadly ovate or orbicular, 4–17 × 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: Dhupjhora, Goutam & AP Das 0379, dated 21.07.2009.

Local Distribution: Plantation Sector.

General Distribution: India: tropical region; Bangladesh, China, Indo–China, Thailand, Malaysia and Fiji Islands.

HIBISCUS L., Sp. Pl. 2: 693. 1753, *nom. cons.*

Key to the species:

- 1a. Plants herbaceous *H. sabdariffa*
- 1b. Plants large shrubs or trees 2
- 2a. Flowers pendulous; staminal column longer than corolla;
 - leaf blade not lobed *H. rosa-sinensis*
- 2b. Flowers erect; staminal column shorter than corolla; leaf blade lobed *H. mutabeelis*

Hibiscus mutabeelis L., Sp.Pl. 694. 1753; Roxb., Fl. Ind. ed. 2, 3: 201. 1832; Dyer in Hook. f. Fl. Brit. Ind. 1: 344. 1874; Hara, Fl. East. Himal. 1: 204. 1966; Hara *et* Ohashi, Enn. Fl. Pl. Nep. 2:67. 1979; Paul in Sharma *et* Sanjappa, Fl. India 3: 390. 1993. *Ketmia mutabeelis* (L.) Moench, Methodus 617. 1794. *Hibiscus sinensis* Mill., Gard. Dict. ed. 8: 2. 1768. *Hibiscus javanicus* Weinm., Syll. Pl. Nov. 2: 172. 1828. *Abelmoschus mutabeelis* (L.) Wall. *ex* Hassk., Cat. Hort. Bot. Bogor. 198. 1844. *Hibiscus immutabeelis* Dehnhigh, Mem. sop. alc. piant. nuov. 4. 1836.

Local name: Sthal Padma.

Perennial, shrubs, 6 m tall. Lamina suborbicular, 12 – 25cm 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: Murti Village, Goutam & AP Das 0487, dated 23.07.2009.

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 L., Sp. Pl. 694. 1753; Roxb., Fl. Ind. ed. 2, 3: 194. 1832; Dyer in Fl. Brit. Ind. 1: 334. 1874; Hara, Fl. East. Himal. 1: 204. 1966; Hara *et* Ohashi, Enn. Fl. Pl. Nep. 2: 67. 1979; Paul in Sharma *et* Sanjappa, Fl. India 3: 391. 1993; Grierson *et* Long, Fl. Bhut. 2 (1): 182. 1991. *Hibiscus boryanus* DC., Prodr. 1: 446. 1824. *Hibiscus festalis* Salisb., Prodr. Stirp. Chap. Allerton 383. 1796. *Hibiscus storckii* Seemon, Fl. Vit. 17. 1865.

Local name: Jaba.

Perennial, erect, glabrous shrubs, 2 – 3m 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, exerted, pollen bearing in upper half only. Fruit not found.

Flowers & Fruits: Throughout the year.

Specimen Cited: Murti Village, Goutam & AP Das 0326, dated 21.07.2009.

Local Distribution: Village area.

General Distribution: India: Tropical India; possibly Eastern African origin. Widely cultivated throughout the tropics and subtropics.

Hibiscus sabdariffa L., Sp. Pl. 695. 1753; Dyer in Hook. f., Fl. Brit. Ind. 1: 340. 1874; Hara, Fl. East Himal. 1: 204. 1966; Hara & Ohashi, Enn. Fl. Pl. Nep. 2: 67. 1979; Paul in Sharma & Sanjappa, Fl. India 3: 391. 1993; Grierson & Long, Fl. Bhut. 2 (1): 182. 1991. *Hibiscus fraternus* L., Pl. Surin. 90. 1775. *Abelmoschus cruentus* (Bertoloni) Walp., Repert. Bot. Syst. 1: 310. 1842. *Hibiscus cruentus* Bertoloni, Fl. Guatimal. 28. 1840.

Local name: Chukar, Tak-dhenrhas

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: Dhupjhora Village, *Goutam & AP Das 0317*, dated 21.07.2009.

Local Distribution: Village area.

General Distribution: India: tropical India; unknown origin, cultivated in the tropics.

MALVAVISCUS Fabricius, Enum. 155. 1759.

Malvaviscus arboreus Cavan., Diss. 3: 13, t. 48. f. 1. 1787; Hara, Fl. East Himal. 1: 205. 1966; Hara et Ohashi, Enn. Fl. Pl. Nep. 2: 68. 1979; Paul in Sharma et Sanjappa, Fl. India 3: 393. 1993; Grierson et Long, Fl. Bhut. 2 (1): 194. 1991.

Local name: Lonka joba

Erect, 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, 1 cm. Calyx 1 – 2 cm. Petals scarlet.

Flowers & Fruits: Throughout the year.

Specimen Cited: Murti Village, *Goutam & AP Das 0329*, dated 21.07.2009.

Local Distribution: Village area.

General Distribution: India: Cultivated throughout in India; Native in tropical America; South America, Widely cultivated in the tropics.

Note: Cultivated in forest villages.

URENA L., Sp. Pl. 2: 692. 1753.

Urena lobata L., Sp. Pl. 692. 1753, s.l.; Masters in Hook. f., Fl. Brit. India 1: 329. 1872; Roxb., Fl. Ind. ed. 2, 3: 182. 1832; Hara, Fl. East Himal. 1: 206. 1966; Hara et Ohashi, Enn. Fl. Pl. Nep. 2: 69. 1979; Paul in Sharma et Sanjappa, Fl. India 3: 380. 1993; Mill. et Long in Grierson et Long, Fl. Bhutan 2(1): 194. 1991. *Urena trilobata* Velloso, Fl. Flumin. 7: t. 44t. 44. 1825. *Urena grandiflora* 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: Dhupjhora, *Goutam & AP Das 0277*, dated 10. 02. 2009.

Local Distribution: Plantation sector & conservation area.

General Distribution: India: throughout in India; pantropical weed.

SIDA L., 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 Burm. f., Fl. Ind. 147. 1768; Hara, Fl. East Himal. 1: 205. 1966; Hara *et* Ohashi, Enn. Fl. Pl. Nep. 2: 68. 1979; Paul in Sharma *et* Sanjappa, Fl. India 3: 281. 1993; Mill. *et* Long in Grierson & Long, Fl. Bhutan 2 (1): 192. 1991; Prain, Beng. Pl. 1: 256. 1903. *Sida lanceolata* Retz., Obs. Bot. 4: 119. 1786. *Sida carpinifolia* auct. non L. f. 1785; Dyer in Hook. f., Fl. Brit. Ind. 1: 323. 1874. *Malvinda carpinifolia* (L. f.) Medik., Malvenfam. 24. 1787. *Sida carpinifolia* L. f., Suppl. Pl. 307. 1782.

Local name: Swet 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, Goutam & AP Das 0079, dated 06. 02. 2009.

Local Distribution: All Terrestrial Sectors.

General Distribution: India: Along roadsides up to 1200m, open places throughout; Pantropical.

Sida cordifolia L., Sp. Pl. 684. 1753; Dyer in Hook. f., Fl. Brit. Ind. 1: 324. 1874; Hara, Fl. East Himal. 1: 205. 1966; Hara *et* Ohashi, Enn. Fl. Pl. Nep. 2: 68. 1979; Paul in Sharma *et* Sanjappa, Fl. India 3: 285. 1993; Mill. *et* Long in Grierson *et* Long, Fl. Bhutan 2 (1): 192. 1991; Prain, Beng. Pl. 1: 256. 1903. *Sida pellita* Kunth, Nov. Gen. Sp. 5: 263 1822. *Sida holosericea* Willd. ex Spreng., Syst. Veg. 3: 112. 1826. *Sida rotundifolia* Lam. ex Cavan., Diss. 1: 19, pl. 3, f. 6: 19. 1785.

Local name: Swet 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, Goutam & AP Das 0100, dated 07. 02. 2009.

Local Distribution: All terrestrial sector.

General Distribution: India: Throughout the dry waste places; Pantropical.

Sida rhomboidea Roxb. ex Fleming, Asiat. Res. 11. 178. 1810; Mill. *et* Long in Grierson *et* Long, Fl. Bhutan 2 (1): 192. 1991; Prain, Beng. Pl. 1: 256. 1903. *Sida rhombifolia* var. *rhomboidea* (Roxb. ex Flem.) Mast. in Hook. f., Fl. Brit. India 1: 324. 1874. *Sida rhombifolia* L. ssp. *rhombifolia sensu* Borss., Blumea 14: 193. 1966.

Erect or prostrate under-shrubs, 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, Goutam & AP Das 0132, dated 07. 02. 2009.

Local Distribution: Road side.

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

Sida cordata (Burm. f.) Borss. Waalk., Blumea 14: 182. 1966; Mill. et Long in Grierson et Long, Fl. Bhutan 2 (1): 192. 1991; Prain, Beng. Pl. 1: 256. 1903.. *Melochia cordata* Burm. f., Fl. Indica 143. 1768. *Sida multicaulis* Cavan., Diss. 1: 10, pl. 1, f. 6: 10. 1785. *Sida humilis* Cav. var. *veronicaefolia* (Lamk.) Mast. in Hook. f., Fl. Brit. India 1: 322. 1874.

Local name: Swet Berala

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, Goutam & AP Das 0126, dated 07. 02. 2009.

Local Distribution: Road side.

General Distribution: India: Philippines, Sri Lanka, Thailand; pantropical species of unknown origin.

ALCEA L., Sp. Pl. 2: 687. 1753.

Alcea rosea L., Sp. Pl. 687. 1753; Paul in Sharma et Sanjappa, Fl. India 3: 386. 1993; Mill. et Long in Grierson et Long, Fl. Bhutan 2 (1): 190. 1991. *Althaea rosea* (L.) Cavan., Diss. 2. 91. t. 28. f. 1. 1786; Dyer in Hook. f., Fl. Brit. Ind. 1: 319. 1874. *Althaea rosea* var. *sinensis* (Cavan.) 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: Dhupjhora Beat Office, Goutam & AP Das 0165, dated 08. 02. 2009.

Local Distribution: Dhupjhora Beat Office.

General Distribution: Extensively cultivated.

MALVA L., Sp. Pl. 2: 687. 1753.

Malva verticillata L., Sp. Pl. 689. 1753; Masters in Fl. Brit. Ind. 1: 320. 1874; Prain, Beng. Pl. 1: 256. 1903. *Malva neilgherrensis* Wight, Icon. Ind. Orient., t. 950. 1845. Sharma et al., Fl. Ind. 3: 363. 1993.

Local 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-Br., reniform.

Flowers & Fruits: December to March.

Specimen Cited: Murti Village, Goutam & AP Das 0205, dated 09. 02. 2009.

Local Distribution: Cultivate at villages.

General Distribution: India: cultivated throughout; Bhutan, Korea, Mongolia, Myanmar, Pakistan; Asia, Europe, Egypt and South Africa.

CORCHORUS L., Sp. Pl. 1: 529. 1753.

Corchorus aestuens L., syst. Nat. ed. 10. 2: 1079. 1759; Sharma *et al.*, Fl. Ind. 3: 485. 1993. *Corchorus acutangularis* Lam., encycl. 2: 104. 1786. Mast. in Hook. *f.*, Fl. Brit. Ind. 1: 398. 1874.; Prain, Beng. Pl. 1: 259.1903.. *Corchorus acutangulus* Lam., Encycl. 2: 104. 1786. *Corchorus oppositiflorus* Hassk., Tijdschr. Natuurl. Gesch. Physiol. 12: 126. 1845. *Corchorus fuscus* Roxb., Fl. Ind. 2: 582. 1824. *Corchorus furcatus* G.Don, Gen. Hist. 1: 544. 1831. *Corchorus aesticans* Hill, Veg. Syst. ed. 14: 23. 1769.

Local name: Jangli paat

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: Gorumara, Goutam & AP Das 0164, dated 08. 02. 2009.

Local Distribution: Gorumara, Gorati Beel.

General Distribution: India, Bangladesh, Bhutan, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa, Australia, Central America, West Indies.

TRIUMFETTA L., Sp. Pl. 1: 444. 1753.

Triumfetta rhomboidea Jacq., Enum. Syst. Pl. 22. 1760; Mast. in Hook. *f.*, Fl. Brit. India 1: 395. 1874; Mill. *et* Long in Grierson *et* Long, Fl. Bhutan 2 (1): 196. 1991; Prain, Beng. Pl. 1: 258.1903. *Bartramia indica* L., Sp. Pl. 389. 1753. *Triumfetta angulata* Lam., Encycl. 3(2): 421. 1791. *Triumfetta bartramii* L., 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-Br. 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, Goutam & AP Das 0078, dated 06. 02. 2009.

Local Distribution: Road side.

General Distribution: India; throughout tropics; type from West Indies.

BOMBAX L., Sp. Pl. 1: 511. 1753, *nom. cons.*

Bombax ceiba L., Sp. Pl. 1: 511. 1753; Nayar *et* Biswas in Sharma *et* Sanjappa, Fl. India 3: 398. 1993; Grierson *et* Long, Fl. Bhut. 2(1): 195. 1991. *Bombax ceiba* Burm.f., Fl. Indica 145. 1768. *Bombax malabaricum* DC., Prodr. 1: 479. 1824. *Gossampinus malabarica* Merr. in Lingnan Sci. Jour. 5: 126. 1927 (publ. 1928). *Gossampinus rubra* Buch.-Ham. in Trans. Linn. Soc. London 15: 128. 1826. *Melaleuca grandiflora* Blanco, Fl. Filip. 615. 1837.

Local 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: Dhupjhora, Goutam & AP Das 0435, dated 22.07.2009.

Local Distribution: Forest and Road side near Leopard cage.

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

ABROMA L. f., Suppl. Pl. 54. 1782.

Abroma augusta L. f., Suppl. Pl. 341. 1782; Grierson & Long, Fl. Bhut. 2(1): 206. 1991; Prain, Beng. Pl. 1: 278. 1903 (*Abroma augusta*).

Local 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: Dhupjhora Village, Goutam & AP Das 0073, dated 06. 02. 2009.

Local Distribution: Panted in Villages.

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

MELOCHIA L., Sp. Pl. 2: 674 [“774”]. 1753, *nom. cons.*

Melochia corchorifolia L., Sp. Pl. 675. 1753; Mast. in Hook. f., Fl. Brit. Ind. 1: 374. 1874; Sharma *et al.*, Fl. Ind. 3: 441. 1993; Grierson *et* Long, Fl. Bhut. 2(1): 206. 1991; Prain, Beng. Pl. 1: 277. 1903. Guha Bakshi, Fl. Mur. Dist. 71. 1984. *Riedleia corchorifolia* (L.) DC., Prodr. 1: 491. 1824. *Geruma subtriloba* Blanco, Fl. Filip. 182. 1837. *Melochia supina* L., Sp. Pl. 675. 1753. *Melochia erecta* Burm. f., Fl. Indica 143. 1768. *Riedleia corchorifolia* (L.) DC., Prodr. 1: 491. 1824.

Subshrubs, less than 1 m, erect or decumbent. Branches yellow-Br., sparsely stellate puberulent. Stipules linear. Leaves simple; lamina ovate to ovate lanceolate, 2 – 6 × 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 Br.-black, ovoid, slightly triangular.

Flowers & Fruits: June to December.

Specimen Cited: Murti, Goutam & AP Das 0383, dated 21.07.2009.

Local Distribution: Throughout the Beel Margin.

General Distribution: India: Paleotropical.

PTEROSPERMUM Schreber, Gen. Pl. 2: 461. 1791, *nom. cons.*

Pterospermum acerifolium Willd., Sp. Pl. 3: 729. 1800; Grierson *et* Long, Fl. Bhut. 2(1): 206. 1991; Prain, Beng. Pl. 1: 278. 1903.. *Pentapetes acerifolia* L., Sp. Pl. 698. 1753. *Pterospermadendron acerifolium* (L.) Kuntze, Revis. Gen. Pl. 1: 80. 1891. *Dombeya acerifolia* (L.) Gaertn., Fruct. Sem. Pl. 2: 260. 1791.

Local name: Hati Pehenlay

Big trees. Branchlets densely velutinous. Stipules linear; petiole robust, striate; lamina nearly orbicular to oblong, 20 – 35 × 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, Br., smooth.

Flowers & Fruits: August to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0473, dated 23.07.2009.

Local Distribution: Pantation forests.

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

STERCULIA L., Sp. Pl. 2: 1007. 1753.

Sterculia villosa Roxb., Fl. Ind., ed. 1832, 3: 153. 1832; Dyer in Hook. *f.*, Fl. Brit. Ind. 1: 355. 1874; Grierson *et* Long, Fl. Bhut. 2(1): 199. 1991; Prain, Beng. Pl. 1: 274. 1903.. *Sterculia armata* Mast. In Hook. *f.*, Fl. Brit. India 1: 357. 357. *Sterculia lantsangensis* Hu in Bull. Fan Mem. Inst. Biol., Bot. 8(1): 42. 1937.

Local name: Odal

Trees. Branchlets robust, with leaf scars, Br. 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: Dhupjhora, Goutam & AP Das 0468, dated 23.07.2009.

Local Distribution: Forests.

General Distribution: India, Bhutan, Cambodia, Myanmar, Nepal, Thailand. Tropical and sub-tropical parts of the world.

Note: Bark is used as rope

BOMBAX L., Sp. Pl. 1: 511. 1753, *nom. cons.*

Bombax ceiba L., Sp. Pl. 1: 511. 1753; Nayar & Biswas in Sharma & Sanjappa, Fl. India 3: 398. 1993; Grierson & Long, Fl. Bhut. 2(1): 195. 1991; Prain, Beng. Pl. 1: 274. 1903.. *Bombax ceiba* Burm.f., Fl. Indica 145. 1768. *Bombax malabaricum* DC., Prodr. 1: 479. 1824. *Gossampinus malabarica* Merr. in Lingnan Sci. Jour. 5: 126. 1927 (publ. 1928). *Gossampinus rubra* Buch.-Ham. in Trans. Linn. Soc. London 15: 128. 1826. *Melaleuca grandiflora* Blanco, Fl. Filip. 615. 1837.

Local 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: Gorumara, Goutam & AP Das 0753, dated 13.09.2009.

Local Distribution: Dhupjhora, Bichhabhanga, Gorumara, Khunia, very common.

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

Order 46: Sapindales Juss. ex Bercht. et Presl (1820)

Anacardiaceae R.Br. in Tuckey, Narr. Exped. Congo 431. 1818 ('Anacardieae'); *nom. cons.*

Key to the genera

- 1a. Leaves pinnately compound **Lannea**
 1b. Leaves simple **Mangifera**

LANNEA A.Rich. in Guillemain et al., Fl. Seneg. Tent. 153. 1831, *nom. cons.*

Lannea coromandelica (Houtt.) Merr. in Jour. Arnold Arb. 19: 353. 1939; Grierson et Long, Fl. Bhut. 2(1): 61. 1991. *Dialium coromandelicum* Houtt., Nat. Hist. Ser. 2(2): 39. t.5. f.2. 1774. *Odina wodier* Roxb., Fl. Ind. 2: 293. 1832; Hook. f., Fl. Brit. India 2: 29. 1876.

Local name: Jiga

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: Dhupjhora, Goutam & AP Das 0567. dated 21. 03. 2007; Goutam & AP Das 0595. dated 22. 03. 2007.

Local Distribution: Dhupjhora, Murti.

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 L., Sp. Pl. 1: 200. 1753.

Mangifera indica L., Sp. Pl. 1: 200. 1753; Hook. *f.*, Fl. Brit. India 2: 13. 1876; Grierson *et* Long, Fl. Bhut. 2(1): 59. 1991; Chandra *et* Mukh. in Singh *et* al., Fl. India 5: 466. 2000; Prain, Beng. Pl. 1: 352.1903.

Local name: Aam

Trees, up to 20 m. Petiole grooved apically, inflated basally; lamina oblong to oblong-lanceolate, 12 – 20 × 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: Murti village, Goutam & AP Das 0334, dated 21.07.2009.

Local Distribution: Murti, Dhupjhora.

General Distribution: India, Nepal, Bangladesh, Myanmar and Malaysia.

Meliaceae Juss., 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 *Toona*
- 2b. Filaments connate into a staminal tube 3
- 3a. Anthers inserted on apical margin of staminal tube *Chukrasia*
- 3b. Anthers inserted inside staminal tube *Swietenia*
- 4a. Fruits a capsule *Aphanamixis*
- 4b. Fruits a drupe 5
- 5a. Leaves bipinnate *Melia*
- 5b. Leaves pinnate..... *Azadirachta*

AZADIRACHTA Juss. Mim. Mel. 68. t. 2. 1830.

Azadirachta indica Jussieu in Mem. Mus. Hist. Nat. 19: 221.t.13.f. 5. 1830; Jain *et* Bennett in Hajra *et* al., Fl. Ind. 4: 478. 1997; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 32. 1991. *Melia azadirachta* L., Sp. Pl. 385. 1753; Hook. *f.*, Fl. Brit. Ind. 1: 544. 1875; Prain, Beng. Pl. 1: 314.1903.

Local name: Nim.

Trees, up to 10 m, deciduous. Leaves odd-pinnate, pinnate; leaflets opposite; lamilets ovate – elliptic to lanceolate, 3 – 7 × 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: Murti village, Goutam & AP Das 0452, dated 22.07.2009.

Local Distribution: Murti, Dhupjhora, Budhuram.

General Distribution: Pantropical.

Note: Cultivated widely.

CHUKRASIA Juss., Bull. Sci. Nat. Géol. 23: 239. 1830.

Chukrasia tabularis Jussieu in Mem. Mus. Hist. Nat. 19: 251. t. 22. 1830; Hook. *f.* in Hook. *f.*, Fl. Brit. India 1: 568. 1875; Jain *et* Bennett in Hajra *et al.*, Fl. Ind. 4: 481. 1997; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 39. 1991.

Local name: Chikrasi.

Trees, up to 25 m. Leaves usually 30 – 50 cm; lamilets 10 – 15; lamilet ovate to oblong-lanceolate, 6 – 12 × 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 × 5 – 6 mm. Staminal tube cylindric; anthers 10, oblong. Ovary on a short disk, elongate. Capsule yellowish gray to Br., subglobose to oblong, usually 3-valved, woody. Seeds flat, oblong.

Flowers & Fruits: April to January.

Specimen Cited: Murti, Goutam & AP Das 0454, dated 22.07.2009.

Local Distribution: Murti, Dhupjhora, Budhuram, Gorumara, Khunia, Bichhabhanga.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Indonesia, Laos, Malaysia, Thailand, Vietnam.

MELIA L., Sp. Pl. 1: 384. 1753.

Melia azedarach L., Sp. Pl. 384. 1753; Hook. *f.*, Fl. Brit. Ind. 1: 544. 1875; Jain *et* Bennett in Hajra *et al.*, 4: 494. 1997; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 30. 1991; Prain, Beng. Pl. 1: 313.1903.

Local name: Ghoranim.

Trees, up to 10 m, deciduous. Leaves odd-pinnate, 2 to 3-pinnate; leaflets opposite; lamilets ovate – elliptic to lanceolate, 3 – 7 × 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: Murti village, Goutam & AP Das 0243, dated 09. 02. 2009.

Local Distribution: Murti, Dhupjhora, Gorumara, Bichhabhanga.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Indonesia, Laos, Papua New Guinea, Philippines, Thailand, Vietnam; tropical Australia, Pacific islands.

SWIETENIA Jacq., Enum. Syst. Pl. 4. 1760.

Swietenia mahagoni (L.) Jacq., Enum. Syst. Pl. 20. 1760; Jain *et* Bennett in Hajra *et al.*, 4: 525. 1997. *Cedrela mahagoni* L., Syst. Nat., ed. 10, 2: 940. 1759.

Local name: Mehagoni.

Large trees, up to 25 m. Leaves alternate, base slightly swelling; leaflets 8 – 12; leaflet blades ovate to lanceolate, 10 – 18 × 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 Br., ovoid. Seeds apically winged.

Flowers & Fruits: May to October.

Specimen Cited: Dhupjhora, Goutam & AP Das 0390, dated 21.07.2009.

Local Distribution: Dhupjhora, Murti, Gorumara.

General Distribution: India, tropical Asia. Native to tropical America.

TOONA (Endl.) Roem., Fam. Nat. Syn. Monogr. 1: 131. 1846.

Toona ciliata Roemer, Fam. Nat. Syn. Monogr. 1: 139. 1846; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 38. 1991. *Cedrela toona* Roxb. *ex* Rottler, Ges. Naturf. Freunde Berlin Neue Schriften 4: 198. 1803; Hook. *f.*, Fl. Brit. Ind. 1: 568. 1875; Prain, Beng. Pl. 1: 320. 1903.

Local name: Tun.

Trees, up to 25m. Leaves pilose; leaflets usually 7 – 15 pairs, glabrescent; leaflet blades lanceolate to ovate-lanceolate, 9 – 11 × 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: Dhupjhora Beat Office, Goutam & AP Das 0267, dated 10.02. 2009.

Local Distribution: Dhupjhora, Murti.

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 Bl., Bijdr. 165. 1825.

Aphanamixis polystachya (Wall.) Parker, Indian Forester 57: 486. 1931; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 35. 1991. *Amoora rohituka* (Roxb.) Wight *et* Arnott in Wight, Cat. Ind. Pl. 24. 1833; Hook. *f.*, Fl. Brit. Ind. 1: 559. 1875. *Andersonia rohituka* Roxb., Fl. Ind. 2: 213. 1832. *Aglaia polystachya* Wall. in Roxburgh, Fl. Ind. 2: 429. 1824.

Local name: Lahsune

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 × 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 Br., oblate.

Flowers & Fruits: May to October.

Specimen Cited: Murti, Goutam & AP Das 0532, dated 23.07.2009.

Local Distribution: Murti, Dhupjhora.

General Distribution: India, Bhutan, Indonesia, Sri Lanka, Laos, Malaysia, Papua New Guinea, Philippines, Thailand, Vietnam; Pacific islands.

Rutaceae Juss., 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 Corrêa, Trans. Linn. Soc. London 5: 222. 1800, *nom. cons.*

Aegle marmelos (L.) Correa in Trans. Linn. Soc. London 5:223.1800; Hook. *f.*, Fl. Brit. Ind. 1:516.1875; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 10. 1991. *Crateva marmelos* L., Sp. Pl. 444.1753. Fl. Ind. 4: 264. 1997.

Local 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: Dhupjhora, Goutam & AP Das 0598, dated 26.07.2009.

Local Distribution: Dhupjhora, Khunia.

General Distribution: India, Myanmar and Sri Lanka.

CITRUS L., Sp. Pl. 2: 782. 1753.

Key to the species

- 1a. Shrubs *C. limon*
 1b. Trees *C. maxima*

Citrus limon (L.) Osbeck, Reis Ostindien China, 250. 1765; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 22. 1991. *Citrus medica* L. var. *limon* L., Sp. Pl. 2: 782. 1753.

Local 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: Dhupjhora, Goutam & AP Das 0594, dated 25.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia.

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

Citrus maxima (Burm.) Merrill, Interpr. Herb. Amboin. 296.1917; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 21. 1991. *Aurantium maximum* Burm. in Rumphius *et* Burm., Herb. Amboin. Auctuar. 7: Index [16]. 1755.

Local name: Jambura, Batabi Lebu

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: Dhupjhora village, Goutam & AP Das 0600, dated 26.07.2009.

Local Distribution: Khunia, Dhupjhora, Murti.

General Distribution: Pantropical.

CLAUSENA Burm., Fl. Indica, 87, 243. 1768.

Clausena excavate Burm. *f.*, Fl. Ind. 87, t. 29, 2. 1768; Hook. *f.*, Fl. Brit. Ind. 1: 504. 1875; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1): 16. 1991; Hajra *et al.*, Fl. Ind. 4: 325. 1997; Prain, Beng. Pl. 1: 301.1903.

Local 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 × 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: Gorumara, Goutam & AP Das 0528, dated 23.07.2009.

Local Distribution: Murti, Dhupjhora, Gorumara, Khunia, Budhuram, Bichhabhanga.

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

GLYCOSMIS Corrêa, Ann. Mus. Natl. Hist. Nat. 6: 384. 1805, *nom. cons.*

Glycosmis pentaphylla (Retz.) Candolle, Prodr. 1: 538. 1924 ; Grierson in Grierson *et* Long, Fl. Bhut. 2 (1) : 15. 1991. *Limonia pentaphylla* Retz., Observ. Bot. 5: 24. 1789.

Trees, up to 5m. Leaves 3 to 5 foliolate; leaflet blades oblong, 10–25 × 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: Murti forest, Goutam & AP Das 0561, dated 24.07.2009.

Local Distribution: Murti, Dhupjhora, Gorumara, Khunia, Budhram, Bichhabhanga.

General Distribution: Tropical and sub-tropical parts of the world. India, Bhutan, Sri Lanka, Indonesia, Cambodia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Thailand, NW Vietnam.

MURRAYA Koenig ex L., 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 (L.) Spreng., Syst. Veg. 2: 315. 1817; Hook. *f.*, Fl. Brit. Ind. 1: 503. 1875; 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; Prain, Beng. Pl. 1: 302. 1903. *Bergera koenigii* L., Mant. Pl. 2: 555, 563. 1771.

Local name: Kaaripata.

Shrubs, up to 5m. Leaves 17 – 31-foliolate; lamina ovate, 2–5 × 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: Murti, Goutam & AP Das 0679, dated 14. 02. 2008.

Local Distribution: Murti, Dhupjhora, Gorumara, Khunia, Budhram, Bichhabhanga.

General Distribution: Tropical and sub-tropical parts of the world. India, Bhutan, Nepal, Pakistan, Sri Lanka, Thailand, Laos, Vietnam.

Note: Leaves are edible

Murraya paniculata (L.) Jack, Malayan Misc. 1: 31. 1820; Grierson in Grierson *et Long*, Fl. Bhut. 2 (1): 17. 1991. *Chalcas paniculata* L., Mant. Pl. 1: 68. 1767.

Local 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: Murti, Goutam & AP Das 0642, dated 12. 02. 2008.

Local Distribution: Murti, Dhupjhora, Gorumara, Khunia, Budhram, Bichhabhanga.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Pakistan, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Philippines, Thailand, Vietnam; Australia, SW Pacific islands.

TODDALIA Juss., Gen. Pl. 371. 1789, *nom. cons.*

Toddalia asiatica (L.) Lam., Tabl. Encycl. 2: 116. 1797; Grierson in Grierson *et Long*, Fl. Bhut. 2 (1): 9. 1991. *Paullinia asiatica* L., Sp. Pl. 1: 365. 1753, *typ. cons.*

Local 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: Dhupjhora, Goutam & AP Das 0724, dated 14.02. 2008.

Local Distribution: Dhupjhora, Murti.

General Distribution: Tropical and sub-tropical parts of India, Bhutan, Nepal, Bangladesh, Indonesia, Japan, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Madagascar.

Sapindaceae Juss., Gen. Pl. 246. 1789 ('Sapindi'); *nom. cons.*

LITCHI Sonn., 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, Mém. Mus. Hist. Nat. 18: 30. 1829.

Local 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: Murti village, Goutam & AP Das 0313, dated 10. 02. 2009.

Local Distribution: Murti, Dhupjhora.

General Distribution: S.E. Asia; widely cultivated in subtropical regions. Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam, New Guinea; widely cultivated in subtropical regions.

Note: Cultivated in villages

Core-Eudicots: Asterids (fr.: Astéridées)

Order 47: Cornales Link (1829)

Cornaceae Dumort., Anal. Fam. Pl. 33. 1829 ('Corneae'); Link, Handb. 2: 2. 1831.

ALANGIUM Lam., Encycl. 1: 174. 1783, *nom. cons.*

Alangium chinense (Lour.) Harms in Ber. Deutsch. Bot. Ges. 15: 24. 1897; Clement in Grierson *et* Long, Fl. Bhutan 2(1): 332. 1991. *Stylidium chinense* Lour., Fl. Cochinch. 1: 221. 1790. *Marlea begoniaefolia* Roxb., Cor. Pl. 3: 80t. 203. 1819; Clarke in Hook. *f.*, Fl. Brit. Ind. 2: 743. 1879; *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: Dhupjhora, Goutam & AP Das 0640, dated 12. 02. 2008.

Local Distribution: Dhupjhora, Murti, Gorumara.

General Distribution: India: tropical; Bhutan, Nepal, Myanmar, Malaysia, Tropical Africa.

Order 48: Ericales Bercht. *et* Presl (1820)

Balsaminaceae DC., Prodr. 1: 685. 1824 ('Balsamineae'); *nom. cons.*

IMPATIENS L., 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 L., Sp. Pl. 2: 938. 1753; Grey-Wilson in Grierson *et* Long, Fl. Bhut. 2 (1): 103. 1991; Prain, Beng. Pl. 1: 296.1903.

Local name: Dopati.

Annual herbs, up to 100 cm. Stem succulent. Leaves alternate, sometimes lowest ones opposite; lamina narrowly elliptic to oblanceolate, 4 – 12 × 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 fusiform. Capsule broadly fusiform. Seeds many, black-Br., globose.

Flowers & Fruits: July to October.

Specimen Cited: Dhupjhora, Goutam & AP Das 0840, dated 12. 02. 2009.

Local Distribution: Dhupjhora, Gorumara.

General Distribution: Native to SE Asia; cultivated worldwide.

Impatiens trilobata Colebr., Exot. Fl. 2: t. 141. 1825; Grey-Wilson in Grierson *et* Long, Fl. Bhut. 2 (1): 90. 1991. *Impatiens flavida* Hook. *f. et* Thom., J. Proc. Linn. Soc., Bot. 4: 127. 1860.

Local name: Dopati.

Annual herbs, up to 100 cm. Stem succulent. Leaves alternate, sometimes lowest ones opposite; lamina narrowly elliptic – lanceolate to oblanceolate, 3 – 10 × 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 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 fusiform. Capsule broadly fusiform. Seeds many, black, globose.

Flowers & Fruits: July to October.

Specimen Cited: Dhupjhora, Goutam & AP Das 0620, dated 22.03.2009.

Local Distribution: Gorumara, Dhupjhora, Bichhabhanga; abundant.

General Distribution: Tropical Asia.

Ebenaceae Vent., Tabl. Regne V6g. 2: 443. 1799; *nom. cons.*

DIOSPYROS L., Sp. Pl. 2: 1057. 1753.

Diospyros malabarica (Desrouss.) Kosteletsky, Allg. Med. Pharm. Fl. 3: 1099. 1834; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(2): 576. 1999. *Garcinia malabarica* Desrouss. in Lam., Ency. 3: 701. 1792. *Diospyros embryopteris* Pers., 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* (Roxb.) Wallich, Numer. List. 4123. B. 1831.

Local name: Gaab

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: Murti, Goutam & AP Das 0222, dated 09. 02. 2009.

Local Distribution: Murti and Dhupjhora.

General Distribution: India, Sri Lanka, Thailand.

Lecythidaceae Poit., 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 Forst. *et* G. Forst., Char. Gen. Pl. 38. 1775, *nom. cons.*

Barringtonia acutangula (L.) Gaertn., Fruct. 2: 97. 1791; Clarke in Hook. *f.*, Fl. Brit. Ind. 2: 508. 1879. *Eugenia acutangula* L., Sp. Pl. 471. 1753. *Butonica acutangula* (L.) Lam., Tabl. Encycl. t. 591. 1794. *Caryophyllus acutangulus* (L.) Stokes, Bot. Mat. Med. 3: 75. 1812. *Michelia acutangula* (L.) Kuntze, Revis. Gen. Pl. 1: 240. 1891.

Local 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: Murti, Goutam & AP Das 0109, dated 07. 02. 2009.

Local Distribution: Murti.

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

CAREYA Roxb., Pl. Corom. 3: 13. 1811; *nom. cons.*

Careya arborea Roxb., Pl. Corom. 3: 14, t.218. 1819; Clarke in Hook. *f.*, Fl. Brit. Ind. 2:511. 1879; Long *et* Rae in Grierson *et* Long, Fl. Bhutan 2(1): 290. 1991. *Barringtonia arborea* (Roxb.) Mueller, Fragm. 5: 184. 1866. *Careya orbiculata* Miers, Trans. Linn. Soc. London, Bot. 1: 98. 1875. *Cumbia coneanae* Buch.-Ham., Trans. Linn. Soc. London 15: 97. 1827. *Careya sphaerica* Roxb., Fl. Ind. 2: 636. 1824.

Local 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: Murti, Goutam & AP Das 0153, dated 08. 02. 2009.

Local Distribution: Murti, Dhupjhora, Gorumara, Khunia, Bichhabhanga, Budhram.

General Distribution: India, Bhutan, China, Sri Lanka, Bangladesh, Pakistan.

Primulaceae Vent., 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 Sw., Prodr. Veg. Ind. Occ. 3: 48. 1788.

Ardisia solanacea Roxb., 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: Dhupjhora, Goutam & AP Das 0249, dated 10. 02. 2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Nepal, Singapore, Sri Lanka, cultivated in Hawaii.

MAESA Forssk., Fl. Aegypt. Arab. 66. 1775.

Maesa indica (Roxb.) Candolle, Trans. Linn. Soc. London 17(1): 134. 1834; Long *et* Rae in Grierson *et* Long, Fl. Bhut. 2(2): 507. 1999. *Baeobotrys indica* Roxb., 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: Murti, Goutam & AP Das 0177, dated 08. 02. 2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

General Distribution: India:throughout; Bhutan, China, Vietnam.

Sapotaceae Juss., Gen. Pl. 151. 1789 ('Sapotae'); *nom. cons.*

MANILKARA Adanson, Fam. Pl. 2: 166. 1763, *nom. cons.*

Manilkara zapota (L.) P.Royen, Blumea 7: 410. 1953. *Achras sapota* L., Sp. Pl. ed. 2: 470. 1762. *Achras zapota* L., Sp. Pl. App.: 1190. 1753. *Pouteria mammosa* (L.) Cronquist, Lloydia 9: 287. 1946. *Sapota achras* Miller, Gard. Dict. ed. 8: 1. 1768.

Local 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: Dhupjhora, Goutam & AP Das 0104, dated 07. 02. 2009.

Local Distribution: Dhupjhora.

General Distribution: India: cultivate throughout; Sri Lanka, Thailand, Vietnam, Cambodia.

Theaceae Mirb., Bull. Soc. Philom. 3: 381. 1813 (*nom. lect.* vs. Ternstroemiaceae, vide D. Don, 1825); *nom. cons.*

CAMELLIA L., Sp. Pl. 2: 698. 1753.

Camellia japonica L., Sp. Pl. 698. 1753. *Camellia florida* Salisb., Prodr. Stirp. Chap. Allerton 370. 1796. *Camellia bonnardii* Berlese ex Lemaire, Hort. Universel 3: 161. 1842.

Local name: Camelia.

Shrubs. Petiole glabrous or adaxially pubescent; leaf blade broadly elliptic to oblong-elliptic, 5 – 10 × 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: Dhupjhora, Goutam & AP Das 0060, dated 07. 02. 2009.

Local Distribution: Dhupjhora.

General Distribution: India: cultivated throughout; China. Cultivated world wide.

Core-Eudicots: Asterids: Euasterids (I)

unassigned to order - Keine Ordnungseinteilung

Boraginaceae Juss., Gen. P1. 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 L., Sp. Pl. 1: 134. 1753.

Cynoglossum lanceolatum Forsskal, Fl. Aegypt. – Arab. 41.1775; Clarke in Hook. *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; Hook. *f.*, Fl. Brit. Ind. 4: 156.1883. *Cynoglossum racemosum* Roxb., Fl. Ind. 2: 6. 1824. *Cynoglossum hirsutum* Thunb., 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, $7 - 10 \times 1 - 3$ 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: Khunia, Goutam & AP Das 0062, dated 26.06.2006.

Local Distribution: Dhupjhora, Gorumara, abundant.

General Distribution: India, Bhutan, China, Indo-Malayan.

HELIOTROPIUM L., Sp. Pl. 1: 130. 1753.

Heliotropium indicum L., Sp. Pl. 1: 139.1753; Clarke in Hook. *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* Lehm., Pl. Asperif. Nucif. 14. 1818. *Heliotropium foetidum* Salisb., Prodr. Stirp. Chap. Allerton 112. 1796. *Tiaridium indicum* (L.) Lehman, Pl. Asperif. Nucif. 1: 14. 1818. *Heliophytum indicum* (L.) 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 $5 - 10 \times 3 - 4$ 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: Dhupjhora, Goutam & AP Das 0810, dated 26.07.2009.

Local Distribution: Gorumara, Dhupjhora, abundant.

General Distribution: India, Bhutan, Bangladesh, China, America, Tropical Africa and Malaysia.

Icacinaceae (Benth.) Miers, Ann. Mag. Nat. Hist. ser. 2: 9: 221. 1852; *nom. cons.*

NATSIATUM Buch.-Ham. ex Arn., Edinburgh New Philos. Jour. 16: 314. 1834.

Natsiatum herpeticum Buch.-Ham. ex Arnott, Edinburgh New Philos. J. 16: 314. 1834; Hook. *f.* in Hook. *f.*, Fl. Brit. India 1: 595. 1875; 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* Gagnep., Notul. Syst. (Paris) 1: 205. 1910.

Young branches yellow – Br. 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: Dhupjhora, Goutam & AP Das 0610, dated 26.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

General Distribution: Throughout India; Bhutan, China, Bangladesh, Nepal, Sri Lanka, NE Thailand, N Vietnam, NE Laos, S Myanmar.

Order 50: Gentianales Lindl. (1846)**Apocynaceae** Juss., 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 ***Calotropis***
- 2b. Climbing or prostrate herbs 3
- 3a. Corolla tube cylindrical, campanulate ***Marsdenia***
- 3b. Corolla rotate to shallowly bowl-shaped ***Dregea***
- 4a. Subshrubs or perennial herbs 5
- 4b. Climbers or Shrubs or trees 6
- 5a. Fruits a follicle ***Catharanthus***
- 5b. Fruits a subglobose drupe ***Rauvolfia***
- 6a. Leaves whorled, at least toward tips of branches ***Alstonia***
- 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 ***Wrightia***
- 8b. Stamens included or barely exerted; corona absent ***Tabernaemontana***
- 9a. Trees; corolla lobes not caudate ***Holarrhena***
- 9b. Climbers, corolla lobes caudate 10
- 10a. Corolla funnelform to subcampanulate ***Vallisneria***
- 10b. Corolla cylindric ***Ichnocarpus***

CATHARANTHUS G. Don, Gen. Hist. 4: 95. 1837.

Catharanthus roseus (L.) G. Don, Gen. Hist. 4: 95. 1837; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 670. 1999. *Vinca rosea* L., Syst. Ed. 10: 944. 1759; Hook. *f.*, Fl. Brit. Ind. 3: 640. 1882. *Ammocallis rosea* (L.) Small, Fl. S.E. U.S. 936. 1903. *Pervinca rosea* (L.) Moench, Methodus 463. 1794.

Local 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: Dhupjhora, Goutam & AP Das 1057, dated 22.09.2010.*Local Distribution:* Dhupjhora, Murti.

General Distribution: Throughout India; Bhutan, China, Bangladesh, Nepal, Sri Lanka, NE Thailand, N Vietnam, NE Laos, S Myanmar.

TABERNAEMONTANA Linnaeus, Sp. Pl. 1: 210. 1753.

Tabernaemontana divaricata (L.) R. Br. in Roem. Schultes, Syst. Veg. 4: 427. 1819; Ohashi in Hara, Fl. E. Himal. 1: 259. 1966; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 675. 1999. *Nerium divaricatum* L., Sp. Pl. 209. 1753. *Tabernaemontana coronaria* (Jacq.) Willd., Enum. Hort. Bertol 275. 1809; Hooker *f.*, Fl. Brit. Ind. 3: 646. 1882. *Tabernaemontana recurva* Roxb., Hort. Bengal. 20. 1814. *Nyctanthes acuminata* Burm. *f.*, Fl. Indica 5. 1768. *Kopsia cochinchinensis* Kuntze, Revis. Gen. Pl. 2: 415. 1891.

Local name: Sadaful; Chaiti ful.

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 November

Specimen Cited: Dhupjhora, Goutam & AP Das 0922, dated 25.03.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Native of Tropical Asia, widely naturalised.

CALOTROPIS R. Br., Mem. Wern. Nat. Hist. Soc. 1: 39. 1810 (preprint).

Calotropis gigantea (L.) Dryander in Aiton, Hortus Kew. ed. 2, 2: 78. 1811; Hook. *f.*, Fl. Brit. Ind. 4: 17. 1883; Ohashi in Hara, Fl. E. Himal. 1: 260. 1966; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 700. 1999. *Asclepias gigantea* L., Sp. Pl. 214. 1753. *Calotropis gigantea* (L.) R. Br. *ex* Schultes, Syst. Veg. 6: 91. 1820. *Periploca cochinchinensis* Lour., Fl. Cochinch. 1: 167. 1790.

Local 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: Dhupjhora, Goutam & AP Das 0728, dated 21.09.2008.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Bhutan, Bangladesh, Nepal, Pakistan, Sri Lanka, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam; tropical Africa.

DREGIA Meyer, Comm. Pl. Afr. Austr. 199. 1838, *nom. cons.*

Dregea volubilis (L. *f.*) Benth. *ex* Hook. *f.*, Fl. Brit. India 4: 46. 1883. *Wattakaka volubilis* (L. *f.*) Stapf, Bot. Mag. 148: , sub pl. 8976. 1923; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 723. 1999. *Asclepias volubilis* L. *f.*, Suppl. Pl. 170. 1782. *Marsdenia volubilis* (L. *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, 7–15 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: Dhupjhora, Goutam & AP Das 0610, dated 26.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Throughout India; Bhutan, China, Bangladesh, Nepal, Sri Lanka, NE Thailand, N Vietnam, NE Laos, S Myanmar.

CHONEMORPHA G. Don, Gen. Hist. 4: 76. 1837, nom. cons.

Chonemorpha grandiflora (Roth) M. R. & Almeida, J. Bombay Nat. Hist. Soc. 90: 427. 1993. *Echites grandiflora* Roth, Nov. Pl. Sp. 136. 1821. *Chonemorpha fragrans* (Moon) Alston, Ann. Roy. Bot. Gard. (Peradeniya) 11: 203. 1929. *Echites fragrans* Moon, Cat. 20.1824. *Echites macrophylla* Roxb., Fl. Ind. 2:13. 1832. *Chonemorpha macrophylla* (Roxb.) G. Don, Gen. Syst. 4: 76. 1837; Wight, Ic.t. 432. 1841; Hook. f., Fl. Brit. India 3: 661. 1882; Gamble, Fl. Pres. Madras 818(575). 1923.

Large climbers; branches hispid. Leaves 15-20 x 14-18 cm, orbicular, obtuse, base cordate, densely tomentose above and below; nerves 10-12 pairs, regular, prominent arching below the margins; petiole 7-8 cm long. Flowers in terminal or axillary cymes; few together; pedicels stout, pubescent; calyx 5lobed, lobes obovate, obtuse; corolla tube ca. 2.5 cm long, cylindrical, glabrous lobes 5, 5-6 x 3-3.5 cm; stamens 5, included, anthers sagitate, acuminate spurred below; carpels free; style cleft below, stigma conical. Mericarps to 30 cm long, terete, glabrous; seeds many, obovate, comose; coma to 5 cm long, many, cottony.

Flowering & Fruiting: April-December.

Distribution: India, Myanmar, Sri Lanka and Andaman and Nicobar Islands. Occasional; in semi-evergreen forests. RNMK 3388, Manikkunnumala.

HOLARRHENA R.Br., Mem. Wern. Nat. Hist. Soc. 1: 62. 1811.

Holarrhena pubescens Wall. 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.

Local 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: Khunia, Goutam & AP Das 0054, dated 28.06.2006.

Local Distribution: Khunia, Murti, Gorumara, Common.

General Distribution: , India, Bhutan, Nepal, Bangladesh, CambodiaLaos, Myanmar, Thailand.

ICHNOCARPUS R. Br., Mem. Wern. Nat. Hist. Soc. 1: 61. 1811, nom. cons.

Ichnocarpus frutescens (L.) Aiton in Aitonf., Hort. Kew. ed. 2, 2:69.1811; Hook. f., Fl. Brit. Ind. 3:669.1882; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 686.1999. *Apocynum frutescens* L., Sp. Pl. 213.1753. *Echites frutescens* (L.) Roxb., Hort. Bengal. 230: 20. 1814. *Gardenia volubilis* Lour., Fl. Cochinch. 148. 1790. *Ichnocarpus frutescens* (L.) R. Br., Mem. Wern. Nat. Hist. Soc. 1: 62. 1809.

Local 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 cylindric; 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: Khunia, Goutam & AP Das 0008. dated 25. 06. 2006: Murti, Goutam & AP Das 0416. dated 17. 12. 2006: Khunia, Goutam & AP Das 0140. dated 02. 07. 2006

Local Distribution: Throughout the study area, abundant.

General Distribution: India, Bhutan, China, Bangladesh, Nepal, Sri Lanka, Myanmar, Java and Australia.

RAUVOLFIA L., Sp. Pl. 1: 208. 1753.

Rauvolfia serpentina (L.) Benth. ex Kurz, For. Fl. Burma 2: 171. 1877; Hook. f., Fl. Brit. India 3: 632. 1882; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 686.1999.

Small shrubs, up to to 1 m. Leaves in whorls of 3–5; petiole 2–5 mm; lamina ovate to oblong, 2–12 × 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: Khunia, Goutam & AP Das 77, dated 26.06.2006.

Local Distribution: Khunia, Common.

General Distribution: Native to tropical America.

VALLARIS Burm., 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* Griff., Not. Pl. Asiat. 4: 77. 1854. *Vallaris solanacea* (Roth) 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; leaf blade elliptic to narrowly elliptic, 2–16 × 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 × 1.5 - 3 cm. Seeds ellipsoid, coma 3–4 cm.

Flowers & Fruits: March to July.

Specimen Cited: Dhupjhora, Goutam & AP Das 0594. dated 22. 03. 2007: Gorumara, Goutam & AP Das 0735. dated 12. 09. 2007: Murti, Goutam & AP Das 0350. dated 17. 12. 2006.

Local Distribution: Dhupjhora, Gorumara, Murti, abundant.

General Distribution: Cambodia, India, Indonesia, Laos, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam.

WRIGHTIA R.Br., Mem. Wern. Nat. Hist. Soc. 1: 73. 1811.

Wrightia arborea (Dennstaedt) Mabberl. 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* Roem. *et* Schultes in L., Syst. Veg. 4/414. 1819; Clarke in Hook. *f.*, Fl. Brit. India 3:653.1882. *Nerium tomentosum* (Roem. *et* Schultes) Roxb., Fl. Indica ed. 1832. 2: 6. 1832.

Local name: Khira.

Trees upto 20 m tall. Branches gray or Br., pubescent, lenticellate. Petiole 2 – 8mm; leaf blade elliptic to broadly elliptic - obovate, 5 – 18 × 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: Khunia, Goutam & AP Das 0115, dated 02. 07. 2006.

Local Distribution: Khunia, Gorumara, Budhuram, Common.

General Distribution: India, Bhutan, China, Bangladesh, Pakistan, Sri Lanka, Myanmar, Thailand.

MARSDENIA R.Br., Prodr. 460. 1810.

Marsdenia tinctoria R. Br. in Mem. Wern. Nat. Hist. Soc. 1: 28-30. 1810; Hook. *f.*, Fl. Brit. Ind. 4: 34. 1883; Ohashi in Hara, Fl. E. Himal. 1: 262. 1966; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 709. 1999. *Pergularia tinctoria* (R.Br.) Sprengel, Syst. Veg. 1: 844. 1824. *Marsdenia tinctoria* var. *tomentosa* Masamune *ex* Tsiang *et* 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* Roxb., [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: August to Dec.

Specimen Cited: Khunia, Goutam & AP Das 0115. dated 02. 07. 2006.

Local Distribution: Dhupjhora, Common.

General Distribution: India, Bhutan, Nepal, Sri Lanka, Indonesia, Japan, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

ALSTONIA R.Br., Mem. Wern. Nat. Hist. Soc. 1: 75. 1811, *nom. cons.*

Alstonia scholaris (L.) R.Br., Mem. Wern. Nat. Hist. Soc. 1:76. 1811; Hook. *f.*, Fl. Brit. Ind. 3: 642. 1882; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 672. 1999. *Echites scholaris* L., Mant. Pl. 1:53.1767. *Pala scholaris* (L.) Roberty, Bull. Inst. Fran. Afrique Noire 15: 1426. 1953.

Local 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 × 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: Gorumara, Goutam & AP Das 0708, dated 30. 09. 2009.

Local Distribution: Throughout the forests.

General Distribution: India, Bhutan, Bangladesh, Sri Lanka, Singapore, Malay Archipelago, tropical Australia and Africa.

Rubiaceae Juss., 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 ***Dentella***
- 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 ***Oldenlindia***
- 4b. Fruit schizocarpous, with 2 flattened winged pyrenes ***Paederia***
- 5a. Ovules 2 or more in each locule of the ovary..... 7
- 5b. Ovules in 1 each locule of the ovary..... ***Mitracarpus***
- 6a. Calyx and corolla lobes each 6 ***Richardia***
- 6b. Calyx and corolla lobes 3–5 ***Spermacoce***
- 7a. Calyx tubes fused into a fleshy mass 8
- 7b. Calyx tubes distinct, free 10
- 8a. Flowers fused together by their ovaries; fruit multiple ***Morinda***
- 8b. Flowers free; fruit free 9
- 9a. Flowers in globose heads, terminal..... 12
- 9b. Flowers variously arranged in cymes, axillary 11
- 10a. Bracts present; corolla lobes valvate..... ***Haldina***
- 10b. Bracts absent; corolla lobes imbricate..... ***Neolamarckia***
- 11a. Style much longer than the corolla..... ***Pavetta***

- 11b. Style smaller corolla..... **Coffea**
 12a. Corolla lobes valvate..... **Mussaenda**
 12b. Corolla lobes twisted 13
 13a. Plants armed with axillary spines **Catunaregam**
 13b. Plants unarmed..... **Ixora**

CATUNAREGAM Adanson, Fam. 2: 85. 1763.

Catunaregam spinosa (Thunb.) Tirveng., Bull. Mus. Hist. Nat. (Paris) Ser. 3. 35: 13. 1978; Long *et al.* in Grierson *et* Long, Fl. Bhut. 2(2): 737. 1999. *Gardenia spinosa* Thunb., Diss. Gard. 7: 16. t.2. f.4. 1780. *Gardenia dumetorum* Retz., Obs. Bot. 2: 14. 1781. *Randia dumetorum* (Retz.) Poir. var. *floribunda* (DC.) Gamble, Fl. Pres. Madras 616(434). 1921. *Randia brandisii* Gamble, Fl. Pres. Madras 616(434). 1921. *Randia spinosa* (Thunb.) Poir. in Lam., Encycl. Suppl. 2:329.1811; Hook. *f.*, Fl. Brit. India 3:110.1880. *Xeromphis spinosa* (Thunb.) Keay, Bull. Jard. Bot. Brux. 28: 37. 1958.

Small trees with small straight axillary spines. Leaves opposite on short lateral branchlets, 4-4.5 x 1.5-2 cm, obovate, obtuse, tomentose below, petiolate; lateral nerves 7-9 pairs, domatia present in the nerve axils; petiole to 1.5 cm long; stipule ovate, cuspidate. Flowers solitary, terminal or lateral branches, pedicellate; calyx tube ca. 0.5 cm long, lobes obovate, hispid; corolla tube ca. 0.6 cm long, broad, densely villous at the base inside; lobes 5, ca. 1.2 cm long, obovate, twisted, white; stamens 5, anthers sessile at the mouth of the corolla; ovary 2-6-celled; ovules many; style ca. 1.2 cm long, stout; stigma fusiform, ribbed. Fruit an obovoid berry, ca. 4 x 3 cm, subglobose, glabrous; seeds many, embedded in pulp.

Flowers & Fruits: April to December.

Specimen Cited: Khunia, Goutam & AP Das 0639, dated 12. 02. 2008

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Tropical Asia and Africa.

HALDINA Ridsdale, Blumea 24: 360. 1978.

Haldina cordifolia (Roxb.) Ridsd., Blumea 24: 361. 1978; Long *et al.* in Grierson *et* Long, Fl. Bhut. 2(2): 739. 1999. *Nauclea cordifolia* Roxb., Pl. Corom. t. 53. 1796. *Adina cordifolia* (Willd. *ex* Roxb.) Hook. *f.* in Benth. *et* Hook. *f.*, Gen. Pl. 2: 30.1873; Hook. *f.*, Fl. Brit. India 3: 24. 1880. *Nauclea cordifolia* Willd. *ex* Roxb., Pl. Corom. I: 40, t. 53 (1795); Takasi Yamazaki in Hara, Fl. E. Himal. 1: 306. 1966.

Large deciduous trees; bark pale brown; branchlets tomentose. Leaves 13-15 cm across, orbicular, cordate at base, tomentose below; petiole 5-8 cm long; stipule ca. 1.3 cm long, obovate, obtuse. Heads ca. 2 cm across, globose, 2-3 together, axillary, peduncled; receptacle hispid; flowers 0.9-1 cm long, sessile; calyx tube obovoid, lobes spatulate; corolla tube ca. 0.8 cm long, 5-ridged; lobes 5, ovate, acute, small; stamens 5, exserted; ovules many; style ca. 1.2 cm long, stigma globose. Capsule obovoid; seeds with tail at one end and a bifid wings at other end.

Flowers & Fruits: October to March.

Specimen Cited: Khunia, Goutam & AP Das 0862, dated 23.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Myanmar, Sri Lanka and Indo-China. Occasional; in moist deciduous forests.

IXORA L., Sp. Pl. 110. 1753.

Key to the species:

- 1a. Calyx lobes equal to the tube *I. coccinea*
1b. Calyx lobes minute *I. nigricans*

Ixora coccinea L., Sp. Pl. 110. 1753; Hook. f., Fl. Brit. India 3: 145. 1880; Long *et al.* in Grierson *et* Long, Fl. Bhut. 2(2): 739. 1999.

Woody herbs to small shrubs. Leaves subsessile, oblong to oblanceolate, 58 x 2.5-3.5 cm, base subcordate, apex subacute. Cymes corymbiform, sessile; flowers dense; calyx lobes equal to the tube; corolla red, tube 3-3.5 cm long. Berry red, globose.

Flowers & Fruits: February to November.

Specimen Cited: Khunia, Goutam & AP Das 0962, dated 23.07.2010.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Peninsular India and Sri Lanka.

Ixora nigricans R. Br. *ex* Wight *et* Arn., Prodr. 428. 1834; Hook. f., Fl. Brit. India 3: 148. 1880; Long *et al.* in Grierson *et* Long, Fl. Bhut. 2(2): 738. 1999.

Shrubs, young shoots glabrous. Leaves 13-16 x 4-5 cm, elliptic to oblanceolate, long-acuminate, attenuate at base; nerves 8-10 pairs, reticulate; petiole ca. 1 cm long; stipule ca. 7 mm long, ovate, acuminate. Cymes ca. 10 cm across; peduncles 4-6 cm long; flowers pedicelled, many; calyx lobes minute, acuminate; corolla tube ca. 1 cm long, slender; lobes ovate, acute; style ca. 1.6 cm long. Drupe ca. 1 cm across, subglobose. Flowering &

Flowers & Fruits: December to March.

Specimen Cited: Khunia, Goutam & AP Das 0462, dated 23.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Subtropical India, Bangladesh, Myanmar, Malesia.

MITRACARPUS Zuccarini in Schultes, Mant. 3: 210. 1827.

Mitracarpus hirtus (L.) DC., Prodr. 4: 572. 1830; Long *et al.* in Grierson *et* Long, Fl. Bhut. 2(2): 739. 1999. *Spermacoce hirta* L., Sp. Pl. ed. 2: 148. 1762. *Mitracarpus villosus* (Sw.) DC., Prodr. 4: 572. 1830. *Spermacoce villosa* Sw., Prodr. 29. 1788. *Mitracarpus verticillatus* (Schum. *et* Thonn.) Vatke, Linnaea 40: 196. 1876; Sebastine *et* Ramam., Bull. Bot. Surv. India 9: 921. 1968; Manilal *et* Sivar., Fl. Calicut 134. 1982.

Erect herbs, 45-50 cm high, little or not branched; stems 4-angled. Leaves to 3-3.5 x 1.5-2 cm, elliptic, acute, sessile, 3-5-nerved, plicate; stipules connate, membranous, fimbriate. Flowers minute, in axillary clusters; calyx lobes 4, unequal; corolla ca. 2.5 mm long, white, tube slender, lobes ovate, obtuse; stamens 4, anthers sessile at mouth of corolla tube; ovary 2-celled; ovule solitary in each cell; style 2-fid at apex. Capsule ca. 2 mm long, obovoid, with persistent calyx lobes; seeds 2, oblong, rugose.

Flowers & Fruits: July to December.

Specimen Cited: Khunia, Goutam & AP Das 1162, dated 23.07.2011.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Tropical and subtropical India, Tropical Africa and America.

MUSSAENDA L., Sp. Pl. 177. 1753.

Mussaenda Roxburghii Hook. f., Fl. Brit. Ind. 3: 87. 1880; Takasi Yamazaki in Hara, Fl. E. Himal. 1: 312. 1966.

Climbing shrubs. Leaves 10-11 x 7-8 cm, broadly ovate, acuminate, rounded at base, thinly hairy; nerves 10-12 pairs, parallel; petiole ca. 5 cm long, slender; stipule ca. 1.2 cm long. Flowers pedicelled; larger calyx lobes 89 cm across, orbicular, hirsute, white; other calyx lobes ca. 1 cm long, linear; corolla tube 2.5-2.9 cm long, orange-yellow, slender, adpressed hairy, densely villous inside. Fruits ca. 8 x 6 mm, globose.

Flowers & Fruits: September to March.

Specimen Cited: Dhupjhora, Goutam & AP Das 1187, dated 25.07.2011.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Nepal, Bhutan, Myanmar.

NEOLAMARCKIA Bosser, Bull. Mus. Natl. Hist. Nat., B, Adansonia 6: 247. 1985.

Neolarckia cadamba (Roxb.) Bosser in Bull. Mus. Nation. Hist. Nat. 4e ser., B. Adansonia 6: 247. 1984; Long *et al.* in Grierson *et* Long, Fl. Bhut. 2(2): 739. 1999. *Nanlea cadamba* Roxb., Fl. Ind. ed. Carey, 2: 121. 1824. *Sarcocephalus cadamba* (Roxb.) Kurz, Prelim. Rep. Forest Pegu App. A: lxxviii. 1875. *Samama cadamba* (Roxb.) Kuntze, Revis. Gen. Pl. 1: 296. 1891. *Anthocephalus cadamba* (Roxb.) Miquel, Fl. Ned. Ind. 2: 135. 1856.

Local 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, funnellform; lobes lanceolate. Fruiting head yellowish green at maturity. Seeds nearly 3 angled.

Flowers & Fruits: June to November.

Specimen Cited: Dhupjhora, Goutam & AP Das 0587, dated 25.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

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

PAVETTA L., Sp. Pl. 110. 1753.

Pavetta indica L., Sp. Pl. 110. 1753; Wight, Ic. t. 148. 1839; Hook. f., Fl. Brit. India 3: 150. 1880; Takasi Yamazaki in Hara, Fl. E. Himal. 1: 314. 1966.

Shrubs, branchlets glabrescent. Leaves 13-16 x 7-9 cm, obovate or oblanceolate, apex acuminate, base acute, glabrescent in both surface; petiole 1.7-2 cm long. Cymes corymbose, axillary and terminal; calyx ca. 3 mm, lobes obovate; corolla white, tube ca. 1.2 cm long, lobes obovate; stamens 4; ovary ca. 2 mm, style ca. 3 cm. Berry 6-8 mm across, subglobose.

Flowers & Fruits: April to July.

Specimen Cited: Dhupjhora, Goutam & AP Das 1188, dated 25.07.2011.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India and Sri Lanka.

SPERMACOCE L., Sp. Pl. 1: 102. 1753.

Key to the species

- 1a. Angles of stems narrowly winged *S. alata*
 1b. Angles of stems not winged *S. ocymoides*

Spermacoce ocymoides Burm. f., Fl. Indica 34. 1768; Springate, Mill, Wood, Wright *et* Long in Grierson *et* Long, Fl. Bhut. 2(2): 819. 1999. *Bigelovia parviflora* Spreng., Syst. Veg. 1: 405. 1824. *Borreria ocymoides* (Burm. f.) DC., 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: May to June.

Specimen Cited: Khunia, Goutam & AP Das 0632, dated 12. 02. 2008

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

General Distribution: Pantropical.

Spermacoce alata Aub., Hist. Pl. Guiane 60. 1775; Springate, Mill, Wood, Wright *et* Long in Grierson *et* Long, Fl. Bhut. 2(2): 818. 1999. *Borreria alata* (Aub.) Candolle, Prodr. 4: 544. 1830.

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 June.

Specimen Cited: Gorumara, Goutam & AP Das 0529, dated 23.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

General Distribution: Pantropical.

COFFEA L., Sp. Pl. 1: 172. 1753.

Coffea bengalensis Roxb. ex Schultes, Syst. Veg. 5: 200. 1819 *et*. Fl. Ind. 1: 540. 1820; Clarke in Hook. f., Fl. Brit. India 3: 153. 1880; Takasi Yamazaki in Hara, Fl. E. Himal. 1: 308. 1966. *Psilanthus bengalensis* (Roxb. ex Schultes) 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 florefoliosa* Chevalier, Rev. Bot. Appl. Agric. Trop. 18: 836. 1938. *Coffea semiexserta* Colebr. ex Roxb., Fl. Ind. 2: 195. 1824. *Psilanthus bababudanii* Sivarajan, Bijuet P. Mathew, Bot. Bull. Acad. Sin. n.s., 33: 212. 1992.

Local name: Chaiti ful.

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: Khunia, Goutam & AP Das 0462, dated 23.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Subtropical Himalaya, Bangladesh, Myanmar.

DENTELLA Forst. & G. Forst., Char. Gen. Pl. 13. 1775.

Key to the species

- 1a. Fruits densely multicellular transparent villose *D. repens*
 1b. Fruits glabrous *D. repens* var. *serpyllifolia*

Dentella repens (L.) Froster *et* G. Froster, Charact. Gen. Pl. 26, t. 13. 1775; Hook. *f.*, in Hook. *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 *et* Orissa Pt. IV: 443. 1922; Mooney, Suppl. Bot. Bihar *et* Orissa 71. 1950; Panda *et* Das, Fl. Sambalp., 168. 2004. *Oldenlandia repens* L., Mantius Pl. 1: 40. 1767. *Hedyotis repens* (L.) Lam., Tabl. Encycl. 1: 271. 1792.

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: Khunia, Goutam & AP Das 0472, dated 23.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Tropical India; Bhutan, Sri Lanka, Myanmar, Singapore, Malayan Island to N. Australia and Polynesia.

Dentella repens var. ***serpyllifolia*** (Wall. *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* Wall. *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: Dhupjhora, Goutam & AP Das 0644, dated 12. 02. 2008.

Local Distribution: Dhupjhora.

General Distribution: Pantropical.

OLDENLENDIA L., 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 L., Sp. Pl. 1: 119. 1753; Hook. *f.*, Fl. Brit. Ind. 3: 64. 1880; Takasi Yamazaki 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* (L.) Lam., Tab. Encl. 1: 272. 1791; Panda *et* Das, Fl. Sambalp., 172. 2004. *Gerontogea corymbosa* (L.) Chamisso & Schlechtendal, Linnaea 4: 154. 1829. *Hedyotis biflora* var. *corymbosa* (L.) 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: Murti, Goutam & AP Das 0599, dated 26.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Sri Lanka, Tropical Asia, Africa, America.

Oldenlandia diffusa (Willd.) Roxb., Hort. Beng. 11. 1814; Fl. Ind. 1: 444. 1820; Prain, Beng. Pl. 1: 559. 1903; Hook. *f.* in Hook. *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* Willd., Sp. Pl. 1: 566. 1798; Panda *et* Das, Fl. Sambalp., 172. 2004. *Hedyotis diffusa* var. *extensa* (Hook. *f.*) Dutta, Taxon. Revis. Hedyotis Indian Subcont. 146. 2004. *Oldenlandia pauciflora* Roxb. *ex* Wight *et* 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, tubulate; 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: Murti, Goutam & AP Das 0526, dated 23.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Tropical and sub-tropical India; S. China, Japan, Malaysia, Borneo and Philippines.

Oldenlandia verticillata L., Mant. Pl. 1: 40. 1767. *Hedyotis verticillata* (L.) Lam., 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* (Retz.) Lam., Encycl. 4: 536. 1798. *Scleromitrium crassifolium* Miq., Fl. Ned. Ind. 2: 185. 1857. *Hedyotis verticillata* (L.) Lam., Tabl. Encycl. 1: 271. 1792.

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 exserted. Style apex inflated. Capsule ovate. Seeds many in each cell.

Flowers & Fruits: March to November.

Specimen Cited: Khunia, Goutam & AP Das 0653, dated 13. 02. 2008.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Nepal, Vietnam, Malaysia, Indonesia

PAEDERIA L., Syst. Nat., ed. 12, 2: 135, 189; Mant. Pl. 1: 7, 52. 1767, *nom. cons.*

Paederia foetida L., Mant. Pl. 1: 52. 1767; Fl. Ind. 2:517. 1824; Clarke in Hook. *f.*, Fl. Brit. India 3:195. 1881; Takasi Yamazaki 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* Roxb. *ex* Wight *et* Arnott, Prodr. Fl. Ind. Orient. 424. 1834. *Paederia tomentosa* Bl., Bijdr. 968. 1826. *Paederia scandens* var. *mairei* (Liveilli) Hara, Enum. Sperm. Jap. 2: 24. 1952. *Paederia scandens* f. *microphylla* (Honda) Hara, Enum. Sperm. Jap. 2: 25. 1952. *Paederia scandens* (Lour.) 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.

Local 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: Khunia, Goutam & AP Das 0412, dated 22.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Throughout India; China, Malaysia.

MORINDA L., Sp. Pl. 1: 176. 1753.

Morinda angustifolia Roxb., Pl. Coromandel 3: 32. 1815 *et*. Pl. Coromandel tab. 287. 1819; Clarke in Hook. *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* Buch.- Ham., Trans. Linn. Soc. London 13: 535. 1822.

Local 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. Drupcetum white, mulberry-shaped; drupes obovate, 4 seeded.

Flowers & Fruits: March to June.

Specimen Cited: Khunia, Goutam & AP Das 0662, dated 13. 02. 2008.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

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

RICHARDIA L., Sp. Pl. 1: 330. 1753.

Richardia scabra L., Sp. Pl. 330. 1753. *Spermacoce hirsuta* Willd. ex Roem. et Schultes, Syst. Veg. 3: 531. 1818. *Plethyrasis glauca* Raf., Autik. Bot. 13. 1840. *Richardia pilosa* Ruiz et Pavon, Fl. Peruv. 3: 50. 1802. *Richardsonia cubensis* 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, sessile 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: Murti, Goutam & AP Das 0494, dated 23.07.2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Native to tropical America.

Order 51: Lamiales Bromhead (1838)

Acanthaceae Juss., Gen. Pl. 102. 1789 ('Acanthi'); *nom. cons.*

Key to the genera

- 1a. Large vines *Thunbergia*
- 1b. Prostrate or erect herbs, shrubs 2
- 2a. Hooklike retinacula present in fruits 3
- 2b. Retinacula absent in fruits *Nelsonia*
- 3a. Calyx lobes heteromorphic 4
- 3b. Calyx lobes homomorphic 5
- 4a. Upper lip of corolla 4-lobed and lower lip 1-lobed *Barleria*
- 4b. Upper lip of corolla 2-lobed and lower lip 3-lobed *Lepidagathis*
- 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 *Phaulopsis*
- 6b. Inflorescence not secund, bracts linear to oblong *Hygrophila*
- 7a. Ovules 3 to many per locule; seeds 6 to many per capsule *Phlogacanthus*
- 7b. Ovules 2 per locule; seeds 4 per capsule 8
- 8a. Stamens 4 11
- 8b. Stamens 2 9
- 9a. Flowers subtended by 2 involucre *Dicliptera*
- 9b. Flowers subtended by a single pair of bracteoles 10
- 10a. Inflorescence often dense with imbricate bracts 2 to 4-ranked *Rungia*
- 10b. Inflorescence a spike *Justicia*
- 11a. Bract lanceolate 12

- 11b. Bracts triangular *Asystasia*
 12a. Calyx lobes linear *Peristrophe*
 12b. Calyx lobes lanceolate *Eranthemum*

PERISTROPHE Nees in Wall., Pl. Asiat. Rar. 3: 77, 112. 1832.

Peristrophe paniculata (Forsskål) Brummitt, Kew Bull. 38: 451. 1983. *Dianthera paniculata* Forssk., Fl. Aeg.-Arab. 7. 1775. *Peristrophe bicalyculata* (Retz.) Nees in Wall., Pl. Asiat. Rar. 3: 113. 1832; Clarke in Hooker f., Fl. Brit. India 4: 554. 1885; Takasi Yamazaki in Hara, Fl. E. Himal. 1:303. 1966.

Erect herbs, stem 6-angular. Leaves 4.5-6 x 2-3 cm, ovate, apex acute, base rounded or truncate, glabrescent above and tomentose below. Panicles axillary; pedicels 1.7-2 cm long; bracts 2, unequal, bracteoles 4, linear, hirsute; calyx lobes linear; corolla tube 5-7 mm long, hairy, lobes 6-7 mm long; filaments hairy, cells muticous; ovary oblong. Capsule ellipsoid, tomentose.

Flowers & Fruits: December to February.

Specimen Cited: Khunia, Goutam & AP Das 0962, dated 13. 02. 2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Bhutan, Nepal, Cambodia, Indonesia, Malaysia, Myanmar, Pakistan, Philippines, Thailand, Vietnam; tropical Africa, Australia.

ERANTHEMUM L., Sp. Pl. 1: 9. 1753.

Eranthemum griffithii (Anders.) Bremek et Nonnenga Bremek in Verh. Nederl. Akad. Wetensch. Sect. 2, 95: 35. 1948; Takasi Yamazaki in Hara, Fl. E. Himal. 2:123. 1969; *Daedalacanthus griffithii* Anders. in J. Linn. Soc. 9: 486. 1867; Clarke in Hook. f. Fl. Brit. Ind. 4: 418. 1884.

Herbs up to 1 m. Stems 4 angled. Lamina lanceolate to linear-lanceolate to oblong, 6-20 x 2-4 cm, glabrous, base attenuate and decurrent onto petiole, entire or crenulate, acuminate. Spikes 3-8 cm; bracts yellowish white with green along veins, oblong to lanceolate; bracteoles lanceolate. Calyx 5-6 mm, outside pilose, 5 lobed to middle; lobes lanceolate. Corolla blue to light purple; lobes obovate. Stamens included; filaments glabrous. Ovary gland-tipped pubescent; style hirsute. Capsule 1-1.5 cm. Seeds gold to reddish brown to blackish.

Flowers & Fruits: December to March.

Specimen Cited: Khunia, Goutam & AP Das 0968, dated 13. 02. 2009.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

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

ASYSTASIA Bl., Bijdr. 796. 1826.

Asystasia macrocarpa Nees in Wall., Pl. As. Rar. 3: 89. 1832; Clarke in Hook. f., Fl. Brit. Ind. 4: 495. 1885; 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 x 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: Dhupjhora, Goutam & AP Das 0629. dated 22. 03. 2007.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Thailand, Indo-China peninsula to Malaysia.

BARLERIA L., 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 L., Sp. Pl. 636.1753; Clarke in Hook. *f.*, Fl. Brit. India 4:488. 1884; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1281. 2001. *Barleria alba* Lodd., Bot. Cab. 4: t. 360. 1820. *Barleria ciliata* Roxb., Fl. Ind. 3: 38. 1832. *Barleria dichotoma* Roxb., Fl. Ind. ed. 1832 3: 39. 1832. *Barleria laciniata* Wall., Pl. Asiat. Rar. 3: 91. 1832. *Barleria indica* L. *ex* Anderson, J. Linn. Soc., Bot. 7: 115. 1864.

Local 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: Khunia, Goutam & AP Das 0669, dated 13. 02. 2008.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Indo-China, India; Islands of Indian Ocean.

Barleria strigosa Willd., Sp. Pl. 3: 379. 1800; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1281. 2001. *Barleria caerulea* Roxb., Fl. Ind. 3: 39. 1832. *Barleria polystachya* Hook. *ex* Nees, Prodr. 11: 226. 1847. *Barleria strigosa* var. *polystachya* (Nees) Clarke, Fl. Brit. India 4: 490. 1884. *Barleria strigosa* var. *terminalis* (Nees) Clarke, Fl. Brit. India 4: 490. 1884.

Much branched subshrubs. Stems subterete, coarsely fulvous strigose. Lamina elliptic to ovate, 6–15 × 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 Br., 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: Murti, Goutam & AP Das 0477. dated 18.12.2006.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Bhutan, China, Nepal, Sri Lanka, Indonesia, Malaysia, Myanmar, Thailand, Cambodia and Vietnam.

DICLIPTERA Juss., Ann. Mus. Natl. Hist. Nat. 9: 267. 1807, *nom. cons.*

Dicliptera bupleuroides Nees in Wall., Pl. As. Rar. 3: 111. 1832; Ohashi in Hara, Fl. E. Himal. 1: 301. 1966; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1292. 2001. *Dicliptera roxburghii* Anderson, J. Linn. Soc., Bot. 9: 519. 1867. *Justicia canescens* Wall., Numer. List 72: n. 2423. 1830. *Dicliptera cardiocarpa* Nees, Pl. Asiat. Rar. 3: 111. 1832. *Dicliptera roxburghiana* var. *bupleuroides* (Nees) 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 Murti, Goutam & AP Das 0310. dated 16. 12. 2006; Khunia, Goutam & AP Das 0083. dated 27. 06. 2006.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Bhutan, Bangladesh, Himalayas, Afghanistan, Thailand, Indo-Chinese Peninsula.

HYGROPHILA R. Br., Prodr. 479. 1810.

Key to the species

- 1a. Herbs with axillary spines & flowers *H. auriculata*
- 1b. Herbs with terminal dens spike, spine less 2
- 2a. Flowers axillary, in whorls upward *H. phlomoides*
- 2b. Inflorescences terminal, spikes *H. polysperma*

Hygrophila auriculata (Schumach.) Heine, Kew Bull. 16(2): 172. 1962; Majumdar, Bull. Bot. Soc. Beng. 19(1): 13. 1965; Guha Bakshi, Fl. Mur. Dist. 239. 1984. Cook, Aqua. Wetl. Pl. Ind. 35. 1996. *Hygrophila spinosa* Anderson in Thwerts, Enum. Pl. Zeyl. 225. 1860 & J. Lin. Soc. (Bot) 7: 22. 1864; Hook. *f.*, Fl. Brit. Ind. 4: 408. 1884; Prain, Beng. Plants 2: 802. 1903. *Astercanthus longifolia* (L.) Nees in Wall., Pl. As. Rar. 3: 90. 1832 & Candolle, Prodr. 11: 247. 1887.

Local name: Kulekhara

Vigorous perennial, spiny erect, hispid herbs. Leaves sessile, lanceolate or oblong-lanceolate, acute at both ends, sparsely hispid. Flowers in dense axillary whorls with 6 spines, bracts linear-lanceolate, hispid, calyx lobes linear-lanceolate, corolla bright bluish purple, glabrous or finely puberulent, Capsule linear oblong; 4 – 8 seeded.

Flowers & Fruits: July to December

Specimen Cited: Dhupjhora, Goutam & AP Das 0297. dated 16. 12. 2006.

Local Distribution: Dhupjhora, Gorumara.

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

Hygrophila polysperma (Roxb.) Anderson, J. Linn. Soc. (Bot.) 9: 456. 1867; Clarke in Hook. *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* Roxb., Fl. Ind. 1; 119. 1832. *Hemiadelphus polyspermus* (Roxb.) Nees in Wall., Pl. As. Rar. 3: 80. 1832; Guha Bakshi, Fl. Mur. Dist. 238. 1984. *Ruellia uliginosa* Wall., Numer. List 2378. 1830.

Perennials, prostrate herbs, up to 1m. Stems 4 angled, slightly swollen above nodes. Lamina oblong-lanceolate to ovate, 2 – 4 × 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: Gorati, Goutam & AP Das 0297. dated 16. 12. 2006: Goutam & AP Das 0308. Dated 16. 12. 2006.

Local Distribution: Dhupjhora, Gorumara.

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

Hygrophila phlomoides Nees, in Wall., Pl. Asiat. Rar. 3: 80. 1832; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1252. 2001. *Cardanthera longifolia* Buch.-Ham. *ex* Nees, Prodr. 11: 90. 1847. *Ruellia phlomoides* Wall., Numer. List 2376. 1830.

Perennial, erect herbs. Stems 4-angled, Br. strigose. Petiole hirsute; lamina elliptic to obovate – oblong, 2–10 × 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: Dhupjhora, Goutam & AP Das 0407. dated 17. 12. 2006.

Local Distribution: Dhupjhora, Gorumara.

General Distribution: India, Bhutan, Indonesia, Philippines, Indo-Chine peninsula, Pakistan, Thailand, Vietnam.

JUSTICIA L., 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 L., 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; Clarke in Hook. *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.

Local 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: Murti, Goutam & AP Das 0437. dated 17. 12. 2006.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Probably native to India, Tropical and sub-tropical parts of the world.

Justicia gendarussa Burm. f., Fl. Indica 10. 1768; Clarke in Hook. f., Fl. Brit. India 4: 532. 1885; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1287. 2001. *Gendarussa vulgaris* Nees in Wall., Pl. As. Rar. 3: 104. 1832. *Justicia gandarussa* L. f., Suppl. Pl. 85. 1782. *Ecbolium gendarussa* (Burm. f.) Kuntze, Revis. Gen. Pl. 2: 487. 1891.

Local name: Kalakasunda.

Subshrubs up to 1.5 cm tall, much branched. Stems swollen at nodes. Lamina narrowly lanceolate, 5–9 × 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: Murti, Goutam & AP Das 0327. dated 17. 12. 2006.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Nepal, Bhutan, Sri Lanka, Thailand, Cambodia, Myanmar; widely cultivated.

Justicia diffusa Willd., Sp. Pl. 1: 87. 1797; Clarke in Hook. f., Fl. Brit. Ind. 4: 538. 1885; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1288. 2001. *Justicia procumbens* L., Sp. Pl. 1: 15. 1753. *Rostellaria diffusa* (Willd.) 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: Gorumara, Goutam & AP Das 0682. dated 11. 09. 2007.

Local Distribution: Murti, Gorumara.

General Distribution: India, Nepal, Bhutan, Sri Lanka, Myanmar and Thailand.

Justicia japonica Thunb., Fl. Jap. 20. 1784. *Justicia simplex* Don, Prodr. Fl. Nepal. 118. 1825; Clarke in Hook. f., Fl. Brit. Ind. 4: 539. 1885; Grierson *et* Long, Fl. Bhut. 2(3): 1288. 2001. *Justicia japonica* Thunb., 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: Murti, Goutam & AP Das 0531, dated 23.07.2009.

Local Distribution: Murti.

General Distribution: India, Nepal, Bhutan, Sri Lanka, Myanmar, Thailand and Malaya.

LEPIDAGATHIS Willd., Sp. Pl. 3: 400. 1800.

Lepidagathis incurva Buch.-Ham. ex Don, Prodr. Fl. Nepal. 119. 1825; Ohashi in Hara, Fl. Nep. 3:142.1982; Hara, Fl. E. Himal. 1: 303. 1966; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1286. 1991. *Lepidagathis hyaline* Nees in Wall., Pl. As. Rar. 3: 95. 1832; Clarke in Hook. *f.*, Fl. Brit. India 4: 521. 1885.

Ascending herbs, up to 90 cm, anisophyllous. Stems 4-angled, sulcate. Lamina ovate to elliptic, 3–10 × 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 exserted. Ovary pubescent. Capsule 5mm, distally pubescent. Seeds subcircular.

Flowers & Fruits: November to April.

Specimen Cited: Murti, Goutam & AP Das 0543. dated 16. 12. 2006: Gorumara, Goutam & AP Das 0684. dated 11. 09. 2007.

Local Distribution: Beel margins through out.

General Distribution: India, China, Mayanmer, Malaysia, Phillipins.

NELSONIA R.Br., Prodr. 480. 1810.

Nelsonia canescens (Lam.) Sprengel in L., Syst. Veg. ed. 16. 1: 42. 1824; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1250. 2001. *Justicia canescens* Lam., Tab. Encycl. Method Bot. 1: 41. 1791. *Nelsonia campestris* R. Br., Prodr. Fl. Nov. Hall. 1: 481. 1810; Clarke in Hook. *f.*, Fl. Brit. Ind. 4: 394. 1884; Prain, Beng. Pl. 2: 594.1903. *Justicia lamiifolia* Roxb., Fl. Ind., ed. 1820 1: 135. 1820. *Dianthera tomentosa* Roxb. ex Clarke in Hook. *f.*, Fl. Brit. India 4: 395. 1884. *Nelsonia lamiifolia* (Roxb.) Sprengel, Syst. Veg. 1: 42. 1824. *Nelsonia rotundifolia* R. Br., Prodr. 481. 1810.

Annual herbs, creeping, prostrate to decumbent. Stems subterete, villous. Petiole villous; lamina elliptic to ovate, 1–3 × 1–1.5cm, lamina of basal leaves 6–10 × 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: Murti, Goutam & AP Das 0240. dated 16. 12. 2006: Goutam & AP Das 0433. dated 17. 12. 2006.

Local Distribution: Road side forest ground throughout.

General Distribution: India, Bhutan, China, Nepal, Indonesia, Laos, Malaysia, Myanmar, Cambodia, Phillipines, Thailand, Vietnam; Africa, Madagascar.

PHAULOPSIS Willd., Sp. Pl. 3: 4, 342. 1800 [“Phayloopsis”], *nom. cons.*

Phaulopsis imbricate (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* Griff., Not. Pl. Asiat. 4: 137. 1854. *Aetheilema reniforme* Nees, Pl. Asiat.

Rar. 3: 94. 1832. *Phaulopsis parviflora* Willd., Sp. Pl. 3: 342. 1800. *Aetheilema reniforme* Nees, Pl. Asiat. Rar. 3: 94. 1832.

Ascending herbs, up to 50 cm, slightly anisophyllous. Stems ascending, 4-angled. Petiole 4–5 cm; lamina ovate to elliptic, 7–10 × 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: Murti, Goutam & AP Das 0283. dated 16. 12. 2006.

Local Distribution: Throughout Forest.

General Distribution: India, Bhutan, Bangladesh, Indo-China, Vietnam, Himalaya, tropic Africa.

PHLOGACANTHUS Nees in Wall., Pl. Asiat. Rar. 3: 76, 99. 1832.

Phlogacanthus thyrsoformis (Roxb. ex Hardw.) Mabberley, Bot. Hist. Hortus Malabaricus 189. 1980. *Justicia thyrsoformis* Hardw., Asiat. Res. 6: 349. 1799. *Phlogacanthus thyrsoflorus* Nees, Pl. Asiat. Rar. 3: 99. 1832; Clarke in Hook. f., Fl. Brit. India 4: 512. 1884; 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 thyrsoides* Roxb. ex Nees, Prodr. 11: 321. 1847. *Phlogacanthus thyrsoflorus* (Hardw.) Mabberley in Bot. Hist. Hortus Malabaricus 83. 1980.

Local name: Jaglibasak.

Large shrubs, up to 4m. Lamina elliptic-oblong to oblong, 8–16 × 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: Murti, Goutam & AP Das 0361. dated 17. 12. 2006: *Khunia*, Goutam & AP Das 0064. dated 26. 06. 2006: *Gorumara*, Goutam & AP Das 0759. dated 11. 07. 2007: *Dhupjhora*, Goutam & AP Das 0565. dated 21. 03. 2007.

Local Distribution: Throughout the forested areas; abundant.

General Distribution: India, Bhutan, Myanmar, Nepal.

RUNGIA Nees in Wall., Pl. Asiat. Rar. 3: 77, 109. 1832.

Rungia pectinata (L.) Nees in 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* L., Torner, Cent. II: Pl. 3. 1756; Amoen. Acad. 4: 299. 1760. *Dicliptera pectinata* (L.) Juss., Ann. Mus. Hist. Nat. 9: 169. 1807. *Dianthera parviflora* Roxb. ex Nees, Prodr. 11: 471. 1847. *Rungia parviflora* Nees, Pl. Asiat. Rar. 3: 110. 1832. *Rungia parviflora* (Retz.) Nees var. *pectinata* (L.) Clarke in Hook. 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 × 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: Murti, Goutam & AP Das 0281. dated 16. 12. 2006.

Local Distribution: Throughout study areas.

General Distribution: India, Bhutan, Sri Lanka, Bangladesh, Myanmar, Nepal, Thailand, Vietnam and Malaysia.

THUNBERGIA Retz., Physiogr. Sölsk. Handl. 1(3): 163. 1780, *nom. cons.*

Key to the species

1a. Petiole round; lamina oblong-ovate; flowers solitary; stem slender *T. fragrans*

1b. Petiole grooved; lamina triangular-ovate; flowers in pendulous

panicle; stem thick *T. grandiflora*

Thunbergia fragrans Roxb., 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* Pers., Syn. Pl. 2: 179. 1806.

Large vines, herbaceous. Stems 4-angled, sulcate. Petiole hirsute; lamina oblong-ovate, broadly ovate to oblong-lanceolate, 5–15 × 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 cylindric; lobes obovate. Stamens included; filaments glabrous; anther thecae divergent. Ovary glabrous; style exerted; stigma funnel-shaped. Capsule glabrous.

Flowers & Fruits: September to April.

Specimen Cited: Khunia, Goutam & AP Das 0036. dated 25. 06. 2006.

Local Distribution: Takomari forest.

General Distribution: India, Bhutan, China, Sri Lanka, Indonesia, Laos, Philippines, Cambodia, Thailand, Vietnam.

Thunbergia grandiflora (Roxb. *ex* Rottler) Roxb., Bot. Reg. 6: 495. 1820; Wood in Grierson *et* Long, Fl. Bhut. 2(3): 1248. 2001. *Flemingia grandiflora* Roxb. *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 × 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: Murti, Goutam & AP Das 0249. dated 16. 12. 2006: *Dhupjhora*, Goutam & AP Das 0586. dated 22. 03. 2007.

Local Distribution: Dhupjhora.

General Distribution: India, Bhutan, China, Myanmar, Thailand, Vietnam.

Bignoniaceae Juss., Gen. P11. 137. 1789 ('Bignoniae'); *nom. cons.*

Key to the genera

- 1a. Leaflets 2 to 6; lamina triangular-ovate 2
 1b. Leaflets 9 to 19; lamina elliptic-oblong to obovate-oblong *Spathodea*
 2a. corolla yellow, bilabiate *Stereospermum*
 2b. Corolla purple-red; tube fleshy; upper lip 2 lobed, lower lip 3 lobed *Oroxylum*

STEREOSPERMUM Chamisso, Linnaea 7: 720. 1833.

Stereospermum colais (Buch.-Ham. ex Dillwyn) Mabberley, Taxon 27: 553. 1978. *Bignonia colais* Buch.-Ham. ex Dillwyn, Rev. Hort. Malab. 28. 1839. *Stereospermum tetragonum* DC., Prodr. 9: 210. 1845; Gamble, Fl. Pres. Madras 998(701). 1924. *Stereospermum chelonoides* sensu Wight, Ic. t. 1341. 1845, non (L.f.) DC.1838; Clarke in Hook.f., Fl. Brit. India 4: 383. 1884.

Large trees, bark transversally rugose, grey. Leaves 30-35 cm long, 1pinnate; lamina 10-12 x 4-4.5 cm, 4-6 pairs, ovate, entire or serrate, caudateacuminate, obtuse at base, slightly unequal-sided, petiolulate; nerves 8-10 pairs. Flowers in terminal panicles, many together; calyx 6-7 mm long, campanulate, shallowly lobed, lobes obtuse; corolla yellow, 2-2.5 cm long, ca. 1.5 cm broad, bilabiate, lobes subequal, crisped; stamens 5, included, filaments pubescent at base; ovary sessile, oblong, 2-celled, ovules many, 1seriate, style slender, stigmas 2, spoon shaped. Capsule 30-35 x 0.5-0.7 cm, subtetragonous, spirally splitting; seeds 7-8 mm long, with membranous wing on both sides.

Flowers & Fruits: February to October.

Specimen Cited: Murti, Goutam & AP Das 0924, dated 10. 02. 2010.

Local Distribution: Murti, Dhupjhora, Gorumara, Bichabhanga, Budhram, Khunia.

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

OROXYLUM Ventenat, Decas Gen. Nov. 8. 1808.

Oroxylum indicum (L.) Benth. ex Kurz, Forest Fl. Burma 2: 237. 1877; Aitken in Grierson et Long, Fl. Bhut. 2(3): 1241. 2001. *Bignonia indica* L., Sp. Pl. 2: 625. 1753. *Bignonia tuberculata* Roxb. ex Candolle, Prodr. 9: 177. 1845. *Bignonia pentandra* Lour., Fl. Cochinch. 379. 1790. *Spathodea indica* (L.) Pers., Syn. Pl. 2: 173. 1807.

Trees up to 10 m. Leaves 2 to 4 pinnately compound, 60 – 130 cm; lamina triangular-ovate, 5 – 12 × 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: Murti, Goutam & AP Das 0299, dated 10. 02. 2009.

Local Distribution: Murti, Dhupjhora, Gorumara, Bichabhanga, Budhram, Khunia.

General Distribution: India: tropical and sub-tropical; Bhutan, China, Nepal, Indonesia, Cambodia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

SPATHODEA Beauv., Fl. Oware 1: 46, t. 27. 1805.

Spathodea campanulata Beauv., 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: Dhupjhora, Goutam & AP Das 0176, dated 08. 02. 2009.

Local Distribution: Planted in Villages.

General Distribution: Throughout India; Native in Tropical Africa.

Lamiaceae Lindl., 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 corolla 7
- 4a. Anthers not globose; corolla tube mostly exserted 5
- 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 galeate 6
- 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 *Rothea*
- 12b. Calyx dentate at anthesis *Clerodendrum*
- 13a. Leaves palmately compound *Vitex*
- 13b. Leaves simple 14
- 14a. Corolla funnelform; stigma lobes very unequal *Gmelina*
- 14b. Corolla tubular; stigma lobes equal *Premna*

AJUGA L., Sp. Pl. 2: 561. 1753.

Ajuga macrosperma Wall. ex Benth., Pl. Asiat. Rar. 1: 58. 1830; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 944. 1999. *Bulga macrosperma* (Wall. 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 × 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 funnelform, 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: Indong, Goutam & AP Das 0408, dated 22.07.2009.

Local Distribution: Gorumara, Dhupjhora; rare.

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

ANISOMELES R.Br., Prodr. 503. 1810.

Anisomeles indica (L.) Kuntze, Revis. Gen. Pl. 2: 512. 1891. *Nepeta indica* L., Sp. Pl. 571. 1753. *Anisomelis indica* L., Sp. Pl. 1: 571. 1753; Bora *et* Kumar, Flor. Div. Assam. 267. 2003. *Anisomelis ovata* R.Br. in Aiton, Hort. Kew 3: 364. 1811; Hook. *f.*, Fl. Brit. Ind. 4: 672. 1885; Prain, Beng. Pl. 2: 853. 1903. *Monarda zeylanica* Burm. *f.*, Fl. Indica 12. 1768. *Marrubium indicum* (L.) Burm. *f.*, Fl. Indica 127. 1768. *Ajuga glabrata* Benth. ex Wall., Numer. List 2041. 1829. *Ajuga disticha* (L.) Roxb., Hort. Bengal. 44. 1814. *Ballota disticha* L., Mant. Pl. 1: 83. 1767.

Erect, branched, herbs up to 2 m. Lamina broadly ovate, 4 – 9 × 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 funnelform; upper lip oblong; lower lip subhorizontally spreading; middle lobe obcordate; lateral lobes ovate. Ovary glabrous. Nutlets ovoid.

Flowers & Fruits: September to December.

Specimen Cited: Murti, Goutam & AP Das 0283, dated 10. 02. 2009.

Local Distribution: Murti, Dhupjhora, Gorumara.

General Distribution: India, Bhutan, Bangladesh, Laos, Malaysia, Cambodia, Myanmar, Philippines, Thailand, Vietnam.

HYPTIS Jacq., Collectanea 1: 101. 1787, *nom. cons.*

Hyptis suaveolens (L.) Poiteau, Ann. Mus. Hist. Nat. 7: 472. 1806; Clement in Grierson et Long, Fl. Bhut. 2(2): 990. 1999. *Ballota suaveolens* L., Syst. Nat. ed. 10 2: 1100. 1759. *Schaueria graveolens* (Bl.) Hasskarl, Flora 25(2 Beibl.): 25. 1842. *Mesosphaerum suaveolens* (L.) Kuntze, Revis. Gen. Pl. 2: 525. 1891. *Marrubium indicum* Blanco, Fl. Filip. 477. 1837. *Bystropogon graveolens* Bl., Bijdr. 824. 1826.

Local name: Bontulsi.

Annual, branched, robust herbs, aromatic. Lamina ovate to broadly ovate, 1.5 – 11 × 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 Br.

Flowers & Fruits: August to June.

Specimen Cited: Khunia, Goutam & AP Das 0318, dated 21.07.2009.

Local Distribution: Khunia, Murti, Bichhabhanga.

General Distribution: India; native in tropical America, widespread tropical weed.

ISODON (Schrad. ex Benth.) Spach, Hist. Nat. Veg. Phan. 9: 162. 1840.

Isodon rugosus (Wall ex Benth) Codd, Taxon 17: 239. 1968; Clement in Grierson et Long, Fl. Bhut. 2(2): 997. 1999. *Plectranthus rugosus* Wall. ex Benth., Pl. Asiat. Rar. 2: 17. 1830. *Rabdosia rugosa* (Wall. ex Benth.) 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 × 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 Br., triquetrous, oblong.

Flowers & Fruits: July to October.

Specimen Cited: Gorumara, Goutam & AP Das 0482, dated 23.07.2009.

Local Distribution: Gorumara, Dhupjhor.

General Distribution: India, Bhutan, Bangladesh, Nepal, Pakistan, Afghanistan.

LEONURUS L., Sp. Pl. 2: 584. 1753.

Leonurus sibiricus L., Sp. Pl. 584. 1753. *Phlomis sibirica* (L.) 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.

Local name: Raktadron.

Erect annuals, up to 1.2 m. Lower stem leaves early deciduous. Lamina ovate, 5 – 7 × 2 – 4 cm, sparsely strigose, lobes narrowly oblong-rhombic, 3 lobulate, base broadly cuneate. Verticillasters many flowered, 3 palmatisect; bracteoles reflexed, shorter than calyx tube, strigose. Flowers sessile. Calyx tubular-campanulate. Corolla red, rarely white. Filaments sparsely scaly. Nutlets brown, oblong, triquetrous.

Flowers & Fruits: July to September.

Specimen Cited: Murti, Goutam & AP Das 0580, dated 25.07.2009.

Local Distribution: Near Murti Jaldhaka junction.

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

LEUCAS R. Br., Prodr. 504. 1810.

Key to the species

1a. Verticillasters loosely globose, few flowered; calyx teeth narrowly triangular *L. indica*

1b. Verticillasters compactly globose, many flowered; calyx teeth

broadly triangular *L. aspera*

Leucas indica (L.) R. Br. ex Vatke in Oesterr. Bot. Zeits. 25: 95. 1875; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 963. 1999. *Leonurus indicus* L., Syst. ed 10: 1101. 1760. *Leucas linifolia* (Roth) Spreng., Syst. 2: 743. 1825; Hook. *f.*, Fl. Brit. Ind. 4: 690. 1885; Prain, Beng. Pl. 2: 856. 1903. *Leucas indica* (L.) Robert Br. ex Sm., Cycl. 20: 5. 1812. *Phlomis indica* L., 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* Cramer, Revised Handb. Fl. Ceylon 3: 184. 1981.

Local name: Madhuful.

Annual herbs, up to 30 cm. Lamina linear, 2.5 – 5 × 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 Br., oblong.

Flowers & Fruits: Through out the Year.

Specimen Cited: Garden, Goutam & AP Das 0292, dated 10. 02. 2009.

Local Distribution: Throughout the study areas.

General Distribution: Pantropical hemisphere.

Leucas aspera (Willd.) Link, Enum. Hort. Berol. Alt. 2: 113. 1822; Clement in Grierson *et* Long, Fl. Bhut. 2(2): 963. 1999. *Phlomis aspera* Willd., Enum. Pl. 621. 1809. *Leucas dimidiata* Benth., Prodr. 12: 532. 1848. *Leucas obliqua* Buch.-Ham. ex Dillwyn, Rev. Hortus Malab. 57. 1839. *Phlomis obliqua* Buch.-Ham. ex Hook. *f.*, Fl. Brit. India 4: 690. 1885.

Local name: Madhuful.

Annual herbs, up to 40 cm. Lamina linear to oblong-linear, 2.5 – 6 × 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 Br., oblong, triquetrous.

Flowers & Fruits: Through out the Year.

Specimen Cited: Dhupjhora, Goutam & AP Das 0138, dated 07. 02. 2009.

Local Distribution: Dhupjhora.

General Distribution: India, Indonesia, Malaysia, Philippines, Thailand.

OCIMUM L., 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 L., Sp. Pl. 1: 597. 1753; Hook. *f.*, Fl. Brit. Ind. 4: 608. 1885; Prain, Beng. Pl. 2: 842. 1903; Clement in Grierson et Long, Fl. Bhut. 2(2): 1001. 1999. *Ocimum album* L., Mant. Pl. 1: 85. 1767. *Ocimum ciliare* B. Heyne *ex* Hook. *f.*, Fl. Brit. India 4: 608. 1885. *Ocimum caryophyllatum* Roxb., Fl. Ind. ed. 1832 3: 16. 1832. *Ocimum basilicum* var. *album* (L.) Benth., Pl. Asiat. Rar. 2: 13. 1830.

Local name: Tulsi

Erect, annual herbs, up to 80 cm. Lamina ovate to oblong, 2.5 – 5 × 1 – 2.5 cm, subobtusate 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 exerted, posterior 2 dentate, base puberulent. Nutlets dark Brown, ovoid.

Flowers & Fruits: July to December.

Specimen Cited: Dhupjhora, Goutam & AP Das 0321, dated 21.07.2009.

Local Distribution: Dhupjhora, Khunia.

General Distribution: India; Tropical Asia, Africa.

Ocimum tenuiflorum L., Sp. Pl. 2: 597. 1753; Clement in Grierson et Long, Fl. Bhut. 2(2): 1002. 1999. *Ocimum sanctum* L., Mant. Pl. 1: 85. 1767. *Ocimum subserratum* Heyne *ex* Hook. *f.*, Fl. Brit. India 4: 609. 1885. *Ocimum sanctum* var. *hirsutum* (Benth.) Hook. *f.*, Fl. Brit. India 4: 609. 1885. *Ocimum scutellarioides* Willd. *ex* Benth., Linnaea 11: 344. 1837. *Ocimum inodorum* Burm. *f.*, Fl. Indica 130. 1768. *Ocimum hirsutum* Benth., Pl. Asiat. Rar. 2: 14. 1830.

Local name: KaloTulsi.

Erect, subshrubs, up to 1 m, much branched. Lamina oblong, 2.5 – 5.5 × 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 oblate; 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 Br., ovoid.

Flowers & Fruits: February to August.

Specimen Cited: Dhupjhora, Goutam & AP Das 0560, dated 24.07.2009.

Local Distribution: Khunia, Murti, Dhupjhora, Budhram.

General Distribution: Throughout India; Malaysia, Myanmar, Philippines, Thailand, Cambodia, Indonesia, Laos, Vietnam; Africa, SWAsia, Australia.

POGOSTEMON Desf., Mém. Mus. Hist. Nat. 2: 154. 1815.

Pogostemon amaranthoides Benth. in Candolle, Prodr. 12: 153. 1848; Clarke in Hook. *f.*, Fl. Brit. Ind. 4: 634. 1885; 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: Budhram, Goutam & AP Das 0603, dated 12.08.2009.

Local Distribution: Budhram, Bichhabhanga.

General Distribution: India, Bhutan, China; pantropical.

CALLICARPA Linnaeus, Sp. Pl. 1: 111. 1753.

Callicarpa arborea Roxb., Fl. Ind. 1: 405. 1820; Long in Grierson *et* Long, Fl. Bhut. 2(2): 919. 1999. *Callicarpa arborea* Roxb. *ex* Clarke in Hook. *f.*, Fl. Brit. Ind. 4: 567. 1885; Ohashi in Hara, Fl. E. Himal. 1: 268. 1966; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 145. 1982; Grierson *et.* Long, Fl. Bhut. 2(2): 919. 1999. *Premna arborea* (Roxb.) Roth, Nov. Pl. Sp. 287. 1821. *Aganon umbellata* Raf., 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 × 7 – 12 cm, leathery, abaxially densely yellow-Br. 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-Br.

Flowers & Fruits: April to November.

Specimen Cited: Forest, Goutam & AP Das 0295, dated 10. 02. 2009.

Local Distribution: Forests.

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

CLERODENDRUM L., 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 (L.) Kuntze, Rev. Gen. Pl. 2: 586. 1891; Long in Grierson *et* Long, Fl. Bhut. 2(2): 931. 1999. *Siphonanthus indicus* L., Sp. Pl. 1: 109. 1753. *Clerodendrum siphonanthud* R. Br., in Aitton *f.*, Hort. Kew. 4: 65. 1812; Clarke in Hook. *f.*, Fl. Brit. Ind. 4: 593. 1885. *Clerodendrum verticillatum* Don, Prodr. Fl. Nepal. 102. 1825. *Clerodendrum indicum* f. *semiserratum* (Wall.) 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 × 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 funnelform, 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: Khunia, Goutam & AP Das 0316, dated 10. 02. 2009.

Local Distribution: Khunia, Gorumara, Dhupjhora.

General Distribution: India, Bhutan, Bangladesh, Sri Lanka, Myanmar, Nepal, S. China and Malaysia.

Clerodendrum infortunatum L., Sp. Pl. 637. 1753. *Clerodendrum viscosum* Ventenat, Jord. Malm. f. 1803; Debet 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.

Local name: Vant.

Shrubs, up to 2 m. Branchlets 4 angled, pubescent. Leaves opposite; petiole up to 5 cm, densely pubescent; lamina subcordate, 4 – 14 × 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, Goutam & AP Das 0398, dated 22.07.2009.

Local Distribution: Throughout forest and open shrubland.

General Distribution: India, Bhutan, China, Sri Lanka, Myanmar, Australia.

Clerodendrum japonicum (Thunb.) Sweet, Hort. Brit. 822. 1826; Long in Grierson *et* Long, Fl. Bhut. 2(2): 934. 1999. *Volkameria japonica* Thunb., Syst. Nat. ed. 14: 578. 1784. *Volkameria dentata* Roxb., Fl. Ind. ed. 3: 61. 1832. *Clerodendrum coccineum* Lam, Verben. Malay. Archip. 296. 1919. *Volkameria japonica* Thunb., Nova Acta Regiae Soc. Sci. Upsal. 3: 203. 1780.

Local name: Bara Vant.

Shrubs, up to 4 m. Branchlets 4 angled, pubescent, nodes sometimes villous. Petiole up to 18 cm, densely yellow-Br. pubescent; lamina subcordate, 8 – 35 × 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, Goutam & AP Das 0430, dated 22.07.2009. *Status:*

Local Distribution: Throughout forest and open shrubland.

General Distribution: India, Bhutan, Bangladesh, Indonesia, Laos, Malaysia, Vietnam.

ROTHECA Raf., Fl. Tellur. 4: 69. 1838.

Rotheca serrata (L.) Steane & Mabb., Novon 8: 206. 1998. *Clerodendrum serratum* (L.) Moon, Cat. Ceylon Pl. 46. 1824; Hara, Enn. Fl. Pl. Nep. 3: 146. 1982; Grierson *et* Long, Fl. Bhut. 2(2): 933. 1999. *Volkameria serrata* L., Mant. Pl. 90. 1767. *Volkameria serrata* L., Mant. Pl. 1: 90. 1767. *Volkameria herbacea* Roxb., Hort. Bengal. 46. 1814. *Clerodendrum grandifolium* Salisb., Prodr. Stirp. Chap. Allerton 108. 1796.

Shrubs, up to 3 m. Branchlets densely yellow pubescent, becoming dark Br. to gray-yellow and glabrous. Leaves opposite or in threes; leaf subsessile; leaf blade obovate-oblong to elliptic-ovate, 6 – 22 × 3 – 7 cm, papery, pubescent, margin serrulate, apex acuminate to acute; veins abaxially prominent. Inflorescences terminal thyrses, densely yellow-Br. pubescent, cymes sometimes monochasial; bracts sessile, ovate to broadly ovate, pubescent; bractlets lanceolate. Calyx truncate, pubescent. Corolla white, bluish; lobes oblong. Stamens long exserted, base pubescent. Ovary glabrous. Style long exserted. Drupes green when young, becoming black, subglobose.

Flowers & Fruits: July to February.

Specimen Cited: Medlajhora, Goutam & AP Das 0463, dated 23.07.2009.

Local Distribution: Medlajhora marginal forest, road sides; less common.

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

GMELINA L., 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.

Local name: Gamari

Trees, up to 15 m; bark grayish Br.; branchlets, petioles and inflorescences densely yellow-Br. tomentose. Branchlets slightly 4 angled when young, becoming terete, lenticellate, leaf scars prominent. Petiole terete; leaf blade broadly ovate, 8 – 20 × 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: Murti, Goutam & AP Das 0524, dated 23.07.2009.

Local Distribution: Murti, Dhupjhora.

General Distribution: India, Bhutan, Nepal, Sri Lanka and Philippines.

TECTONA L.f., Suppl. Pl. 151. 1781 (publ. 1782), *nom. cons.*

Tectona grandis L. *f.*, Suppl. Pl. 151. 1782; C.B. Clarke in Hook. *f.*, Fl. Brit. Ind. 4: 570. 1885; Grierson *et* Long, Fl. Bhut. 2(2): 921. 1999. *Tectona theca* Lour., Fl. Cochinch. 137. 1790. *Theka grandis* (L. *f.*) de Lam., Tabl. Encycl. 2: 111. 1797. *Jatus grandis* (L. *f.*) Kuntze, Revis. Gen. Pl. 2: 508. 1891.

Local name: Segun.

Trees, up to 40 m. Branchlets gray to grayish Br., 4 angled, yellowish to grayish Br. stellate tomentose. Petiole robust, 3 cm; leaf blade ovate-elliptic to ovate, 15 – 50 × 8 – 25 cm, papery, abaxially densely grayish Br. to yellowish Br., 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, Goutam & AP Das 0682, dated 14. 02. 2008.

Local Distribution: Pantation forests.

General Distribution: Indo- Malaysia.

VITEX L., Sp. Pl. 2: 638. 1753.

Vitex negundo L., Sp. Pl. 638. 1753; Clarke in Hook. *f.*, Fl. Brit. Ind. 4: 583. 1885; Ohashi in Hara, Fl. E. Himal. 1: 270. 1966; Long in Grierson *et* Long, Fl. Bhut. 2(2): 926. 1999. *Agnus-castus negundo* (L.) Carrière, Rev. Hort. 42: 415. 1871. *Vitex nogondo* L., Hortus Mauriti. 258. 1837.

Local name: Nishinda.

Shrubs to small trees. Branchlets densely gray tomentose. Leaves 3 – 5 foliolate; central leaflet distinctly petiolulate, 4 – 13 × 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: Dhupjhora, Goutam & AP Das 0513, dated 23.07.2009.

Local Distribution: Panted in Villages.

General Distribution: India, Bhutan, China, Sri Lanka, Afganistan, Myanmar, Malaysia.

PREMNA L., Mant. Pl. 154. 1771, *nom. cons.*

Key to the species

- 1a. Trees; leaves opposite, ovate, cordate *P. bengalensis*
- 1b. Subshrubs; leaves rosulate; obovate-oblong to spatulate *P. herbacea*

Premna bengalensis Clarke in Hook. *f.*, Fl. Brit. India 4: 577 1885; Long in Grierson *et* Long, Fl. Bhut. 2(2): 925. 1999; Prain, Beng. Pl. 2: 83. 1903.

Local Name: Gineri.

Small trees, up to 8 m. Branchlets dark Br., striate, pubescent when young, subglabrescent. Leaves simple, opposite, estipulate; lamina ovate-oblong to ovate, subrounded or cordate, 5 – 12 × 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: Murti, Goutam & AP Das 0453, dated 22.07.2009.

Local Distribution: Murti, Gorumara, Bichhabhanga.

General Distribution: India: Cambodia, Indonesia, Laos, Myanmar, Philippines, Vietnam.

Premna herbacea Roxb., Fl. Ind. ed. 1832, 3: 80. 1832; Long in Grierson *et* Long, Fl. Bhut. 2(2): 925. 1999. *Gumira herbacea* (Roxb.) 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 × 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: Khunia, Goutam & AP Das 0338, dated 21.07.2009.

Local Distribution: Khunia.

General Distribution: India, Bhutan, Nepal, Cambodia, Laos, Myanmar, New Guinea, Philippines, Thailand, Vietnam; Australia.

Verbenaceae Juss., Ann. Mus. Hist. Nat. Paris 7: 64. 1806; *nom. cons.*

Key to the genera:

- 1a. Inflorescences centripetal 2
- 1b. Inflorescences centrifugal ***Duranta***
- 2a. Shrubs; fruit a drupe; stem spiny ***Lantana***
- 2b. Herbs; fruit a capsule; stem not spiny ***Phyla***

LANTANA Linnaeus, Sp. Pl. 2: 626. 1753.

Lantana camara L., Sp. Pl. 2: 627. 1753; Long in Grierson *et* Long, Fl. Bhut. 2(2): 914. 1999. *Camara vulgaris* Benth., Bot. Voy. Sulphur 154. 1846. *Lantana urticifolia* Miller, Gard. Dict. ed. 8: 5. 1768. *Lantana undulate* Raf., Sylva Tellur. 82. 1838. *Lantana Mexicana* Turner, Flor. Kingd. 181. 1876.

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: Murti, Goutam & AP Das 0352. dated 17. 12. 2006.

Local Distribution: Gorumara, Murti, Dhupjhora, Khunia, Bichhabhanga, Budhram.

General Distribution: Tropical India; tropical and sub-tropical America, often naturalized in other tropical and subtropical regions.

PHYLA Lour., Fl. Cochinch. 1: 66. 1790.

Phyla nudiflora (L.) 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* L., Sp. Pl. 1: 20. 1753. *Lippia nodiflora* (L.) Michaux, Fl. Bor. Amer. 2: 15. 1803; Clarke in Hook. *f.*, Fl. Brit. Ind. 4: 563. 1885. Haines, Bot. Bihar & Orissa pt. IV: 706. 1922; Mooney, Suppl. Bot. Bihar & Orissa 120: 1950. *Verbena lanata* Willd. ex Walpers, Repert. Bot. Syst. 4: 48. 1845. *Lippia sarmentosa* (Willd.) Sprengel, Syst. Veg. 2: 752. 1825. *Phyla chinensis* Lour., Fl. Cochinch. 66. 1790.

Perennial herbs. Branched, creeping, rooting at distal nodes, minutely strigose. Leaves sessile; 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: Dhupjhora, Goutam & AP Das 0562. dated 21. 03. 2007.

Local Distribution: Murti, Dhupjhora, Bichhabhanga, Budhuram.

General Distribution: Pantropical.

DURANTA L., Sp. Pl. 2: 637. 1753.

Duranta erecta L., 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* L., Sp. Pl. 637. 1753.

Duranta dentata Pers., Syn. Pl. 2: 142. 1806. *Duranta repens* L., Sp. Pl. 2: 637. 1753.

Local 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: Murti, Goutam & AP Das 0430. dated 17. 12. 2006.

Local Distribution: Gorumara, Murti, Dhupjhora, Khunia, Bichhabhanga, Budhuram.

General Distribution: India: cultivated through out; North and South America.

Order: **Solanales** Juss. ex Berchtoldet J. Presl (1820).

Convolvulaceae Juss., 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>Argyreia</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 Lour., Fl. Cochinch. 1: 95, 134. 1790.

Argyreia roxburghii (Wall.) Arnott *ex* Choisy in Mem. Soc. Phys. Hist. Nat. Geneve 6: 419. 1834; Hooker *f.*, Fl. Brit. Ind. 4: 185. 1883; 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* Wall., 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, ovoidglobose.

Flowers & Fruits: February to October.

Specimen Cited: Gorumara, Goutam & AP Das 0743. dated 12. 09. 2007.

Local Distribution: Gorumara, Murti, Dhupjhora, Khunia, Bichhabhanga, Budhram.

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

EVOLVULUS L., Sp. Pl. ed. 2. 391. 1762.

Evolvulus nummularius (L.) L., Sp. Pl. (ed. 2) 1: 391. 1762; Guha Bakshi, Fl. Mur. Dist. 208. 1984. *Convolvulus nummularius* L., Sp. Pl. 1: 157. 1753. *Evolvulus veronicaefolius* Kunth, Nov. Gen. Sp. (quarto ed.) 3: 117, t. 215, 117. 1818. *Volvulopsis nummularium* (L.) Roberty, Candollea 14: 28. 1952. *Evolvulus repens* 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-trigonous.

Flowers & Fruits: March to December.

Specimen Cited: Gorumara, Goutam & AP Das 0722. dated 12. 09. 2007.

Local Distribution: Gorumara, Murti, Dhupjhora, Khunia, Bichhabhanga, Budhram.

General Distribution: India, Tropical Africa, Madagascar, Malaya Peninsula, Mexico and West Indies.

IPOMOEA L., 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 aquatic Forsskal, Fl. Aegypt. Arab. 44. 1775; Clark in Hook. *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 reptants* Poirlet in Lam., Encycl., Suppl. 3(2): 460. 1814; Prain Beng. Pl. 2: 547. 1903. *Ipomoea repens* Roth, Nov. Pl. Sp. 110. 1821. *Ipomoea natans* Dinteret Suess, Mitt. Bot. Staatssamml. München 4: 112. 1952.

Local 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: Gorumara, Goutam & AP Das 0722. dated 12. 09. 2007.

Local Distribution: Gorumara, Murti, Dhupjhora.

General Distribution: Throughout the India; Tropical Asia, Australia and Africa.

Ipomoea fisulosa Mart ex Choisy in de Candolle, Prodr. 9: 349. 1845. *Ipomoea carnea* Jacq., Enum. Syst. Pl. 13. 1760; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 851. 1999. *Ipomoea fruticosa* Kuntze, Revis. Gen. Pl. 2: 444. 1891. *Ipomoea crassicaulis* (Benth.) B.L. Robinson, Proc. Amer. Acad. Arts 51(10): 530. 1916. *Ipomoea carnea* f. *albiflora* Moldenke, Phytologia 2: 224. 1947. *Batatas crassicaulis* Benth., Bot. Voy. Sulphur 134. 1845.

Local 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, caduceous. 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: Gorumara, Goutam & AP Das 0743. dated 12. 09. 2007.

Local Distribution: Gorumara, Murti, Dhupjhora.

General Distribution: India; Native to America; naturalized in tropical areas.

Ipomoea hederifolia L., Syst. Nat. (ed. 10) 925. 1759. *Ipomoea hederifolia* L., Sp.Pl. ed. 1. 159. 1753; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 850. 1991. *Ipomoea phoenicea* Roxb., Fl. Indica (ed. Carey) 2: 92. 1824. *Quamoclit sanguinea* (Vahl) G. Don, Gen. Hist. 4: 259. 1838. *Quamoclit phoenicea* (Roxb.) Choisy, Convolv. Orient. 51. 1833. *Ipomoea luteola* Jacq., Collectanea 2: 266. 1788. *Ipomoea angulata* Lam., Tabl. Encycl. 1: 464. 1791. *Ipomoea coccinea* var. *hederifolia* (L.) 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: Murti, Goutam & AP Das 0248. dated 16. 12. 2006.

Local Distribution: Gorumara, Murti, Dhupjhora, Khunia, Bichhabhanga, Budhuram.

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 (L.) Merrill, Philipp. J. Sci. 7(4): 244-245. 1912; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 854. 1999. *Ipomoea linifolia* Bl., Bijdr. Fl. Ned. Ind. 13: 721. 1825. *Convolvulus hirtus* L., Sp. Pl. 1: 159. 1753. *Convolvulus caespitosus* Roxb., Fl. Ind., ed. 1832 1: 483-484. 1832. *Skinneria caespitose* (Roxb.) Choisy, Mum. Soc. Phys. Gen. 6: 487. 1833.

Local 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: Khunia, Goutam & AP Das 0136. dated 02. 07. 2006.

Local Distribution: Gorumara, Murti, Dhupjhora, Khunia, Bichhabhanga, Budhuram.

General Distribution: India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam; N Australia.

Merremia hederacea (Burm. f.) Hallier f., Bot. Jahrb. Syst. 18(1-2): 118. 1893; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 854. 1999. *Evolvulus hederaceus* Burm. f., Fl. Indica 77, pl. 30, f. 2: 77. 1768. *Convolvulus lapathifolius* Spreng., Syst. Veg. 1: 604. 1825. *Convolvulus flavus* Willd., 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: Khunia, Goutam & AP Das 0049. dated 26. 06. 2006.

Local Distribution: Gorumara, Murti, Dhupjhora, Khunia, Bichhabhanga, Budhuram.

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 (Burm. f.) Hallier, Bot. Jahrb. Syst. 16(4-5): 552. 1893; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 852. 1999. *Convolvulus vitifolius* Burm. f., Fl. Indica 45. 1768. *Convolvulus vitifolius* Burm. f., Fl. Indica 45-46, pl. 18, f. 1: 45. 1768. *Ipomoea vitifolia* (Burm. f.) Blume, Bijdr. Fl. Ned. Ind. 13: 709. 1825. *Convolvulus angularis* Burm. f., Fl. Indica 46. 1768.

Local 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: Khunia, Goutam & AP Das 0082. dated 27. 06. 2006.

Local Distribution: Gorumara, Murti, Dhupjhora, Khunia, Bichhabhanga, Budhuram.

General Distribution: Tropical hemisphere.

PORANOPSIS Roberty, Candollea 14: 26. 1952.

Poranopsis paniculata (Roxb.) Roberty, Candollea 14: 26. 1953. *Porana paniculata* Roxb., 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 funnellform; 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: Murti, Goutam & AP Das 0352. dated 17. 12. 2006.

Local Distribution: Murti, Dhupjhora, Khunia, Bichhabhanga, Budhuram.

General Distribution: India, Bhutan, Nepal, Pakistan, Myanmar.

CUSCUTA L., Sp. Pl. 1: 124. 1753.

Key to the species:

1a. Stem thick; flowers in racemes or panicles; style 1 *C. reflexa*

1b. Stem thin; flowers in compact cymose; style 2 *C. chinensis*

Cuscuta reflexa Roxb., Pl. Corom. 2: 3,t. 104. 1798; Hook. *f.*, Fl. Brit. Ind. 4: 225. 1883; Mill in Grierson *et* Long, Fl. Bhut. 2(2): 863. 1999. *Monogynella reflexa* (Roxb.) Holub, Folia Geobot. Phytotax. 12(4): 429. 1977. *Cuscuta hookeri* Sweet, Hort. Brit. 290. 1826.

Local 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: Murti, Goutam & AP Das 0248. dated 16. 12. 2006.

Local Distribution: Murti, Dhupjhora, Budhuram.

General Distribution: India throughout; Bhutan, Nepal, Sri Lanka, Pakistan, Malaysia. Afghanistan, Indonesia, Malaysia, Myanmar, Thailand.

Cuscuta chinensis Lam., Encycl. 2(1): 229. 1786. *Cuscuta carinata* R. Br., Prodr. 491. 1810. *Cuscuta chinensis* var. *carinata* (R. Br.) Engelman, Trans. Acad. Sci. St. Louis 1(3): 480. 1859. *Cuscuta fimbriata* Bunge ex Engelman, Trans. Acad. Sci. St. Louis 1: 480. 1859.

Local 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: Khunia, Goutam & AP Das 0001. dated 25. 06. 2006.

Local Distribution: Murti, Khunia, Bichhabhanga, Budhuram.

General Distribution: India throughout; Bhutan, Afghanistan, Sri Lanka, Indonesia, Japan, Kazakhstan, Korea, Mongolia, Russia; Africa, SW Asia, Australia.

Solanaceae Juss., Gen. Pl. 124. 1789 ('Solaneae'); *nom. cons.*

Key to the Genera:

- 1a. Berries completely enclosed within the enlarged calyx ***Physalis***
- 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 ***Solanum***
- 3b. Plants without spine; leaves unlobed ***Nicotiana***
- 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 L., 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 L., Sp. Pl. 179. 1753; Hook. *f.*, Fl. Brit. Ind. 4: 243. 1883; 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* Horn., Hort. Bot. Hafn. 1: 212. 1813. *Datura alba* Mueller, Fragm. 6: 144. 1868.

Local 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: Murti, Goutam & AP Das 0352. dated 17. 12. 2006.

Local Distribution: Dhupjhora, Murti, Bichhabhanga.

General Distribution: Native of the Americas, long introduced and naturalized in Asia.

Datura stramonium L., Sp. Pl. 179.1753; Clark in Hook. *f.*, Fl. Brit. Ind. 4: 242. 1883; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1067. 2001. *Datura laevis* L. *f.*, Suppl. Pl. 146. 1782. *Stramonium spinosum* Lam., Fl. Franç. 256. 1779. *Datura parviflora* Salisb., Prodr. Stirp. Chap. Allerton 131. 1796.

Local 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-angulate. 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: Gorumara, Goutam & AP Das 0687. dated 11. 09. 2007.

Local Distribution: Dhupjhora, Murti.

General Distribution: Temperate region of world. native of Mexico, now worldwide.

NICOTIANA L., 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 Hook. 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* L., Syst. Nat. (ed. 10) 2: 933. 1759. *Nicotiana cavanillesii* Dunal, Prodr. 13(1): 572. 1852. *Nicotiana plantaginea* Dunal, Prodr. 13(1): 559. 1852.

Local 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: Murti, Goutam & AP Das 0306. dated 16. 12. 2006; Goutam & AP Das 0546. dated 19. 12. 2006.

Local Distribution: Murti, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India (Assam, West Bengal); Native to Mexico and West Indies.

PETUNIA Juss., 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* Hook. f., Bot. Mag. 64: pl. 3556. 1837. *Petunia hybrida* (Hook. f.) Vilmorin, Fl. Pleine Terre ed. 1. 615. 1863; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1076. 2001. *Petunia violacea* var. *hybrida* Hook. f., Bot. Mag. 64: t. 3556. 1837.

Local name: Petuinia.

Annual, herbs up to 60 cm, glandular hairy. Leaves short petiolate to sessile; 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: Murti, Goutam & AP Das 0288. dated 16. 12. 2006.

Local Distribution: Dhupjhora, Murti.

General Distribution: Cultivated Worldwide.

PHYSALIS L., Sp. Pl. 1: 182. 1753.

Physalis minima L., Sp. Pl. 183-184. 1753; Clarke in Hook. *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* R. Br., Prodr. 447. 1810. *Physalis lanceifolia* Nees, Linnaea 6(3): 473-474. 1831.

Local 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: Dhupjhora, Goutam & AP Das 0573. dated 21. 03. 2007.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhuram, Bichhabhanga.

General Distribution: Pantropic.

SOLANUM L., 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 Candolle, Prodr. 13(1): 240. 1852; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1058. 2001. *Solanum khasianum* Clarke in Hook. *f.*, Fl. Brit. Ind. 4: 234. 1833.

Local 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: Gorumara, Goutam & AP Das 0722. dated 12. 09. 2007.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

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 Hook. 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* Schltde, Linnaea 19: 297-298. 1847. *Solanum auctosepalum* Rusby, Descr. S. Amer. Pl. 114. 1920.

Local 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 extraaxillary, 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: Gorumara, Goutam & AP Das 0743. dated 12. 09. 2007.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

General Distribution: Tropical India, China, Malaya, Philippines and Tropical America.

Solanum americanum Miller, Gard. Dict. (ed. 8) no. 5 no. 5. 1768. *Solanum nigrum* L., Sp. Pl. 1: 186. 1753; Clarke in Hook. 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* Jacq., Icon. Pl. Rar. 2: 11, pl. 326, 11. 1786. *Solanum nigrum* var. *minor* Hook. 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: Khunia, Goutam & AP Das 0182. dated 03. 07. 2006.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

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* Bernh. ex Willd., Enum. Pl. 1: 236. 1809.

Annual, erect, herbs up to 100 cm. Lamina ovate, 4 – 10 X 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: Murti, Goutam & AP Das 0528. dated 19. 12. 2006.

Local Distribution: Dhupjhora, Murti, Khunia, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Japan; SW Asia, Europe.

Solanum sisymbriifolium Lam., Tab. Encyl. 2: 25. 1794. *Solanum sisymbriifolium* f. *ililacinum* Kuntze, Revis. Gen. Pl. 3(3): 227. 1898.

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: Murti, Goutam & AP Das 0289. dated 16. 12. 2006.

Local Distribution: Dhupjhora, Murti, Budhram, Bichhabhanga.

General Distribution: India, native to South America; naturalized in Africa, Australia.

Solanum melongena L., Sp. Pl. 1: 186. 1753; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1058. 2001.

Local 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: Dhupjhora, Goutam & AP Das 0566. dated 21. 03. 2007.

Local Distribution: Dhupjhora, Murti, Budhram.

General Distribution: Widely cultivated for its edible fruits.

Solanum pimpinellifolium L., Cent. Pl. I 1: 8. 1755. *Lycopersicon pimpinellifolium* (L.) Miller, Gard. Dict. (ed. 8) no. 4. 1768. *Lycopersicon esculentum* Miller, Gard. Dict. (ed.8) n.2. 1768; Hook. f., Fl. Brit. Ind. 4:237.1883; Mill in Grierson *et* Long, Fl. Bhut. 2(3): 1063. 2001. *Solanum lycopersicum* L., Sp. Pl. 185.1753.

Local 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: Murti, Goutam & AP Das 0039. dated 25. 06. 2006.

Local Distribution: Dhupjhora, Murti, Budhram, Bichhabhanga.

General Distribution: A native to Mexico and South America; cultivated elsewhere; sometime escapes.

Order 54: 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	<i>Artemisia</i>
3b. Phyllaries whitish brown or yellowish especially in distal part	<i>Gnaphalium</i>
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	<i>Xanthium</i>
9b. Capitula colorful and attractive; some or all florets bisexual	10
10a. Leaves and phyllaries with obvious oil glands	<i>Tagetes</i>
10b. Leaves and phyllaries lacking oil glands	11
11a. Only ray florets fertile, ray achenes much longer than sterile disk florets	<i>Parthenium</i>
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	<i>Tridax</i>
13b. Pappus absent or of fimbriate	<i>Galinsoga</i>
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	<i>Bidens</i>
15b. Pappus absent, or persistent, of 2 bristly cusps or scales; leaves opposite	16
16a. Achenes markedly dimorphic, lacerate winged margin, others wingless	<i>Synedrella</i>

- 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 diametre 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*

ACMELLA Rich. in C. H. Pers., Syn. Pl. 2: 472. 1807.

Key to the species :

- 1a. Petiole 1–2 cm; lamina ovate to ovate-lanceolate, apex acute *A. paniculata*
- 1b. Petiole 5 – 8 mm; lamina lanceolate, apex acuminate or caudate *A. calva*

Acmella paniculata (Wall. ex Candolle) Jansen, Syst. Bot. Monogr. 8: 67. 1985; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1605. 2001. *Spilanthes paniculata* Wallich ex Candolle, Prodr. 5: 625. 1836. *Spilanthes acmella* var. *paniculata* (Wall. ex Candolle) 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: Khunia, Goutam & AP Das 0806, dated 04.07.2009.

Local Distribution: Khunia, Murti, Budhram, Bichhabhanga, abundant.

General Distribution: India, Bhutan, China, Bangladesh, Nepal, Sri Lanka, Indonesia, Laos, Malaysia, Myanmar, Philippines, Vietnam, Thailand.

Acmella calva (Candolle) Jansen, Syst. Bot. Monogr. 8: 41. 1985; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1605. 2001. *Spilanthus calva* Candolle in Wight, Contr. Bot. Ind. 19. 1834; Ohashi in Hara, Fl. E. Himal. 2: 141. 1971; Hara *et al.*, Enn. Fl. Pl. Nep. 3: 45. 1982; Fl. Ind. 12: 409. 1995. *Spilanthus acmella* var. *calva* (Candolle) Clarke, Comp. Ind. 138. 1876; Clarke in Hook. *f.*, Fl. Brit. Ind. 3: 307. 1881

Perennial, creeping or prostrate herbs. Stems up to 60 cm, rooting at nodes. Petiole 5 – 8 mm; lamina lanceolate, 3 – 8 × 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 Br., oblong; pappus 2.

Flowers & Fruits: July to November.

Specimen Cited: Khunia, Goutam & AP Das 0206, dated 04.07.2006.

Local Distribution: Khunia, Murti, Budhram, Bichhabhanga, abundant.

General Distribution: India, Bhutan, Nepal, Sri Lanka, China, Myanmar, Indonesia, Malaysia.

AGERATINA Spach, Hist. Nat. Veg. Phan. 10: 286. 1841.

Ageratina adenophora (Spreng.) King & Robins., Phytologia 19: 211. 1970. *Eupatorium adenophorum* Spreng., Syst. Veg. 3: 420. 1826; Uniyal in Hajra *et al.*, Fl. India 12: 350. 1995. *Eupatorium glandulosum* Kunth, Nov. Gen. Sp. 4: 122, t. 346. 1820; Matthew, Rec. Bot. Surv. India 20:135. 1969.

Subshrubs, glandular hairy; stems violet-blue. Leaves opposite, 7-8 x 3-4 cm, ovate, acute, serrate; petiole ca. 2 cm long. Heads 7-8 mm across, packed, in terminal corymbose panicle; bracts 3-seriate, lanceolate, strongly 3-ribbed; outer florets bisexual, 4-5 mm long; corolla white, tube narrow, campanulate above, 5-lobed, hispid; inner florets female. Achenes curved, ellipsoid, 5angled, brown, smooth; pappus 5-10, white, barbed.

Flowering & Fruiting: February to June.

Specimen Cited: Murti, Goutam & AP Das 0442, dated 18. 12. 2006.

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara.

General Distribution: Pantropical.

AGERATUM L., 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) Candolle, Prodr. 5: 108. 1836. *Carelia houstoniana* (Miller) Kuntze, Revis. Gen. Pl. 1: 325. 1891. 325. 1891. *Ageratum cordifolium* Roxburgh, 415. 1832.

Local name: Uchuntijhar.

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 × 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: Throughout of year.

Specimen Cited: Murti, Goutam & AP Das 0442, dated 18. 12. 2006.

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara, Bichhabhanga, Budhura; abundant.

General Distribution: native to tropical America; widespread weed throughout Africa, India, Malay Peninsula, Myanmar, Nepal, and the South China Sea islands

Ageratum conyzoides L., Sp. Pl. 2: 839. 1753; Clarke in Hook. f., Fl. Brit. India 3: 243. 1881; 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* Robinson, Contr. Gray Herb. 64 3. 1922.

Local name: Uchunti jhar.

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 × 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: June to November.

Specimen Cited: Khunia, Goutam & AP Das 0138; dated: 02.07.2006

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara, Bichhabhanga, Budhura; abundant.

General Distribution: India, Myanmar, Nepal; Africa, South China Sea islands; native to tropical America.

ARTEMISIA L., Sp. Pl. 2: 845. 1753.

Artemisia indica Willd., 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* Willd., Sp. Pl., ed. 4. 3: 1846. 1803.

Local name: Nagnishinda.

Perennial herbs or small shrubs, up to 180 cm tall, much branched. Leaves shortly petiolate; lamina tomentose. Leaves ovate to oblong-ovate, 6 – 15 × 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: Khunia, Goutam & AP Das 0838; dated: 02.07.2009

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara.

General Distribution: India: tropical and subtropical; S.E. Asia, North America including Central America, Oceania.

BIDENS L., Sp. Pl. 831. 1753.

Bidens pilosa L., Sp. Pl. ed. 2: 832. 1753; Clarke in Hook. *f.*, Fl. Brit. Ind. 3: 309. 1881; 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* (L.) Candolle, Prodr. 5: 605. 1836. *Coreopsis alba* L., Sp. Pl. 2: 908. 1753.

Annual erect or suberect herbs, up to 90 cm. Lamina ovate to lanceolate, 30 – 90 × 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-Br., 2-grooved; inner achenes blackish, 4 angled, 2-grooved.

Flowers & Fruits: June to March.

Specimen Cited: Dhupjhora, Goutam & AP Das 0853, dated 14. 02. 2010.

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara, Bichhabhanga, abundant.

General Distribution: Tropical and subtropical regions.

BLUMEA Candolle in Guillemin, Arch. Bot. (Paris) 2: 514. 1833.

Blumea lacera (Burm. *f.*) Candolle in Wight, Contr. Bot. India, 14. 1834; Hook. *f.*, 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* Burm. *f.*, Fl. Ind. 180. t. 59. f. 1. 1768. *Blumea hieraciifolia* Hook. *f. et* Thom., Fl. Brit. Ind. 3(8): 267. 1881. *Blumea lacera* var. *cinerascens* (Candolle) Hook. *f.*, Fl. Brit. Ind. 3(8): 263. 1881. *Blumea hieraciifolia* Hook. *f. et* Thomson in Hook. *f.*, Fl. Brit. Ind. 3(8): 267. 1881. *Blumea villosa* Schultz-Bipontinus *ex* Hook. *f.*, Fl. Brit. Ind. 3(8): 263. 1881.

Local name: Kukur mota.

Annual or biennial, erect, branched, herbs, up to 100 cm. Leaves sessile and petiolate, elliptic to oblong, 10 – 15 × 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.

Exsicattus: Murti, Goutam & AP Das 0321, dated 17.12.2006.

Local Distribution: Murti, Khunia, Gorumara, Budhuram, Bichhabhanga, abundant.

General Distribution: India, Bhutan, Japan, Malaysia, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam; Africa, N Australia, Pacific islands.

CHROMOLAENA Candolle, Prodr. 5: 133. 1836.

Chromolaena odorata (L.) King *et* 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; Clarke in Hook. *f.*, Fl. Brit. India 3: 244. 1881; Uniyal in Hajra *et al.*, Fl. India 12: 354. 1995.

Local name: Assamlata.

Perennial, procumbent herbs. Stems erect, up to 2.5 m. Leaves opposite; lamina ovate, triangular, or ovate-triangular, 5 – 10 × 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-Br.

Flowers & Fruits: April to December.

Specimen Cited: Khunia, Goutam & AP Das 0105, dated 27.06.2006.

Local Distribution: Khunia, Murti, Dhupjhora, abundant.

General Distribution: Native to America; naturalized in tropical countries.

CRASSOCEPHALUM Moench, Methodus 516. 1794. (*nom. rej.* vs. *Gynura* Cassini 1825, *nom. cons.*)

Crassocephalum crepidioides (Benth.) 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 Hook. *f.*, Fl. Niger. 438.1849.

Annual, erect, herbs, up to 120 cm. Lamina elliptic to oblong-elliptic, 8 – 12 × 4 – 5 cm, membranous, base cuneate, irregularly serrate or double-serrate, sometimes pinnately lobed at base, acuminate. Capitula numerous in terminal corymbiform cymes. Involucres cylindric; phyllaries uniseriate, linear-lanceolate. Florets tubular, bisexual; corolla red-brownish. Style papillose. Achenes brownish, narrowly oblong.

Flowers & Fruits: April to December.

Specimen Cited: Gorumara, Goutam & AP Das 0338, dated 21.07.2009.

Local Distribution: Gorumara, Khunia, Murti, Dhupjhora, abundant.

General Distribution: India, native to Africa; pantropical weed of Africa, S and SE Asia, Australia, Central and South America, and Pacific islands.

CYANTHILLIUM Bl., Bijdr. Fl. Ned. Ind. 15: 889. 1826.

Cyanthillium cinereum (L.) Robinson, Proc. Biol. Soc. Wash. 103: 252. 1990; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1488. 2001. *Vernonia cinerea* (L.) Less in Linnæa 4:291. 1829; Hook. *f.*, Fl. Brit. Ind 3: 233. 1881; Guha Bakshi, Fl. Mur. Dist. 175. 1984. Hajra *et al*, Fl. Ind. 13: 367. 1995. *Conyza cinerea* L., 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 × 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 cylindric. Pappus white.

Flowers & Fruits: January to January.

Specimen Cited: Dhupjhora, Goutam & AP Das 0674, dated 24.03.2009.

Local Distribution: Dhupjhora, Khunia, Murti, Bichhabhanga, very common.

General Distribution: India, Indonesia, Japan, Malaysia, Myanmar, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Arabia, Australia, Pacific islands; introduced to the Americas.

ECLIPTA L., Mant. Pl. 157, 286. 1771.

Eclipta prostrata (L.) L., 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* L., Sp. Pl. 2: 902. 1753. *Eclipta alba* (L.) Hasskarl, Pl. Jav. Rav. 528. 1848; Clarke in Hook. *f.*, Fl. Brit. Ind. 3: 304. 1881. *Verbesina alba* L., Sp. Pl. 2: 902. 1753.

Local name : Kesut.

Annual erect, ascending or prostrate, herbs, up to 60 cm. Leaves lanceolate, 3 – 10 × 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: Budhram, Goutam & AP Das 0773, dated 12. 11. 2009.

Local Distribution: Budhram, Khunia, Murti, Gorumara, Dhupjhora, Bichhabhanga, Common.

General Distribution: North America, Central America; South America; introduced in Europe, Asia, Africa, Pacific islands, Australia.

ELEPHANTOPUS L., Sp. Pl. 814. 1753 et Gen. Pl. ed. 5. 5355. 1754.

Elephantopus scaber L., Sp. Pl. 2: 814. 1753; Clarke in Hook. *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* Lour., 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 × 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 November.

Specimen Cited: Gorumara, Goutam & AP Das 0709, dated 30. 09. 2009.

Local Distribution: Gorumara, Khunia, Murti, Gorumara, Budhram, Bichhabhanga, very common.

General Distribution: widely distributed in tropical areas of Africa, America, and Asia.

ELEUTHERANTHERA Poiteau, Bull. Sci. Soc. Philom. Paris 3(no. 66): 137. 1802.

Eleutheranthera ruderalis (Sw.) Sch.-Bip., Bot. Zeitung (Berlin) 24: 165. 1866; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1606. 2001. *Melampodium ruderalis* Sw., Fl. Ind. Occid. 3: 1372. 1806. *Gymnopsis microcephala* Gardner, London Jour. Bot. 7 292. 1848.

Annual, erect herbs, up to 30 cm. Petiole 1 – 2 cm; lamina ovate, 3 – 7 × 2 – 3 cm, 3 veined from near base, both surfaces pubescent and glandular, base obtuse, acute to acuminate, margin entire or crenulate-dentate, acute to acuminate. Synflorescence terminal. Capitula discoid; phyllaries 2 seriate. Florets 2 – 6; anthers black; style branches lanceolate. Achenes Br., 3 angled; pappus an apical peg.

Flowers & Fruits: June to November.

Specimen Cited: Murti, Goutam & AP Das 0819, dated 17. 12. 2009.

Local Distribution: Khunia, Murti, Gorumara; abundant.

General Distribution: Widespread in Central and South America but also found in W Africa and Australia.

EMILIA Cassini, Bull. Sci. Soc. Philom. Paris 1817: 68. 1817.

Emilia sonchifolia (L.) Candolle ex 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* L., Sp. Pl.: 835. 1753; Hook. *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. Involucre cylindrical; phyllaries 8 or 9, oblong-linear to linear. Florets pink or purplish. Achenes cylindrical.

Flowers & Fruits: June to October.

Specimen Cited: Gorumara, Goutam & AP Das 0744, dated 30. 09. 2009.

Local Distribution: Dhupjhora Budhuram, Gorumara, Bichhabhanga, Murti, Khunia.

General Distribution: India: eastern states throughout; China, Asia and Africa.

ENYDRA Lour., Fl. Cochinch. 2: 510. 1790.

Enydra fluctuans Lour., Fl. Cochinch. 511. 1790; Clarke in Hook. *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.

Local name: Helencha; Hinchha.

Annual or biennial, cylindrical, slightly fleshy, prostrate herbs, up to 80 cm. Leaves subsessile, oblong to linear-oblong, 3 – 6 cm × 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-cylindrical.

Flowers & Fruits: November to April.

Specimen Cited: Gorumara, Goutam & AP Das 0714, dated 30. 09. 2009.

Local Distribution: Dhupjhora Budhuram, Gorumara, very common in riverine wetland.

General Distribution: Tropical regions of Asia and Africa.

ERIGERON L., Sp. Pl. 2: 863. 1753.

Erigeron canadensis L., Sp. Pl. 2: 863. 1753; Grierson *et Springate* in Grierson *et Long*, Fl. Bhutan 2(3): 1546. 2001. *Conyza canadensis* (L.) Cronquist, Bull. Torrey Bot. Club. 70: 632. 1943.

Annual, semierect, branched herbs, up to 80 cm. Lower leaves petiolate, lamina oblanceolate, 6 – 10 × 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 subcylindrical; 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: Dhupjhora, Goutam & AP Das 0852, dated 14. 02. 2010.

Local Distribution: Khunia, Murti, Bichhabhanga, Common.

General Distribution: native to North America.

GALINSOGA Ruiz *et* Pav. Fl. Peruv. Prodr. 110, plate 24. 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 × 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: July to October.

Flowers & Fruits: June to December.

Specimen Cited: Budhram, Goutam & AP Das 0772, dated 12. 11. 2009.

Local Distribution: Gorumara, Khunia, rare.

General Distribution: native to South America.

GNAPHALIUM L., 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* (Don) Koster in Blumea 4(3): 484. 1941; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1522. 2001. *Gnaphalium affine* Don, Prodr. Fl. Nep. 173. 1825. *Gnaphalium luteo-album* var. *multiceps* Candolle, Prodr. 6: 222. 1838; Hook. *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: Gorumara, Goutam & AP Das 0712, dated 30. 09. 2009.

Local Distribution: Gorumara, Khunia, Murti.

General Distribution: Tropical India; Bhutan, China, Myanmar, Thailand and Japan.

Gnaphalium purpureum L., Sp. Pl. 2: 854. 1753; Hook. *f.*, Fl. Brit. Ind 3: 289. 1881; Hajra *et. al.*, Fl. Ind. 13: 92. 1995. *Gamochaeta purpurea* (L.) Cabrera, Bol. Soc. Argent. Bot. 9: 377. 1961; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1523. 2001. *Gnaphalium littorale* Banks *et* Solander *ex* Hooker *f.*, 310. 1846. *Gamochaeta rosacea* (Johnston) Anderberg, Opera Bot. 104: 157. 1991.

Annual or biennial, erect to decumbentascending, 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: June to November.

Specimen Cited: Dhupjhora, Goutam & AP Das 0855, dated 14. 02. 2010.

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara, Budhram, Bichhabhanga, abundant.

General Distribution: Pantropical in Asia.

GRANGEA Adanson, Fam. 2: 121. 1763.

Grangea maderaspatana (L.) Poir. in Lam., Encycl. Suppl. 2: 825. 1812; Hook. f., Fl. Brit. Ind 3: 247.1881; Prain, Beng. Pl. 1: 442.1903; Grierson et Long, Fl. Bhut. 2(3): 1529. 2001. *Artemisia maderaspatana* L., Sp. Pl. 2: 849. 1753.

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 × 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 cylindrical campanulate. Achenes compressed.

Flowers & Fruits: May to August.

Specimen Cited: Dhupjhora, Goutam & AP Das 0546; dated 21.03.2009.

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Bangladesh, Bhutan; Pantropical Asia and Africa.

LAPHANGIUM (Hillard et. Burt) Tzvelev, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 98(6): 105. 1994.

Laphangium affine (Don) Tzvelev, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 98(6): 105. 1994. *Gnaphalium affine* Don, Prodr. Fl. Nepal. 173 1825. *Gnaphalium luteo-album* Linnaeus var. *multiceps* Candolle, Prodr. 6: 222.1838; Hooker f., Fl. Brit. Ind 3: 288. 1881. *Gnaphalium luteo-album* L., Sp. Pl. 2: 851. 1753; Hook. f., Fl. Brit. Ind 3: 288. 1881. *Pseudognaphalium affine* (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 × 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: June to November.

Specimen Cited: Dhupjhora, Goutam & AP Das 0572; dated: 21.03.2009.

Local Distribution: Murti, Gorumara, Budhram, Bichhabhanga, abundant.

General Distribution: India, Mauritius, Philippines, Indo-Chin, New Guinea, Australia, Africa and Europe.

MIKANIA Willd., Sp. Pl. ed. 4, 3: 1742. 1803, *nom. cons.*

Mikania micrantha Kunth in HBK., 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 × 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: Gorumara, *Goutam & AP Das 0711*, dated 30. 09. 2009.

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: India, Tropical America. Nepal, Myanmar, Malaysia, China, Philippines, Taiwan and Tropical Africa.

PARTHENIUM L., Sp. Pl. 988. 1753; Gen. Pl. ed. 5, 426. 1754.

Parthenium hysterophorus L., 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 × 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: Bichhabhanga, *Goutam & AP Das 0741*, dated 30. 09. 2009.

Local Distribution: Bichhabhanga.

General Distribution: Through out India; native to tropical America; a widely introduced weed in the tropics.

SONCHUS L., Sp. Pl. 2: 793. 1753.

Sonchus asper (L.) Hill, Herb. Brit. 1: 47. 1769; Hook. *f.*, Fl. Brit. Ind. 3: 414. 1881; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1479. 2001. *Sonchus oleraceus* L. var. *asper* L., 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 × 2 – 5 cm, undivided or irregularly pinnatisect, base attenuate, densely spinulosely 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: Throughout the year.

Specimen Cited: Murti, *Goutam & AP Das 0823*, dated 17. 12. 2009.

Local Distribution: Khunia, Murti, Gorumara.

General Distribution: Pantropical in Asia.

SYNEDRELLA Gaertn., Fruct. Sem. Pl. 2: 456, plate 171, fig. 7. 1791.

Synedrella nodiflora (L.) Gaertn., Fruct. Sem. Pl. 2: 456. 1791; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1607. 2001. *Verbesina nodiflora* L., Cent. Pl. 1: 28. 1755. *Blainvillea latifolia* (L. *f.*) Candolle, Contributions to the Botany of India 17. 1834. *Eclipta latifolia* L. *f.*, 378. 1782.

Annuals, suberect to ascending, branched herbs, up to 70 cm. Leaves cauline, opposite, petiolate; lamina ovate to elliptic, 3 – 9 × 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: through out the year.

Specimen Cited: Dhupjhora, Goutam & AP Das 0854, dated 14. 02. 2010.

Local Distribution: Dhupjhora, Khunia, Budhram, Bichhabhanga, moderate.

General Distribution: Pantropical weed of South American origin.

TRIDAX L., Sp. Pl. 900. 1753; Gen. Pl. ed. 5, 382. 1754.

Tridax procumbens (L.) L., Sp. Pl. 2: 900. 1753; Hook. f., Fl. Brit. India 3: 311. 1881; Gamble, Fl. Pres. Madras 711(500). 1921; Chowdhery in Hajra *et al.*, Fl. India 12: 418. 1995; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1611. 2001. *Balbisia elongate* Willd., Sp. Pl. 3: 2214. 1803. *Balbisia canescens* Richard, Syn. Pl. 2: 470. 1807.

Annual to perennial, procumbent herbs up to 40 cm, stems terete, hispid. 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: Gorumara, Goutam & AP Das 0711, dated 30. 09. 2009.

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara, Budhram, Bichhabhanga.

General Distribution: native to tropical America; now a pantropical weed.

WEDELIA Jacq., Enum. Syst. Pl. 8, 28. 1760.

Wedelia trilobata (L.) Hitchc., Rep. Missouri Bot. Gard. 4: 99. 1898; Sivar. *et* Pradeep, Indian J. For. 11: 161. 1988; Chowdhery in Hajra *et al.*, Fl. India 12: 426. 1995. *Silphium trilobatum* L., Syst. (ed. 10) 1232. 1759.

Herbs, rooting at nodes; stems glabrous or pubescent near nodal region. Leaves 3-7 cm long, elliptic-obovate, usually with 3 angular lobes with toothed margins, acute at apex, basally cuneate, glabrous to sparingly pubescent. Heads radiate, solitary 2-2.5 cm across; peduncles strigose, 4-15 cm long; ray florets 5-8; corolla bright yellow, tube short; ovary trigonous; stigma bilobed; disc florets many; anthers black, syngeneicous. Achenes blackish, warty, crowned by the persistent pappus cup.

Flowering & Fruiting: June to September.

Specimen Cited: Gorumara, Goutam & AP Das 0711, dated 30. 09. 2009.

Local Distribution: Gorumara.

General Distribution: Pantropical.

XANTHIUM L., Sp. Pl. 987. 1753.

Xanthium strumarium L., Sp. Pl. 2: 987. 1753; *Xanthium indicum* Koen. ex Roxb., 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* L., Sp. Pl. 2: 987. 1753, p. p.; Hook. f. in Hook. f., Fl. Brit. Ind 3: 303. 1881; Haines, Bot. Bihar & Orissa pt. IV: 478. 1922.

Local 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: Murti, Goutam & AP Das 0427; dated: 17.12.2006.

Local Distribution: Khunia, Murti, Bichhabhanga, Common.

General Distribution: Pantropical.

YOUNGIA Cassini, Ann. Sci. Nat. (Paris) 23: 88. 1831.

Youngia japonica (L.) Candolle, Prodr. 7: 194. 1838; Grierson *et* Springate in Grierson *et* Long, Fl. Bhutan 2(3): 1457. 2001. *Prenanthes japonica* L., Mant. Pl. 1: 107. 1767. *Youngia formosana* (Hayata) H. Hara, 53. 1938. *Youngia ambigua* Candolle, Prodr. (Candolle) 7(1): 193. 1838.

Annual, erect, branched herbs, up to 120 cm. Leaves oblanceolate, lamina 15 – 25 × 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 cylindrical. Phyllaries ovate to triangular, apex acute. Anther tube dark green. Style branches yellow. Achene purplish Br.. Pappus white.

Flowers & Fruits: April to October.

Specimen Cited: Dhupjhora, Goutam & AP Das 0634, dated 22. 03. 2009.

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Japan, Korea, Malaysia, Philippines.

Order 59: 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 to rounded-cordate **Centella**
- 1b. Stem usually erect, not creeping; leaves not reniform 2
- 2a. Leaves simple, usually palmately divide to shallowly lobed **Eryngium**
- 2b. Leaves compound 4
- 3a. Calyx teeth minute; fruit ellipsoid, furrowed **Oenanthe**
- 3b. Calyx teeth obsolete; fruit sub-globose, furrow absent, ridges thick **Seseli**

CENTELLA L., Sp. Pl., ed. 2, 2. 1393. 1763.

Centella asiatica (L.) Urb., Mart. Fl. Brass. 11: 287. 1879; Datta *et* Majumder, Bull. Bot. Soc. Beng. 20(2): 93. 1966. Guha Bakshi, Fl. Mur. Dist. 149. 1984. *Hydrocotyle asiatica* L. Sp. Pl. 1: 234. 1753; Clarke in Hook. f., Fl. Brit. Ind. 2: 669. 1879; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 446. 1999; Prain, Beng. Pl. 1: 391. 1903.

Local name: Thankuni

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: Murti, Goutam & AP Das 0387, dated 17.12.2006.

Local Distribution: Dhupjhora, Khunia, Murti, Gorumara, Budhuram, Bichhabhanga.

General Distribution: India, Bhutan, China, Nepal, Pakistan, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Thailand, Vietnam.

ERYNGIUM L., Sp. Pl. 1: 232. 1753.

Eryngium foetidum L., Sp. Pl. 1: 232. 1753; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 447. 1999.

Local 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 spinuloseserrate, base cuneate to decurrent. Upper leaves sessile. Inflorescence divaricately trifurcate; heads numerous. Flower heads cylindrical; margin 1–3 spinulose-serrate. Calyx teeth ovatelanceolate, acute, equaling petals. Petals white to pale yellow. Styles erect, exceeding calyx teeth. Fruit ovoid-globose.

Flowers & Fruits: April to December.

Specimen Cited: Murti, Goutam & AP Das 0174. dated 03. 07. 2006.

Local Distribution: Gorumara, Murti, Dhupjhora.

General Distribution: Tropical India; native to Central America; now a widespread weed in tropical and subtropical regions.

OENANTHE L., Sp. Pl. 1: 254. 1753.

Oenanthe javanica (Bl.) Candolle, Prodr. 4: 138. 1830; Watson in Grierson *et* Long, Fl. Bhut. 2(2): 486. 1999. *Sium javanicum* Bl., Bijdr. 15: 881. 1826. *Oenanthe bengalensis* Benth. *et* Hook., Gen. Pl. 1: 906: 1862; Clarke in Hook. *f.*, Fl. Brit. Ind. 2: 696. 1879; Prain, Beng. Pl. 1: 394. 1903.

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, furrow1-vittate, carpophore 0.

Flowers & Fruits: January to April.

Specimen Cited: Gorumara, Goutam & AP Das 0749, dated 21.09.2009.

Local Distribution: Gorumara, Dhupjhora, Common in riverine wetland.

General Distribution: India, China, Nepal, Pakistan, Malaysia, Myanmar, Japan, Thailand, Vietnam and Java.

SESELI L. Sp. Pl. 1: 259. 1753

Seseli diffusum (Roxb. *ex* Sm.) Santapou *et* Wagh, Bull. Bot. Surv. Ind. 5(2): 108. 1963. *Ligusticum diffusum* Roxb. *ex* Sm., Rees Cyclop 21: 11. 1812. *Cnidium diffusum* Candolle, Prodr. 4: 153. 1830. *Seseli indicum* Wight *et* Arn., Prodr. 371. 1874; Clarke in Hook. *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. Fruit sub-globose, glabrous or hispid; ridges thick.

Flowers & Fruits: January to April.

Specimen Cited: Dhupjhora, Goutam & AP Das 0857, dated 14. 02. 2010.

Local Distribution: Dhupjhora, Common in riverine wetland.

General Distribution: India (Throughout the plains) and Bangladesh.

Araliaceae Juss., Gen. Pl. 217. 1789 ('Araliae').

HYDROCOTYLE L., Sp. Pl. 1: 234. 1753.

Hydrocotyle sibthorpioides Lam., Encycl. Meith. 3:153. 1789; 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* Roxb. *ex* Candolle, Prodr. 4:64. 1830; Hook. *f.*, Fl. Brit. Ind. 2:668. 1879.

Local name: Chhotomanimuni.

Strongly aromatic herbs. Stem weak, slender, filiform, creeping. Lamina reniform-rounded, 0.5 – 1.5 × 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: Gorumara, Goutam & AP Das 0713, dated 30. 09. 2009.

Local Distribution: Throughout the forests.

General Distribution: India, Bhutan, Nepal, China, Indonesia, Japan, Korea, Philippines, Thailand, Vietnam; tropical Africa.

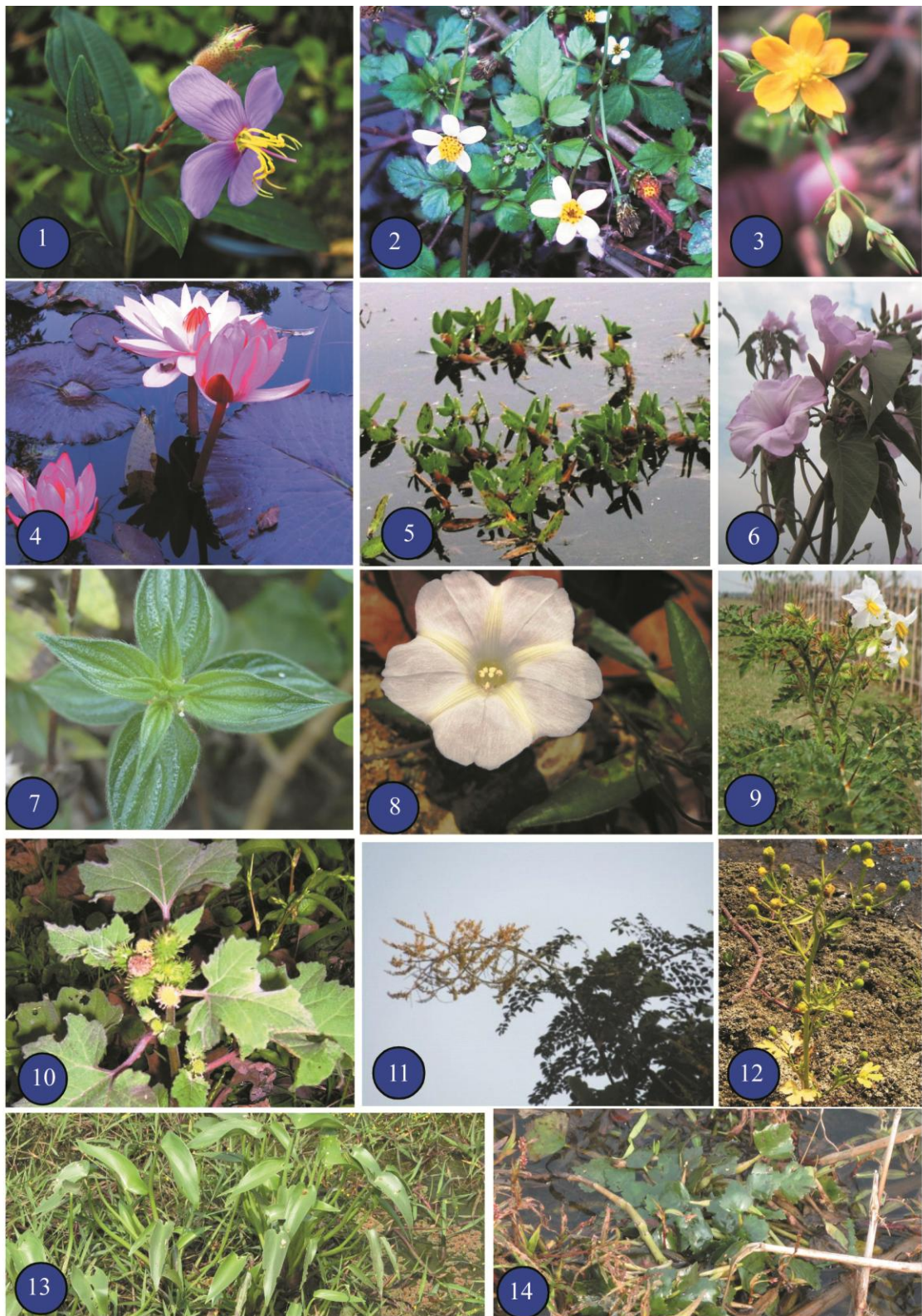


PLATE 1: Figure 1 - 14: 1. *Melastoma malabathricum*; 2. *Bidens pilosa*; 3. *Hypericum japonicum*; 4. *Nymphaeae rubra*; 5. *Hygroryza aristata*; 6. *Ipomoea fistulosa*; 7. *Pouzolzia zeylanica*; 8. *Merremia hirta*; 9. *Solanum sisymbriifolium*; 10. *Xanthium strumarium*; 11. *Caesalpinia cucullata*; 12. *Ranunculus sceleratus*; 13. *Monochoria hastata*; 14. *Trapa natans* var. *bispinosa*



PLATE 2: Figure 15 - 29: 15. *Dendrocnide sinuata*; 16. *Duchesnea indica*; 17. *Oxalis debilis* var. *corymbosa*; 18. *Terminalia bellirica*; 19. *Rumex dentatus*; 20. *Croton bonplandianus*; 21. *Ludwigia adscendens*; 22. *Rotala rotundifolia*; 23. *Floscopa scandens*; 24. *Centella asiatica*; 25. *Persicaria hydropiper*; 26. *Alternanthera paronychioides*; 27. *Eleutheranthera ruderalis*; 28. *Barleria strigosa*; 29. *Ocimum basilicum*

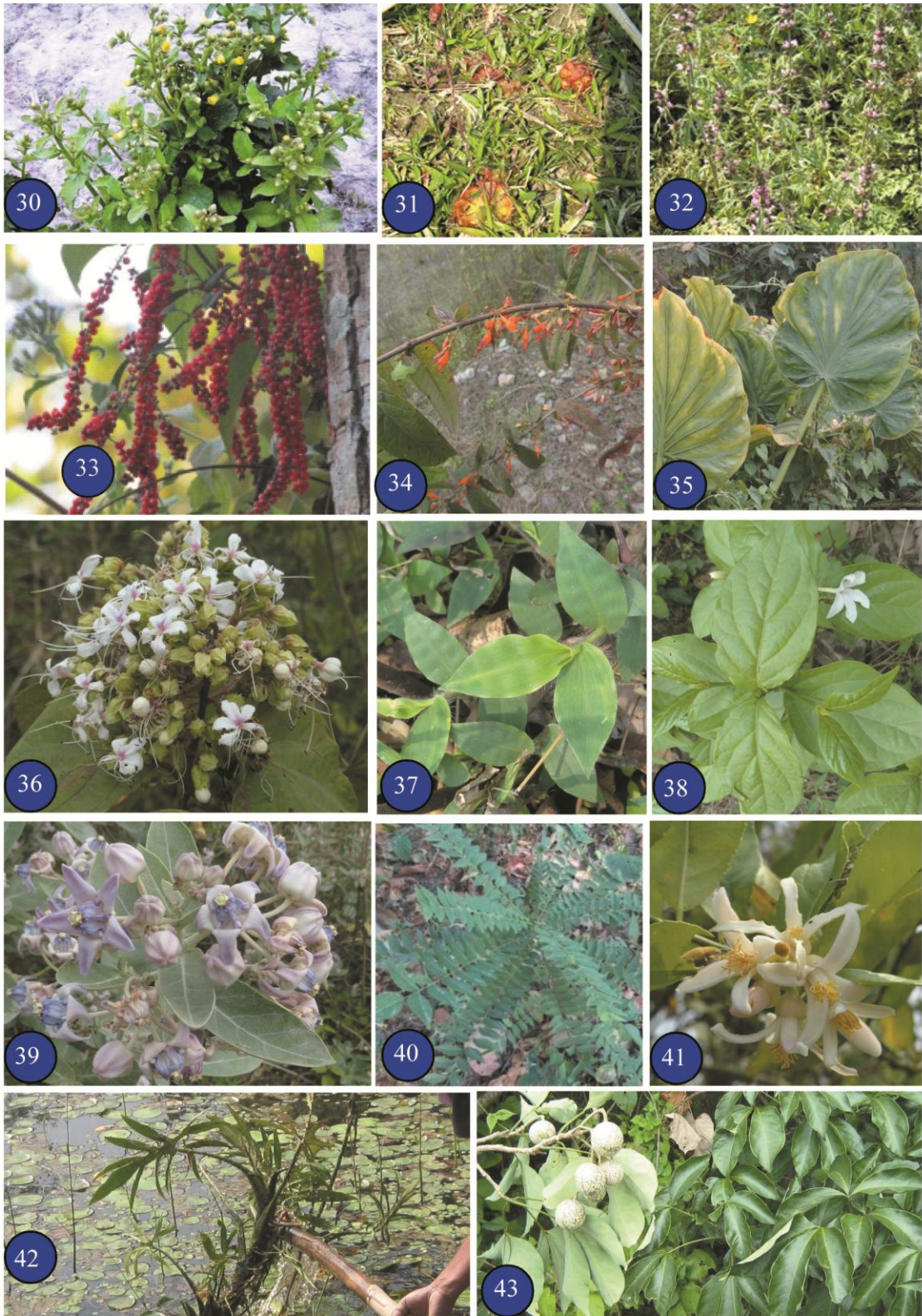


PLATE 3: Figure 30 - 43: 30. *Blumea lacera*; 31. *Drosera burmannii*; 32. *Leonurus sibiricus*; 33. *Deeringia amaranthoides*; 34. *Woodfordia fruticosa*; 35. *Xanthosoma brasiliense*; 36. *Clerodendrum infortunatum*; 37. *Oplismenus burmannii*; 38. *Coffea bengalensis*; 39. *Calotropis gigantea*; 40. *Clausena excavate*; 41. *Citrus limon*; 42. *Lasia spinosa*; 43. *Crateva religiosa*

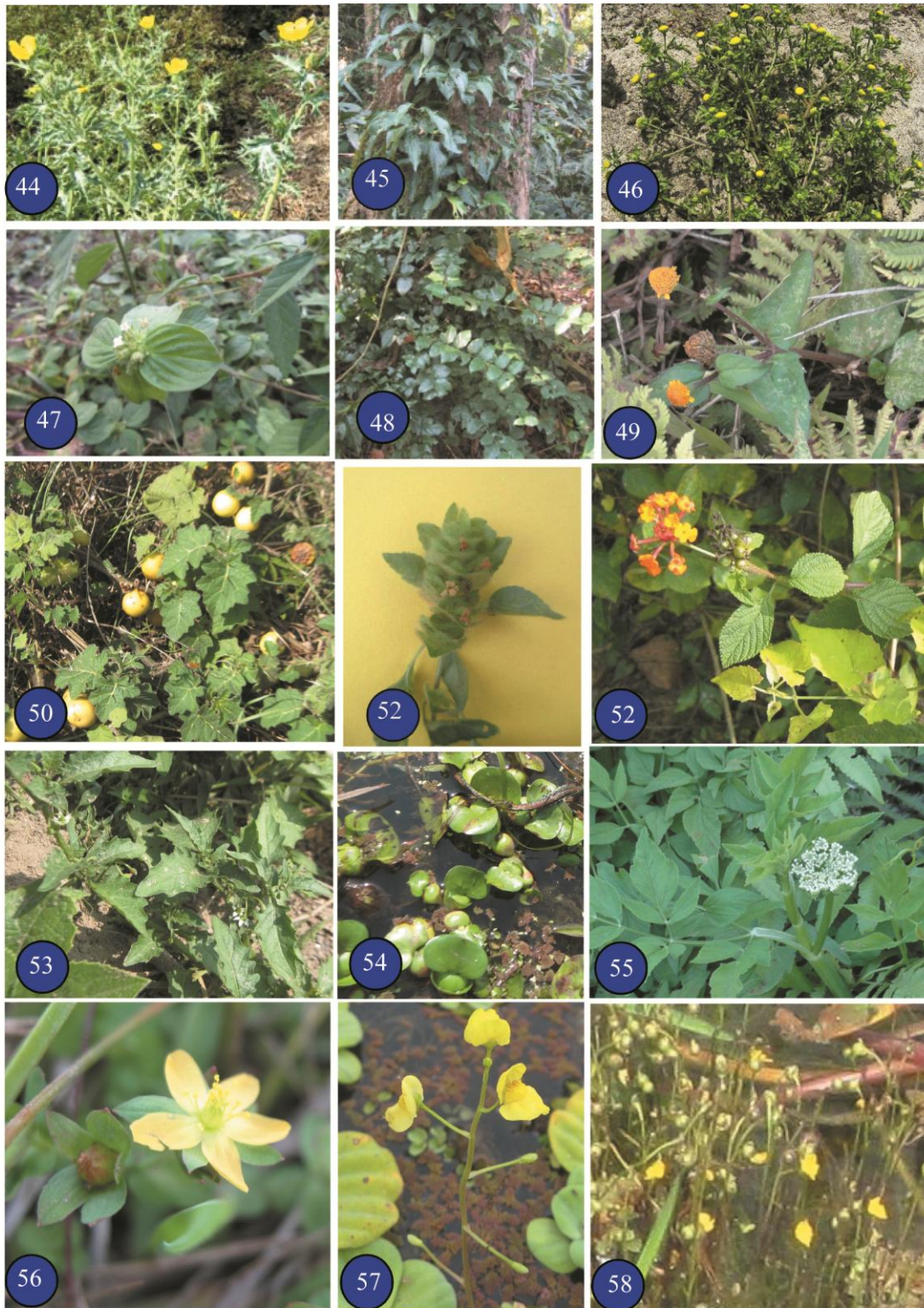


PLATE 4: Figure 44 - 58: 44. *Argemone mexicana*; 45. *Piper sylvaticum*; 46. *Grangea maderaspatana*; 47. *Dentella repens*; 48. *Catunaregam spinosa*; 49. *Acmella calva*; 50. *Solanum viarum*; 51. *Sagittaria guayanensis*; 52. *Phalopsis imbricate*; 53. *Solanum villosum*; 54. *Eichhornia crassipes*; 55. *Oenanthe javanica*; 56. *Hypericum japonicum*; 57. *Utricularia aurea*; 58. *Utricularia gibba*

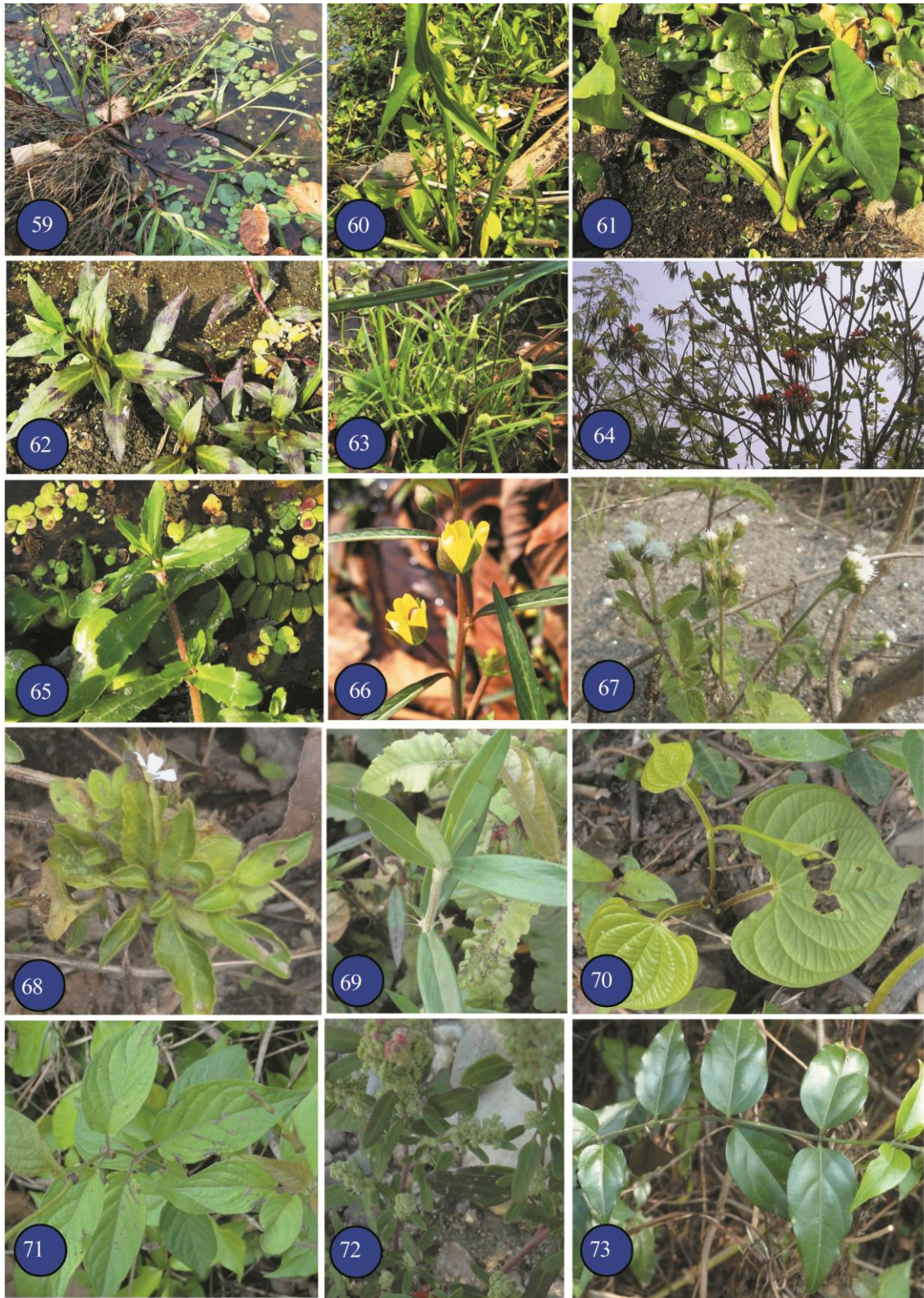


PLATE 5: Figure 59 - 73: 59. *Echinochloa colona*; 60. *Sagittaria sagittifolia*; 61. *Colocasia esculenta*; 62. *Polygonum pubescens*; 63. *Kyllinga nemoralis*; 64. *Erythrina stricta*; 65. *Enydra fluctuans*; 66. *Ludwigia octovalvis*; 67. *Ageratum conyzoides*; 68. *Phaulopsis imbricata*; 69. *Oldenlandia verticillata*; 70. *Dioscorea esculenta*; 71. *Paederia foetida*; 72. *Chenopodium album*; 73. *Jasminum dispersum*

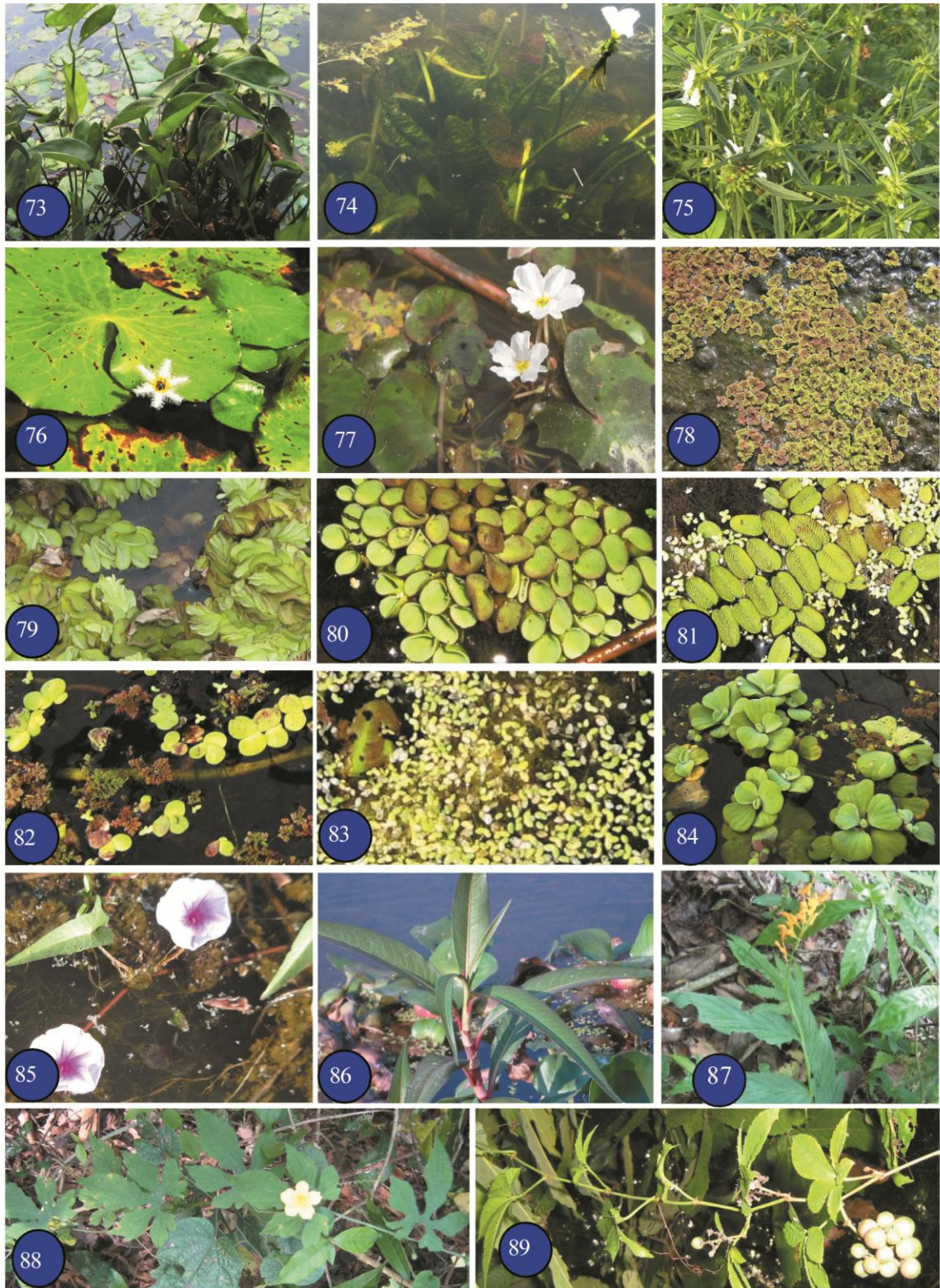


PLATE 6: Figure 73 - 90: 73. *Monochoria vaginalis*; 74. *Ottelia alismoides*; 75. *Leucas indica*; 76. *Nymphoides indica*; 77. *Nymphoides hydrophylla*; 78. *Azolla pinnata subsp. africana*; 79. *Salvinia adnata*; 80. *Salvinia cucullata*; 81. *Salvinia natans*; 82. *Spirodela polyrrhiza*; 83. *Lemna aequinoctialis*; 84. *Pistia stratiotes*; 85. *Ipomoea aquatica*; 86. *Persicaria barbata*; 87. *Globba racemosa*; 88. *Momordica charantia*; 89. *Tetrastigma serrulatum*

