

UGC-MRP FINAL REPORT

A STUDY ON THE DIVERSITY OF ANGIOSPERMS IN BARAIL WILDLIFE SANCTUARY, ASSAM WITH SPECIAL REFERENCE TO ASSESSMENT OF RARE, ENDANGERED AND THREATENED (RET) TAXA

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Principal Investigator

SUMMARY OF THE PROJECT

This research work has been carried out under the UGC-MRP Project titled “A study on the diversity of Angiosperms in Barail Wildlife Sanctuary (BWS), Assam with special reference to assessment of Rare, Endangered and Threatened (RET) taxa”. In this project, angiospermic plants of BWS have been enumerated by morpho-taxonomic studies. Extensive and intensive field studies were done to collect specimens as well as to record the field data of the habitat. Different herbaria of the country were visited in due course. The study was aimed to document the diversity of angiospermic plant species from the sanctuary along with their vernacular names, habitat and their occurrence. As the work has been completed, it is expected that the outcome of the research will be a user-friendly identification manual of angiospermic plants of the sanctuary. This report will provide an elaborate idea on the diversity of angiosperms in BWS, Assam.

1. GENERAL INTRODUCTION

Angiosperms are characterized by diverse types of herbs, shrubs, trees, climbers and lianas, epiphytes and even parasites. In India, there are about 17,817 species of angiosperms which account for 38% of the total Indian flora (Anonymous, 2012). Among the Indian species, about 10% of the entire angiospermic plants have been considered as endangered out of which about 800 species are reported from northeastern India (Nayar and Sastry 1987, 1988, 1990; Ahmedullah *et al.*, 1999).

Northeast India includes eight states, namely, Assam, Arunachal Pradesh, Meghalaya, Manipur, Tripura, Mizoram Nagaland and Sikkim. According to FSI in 1997, the forest cover of this area is 164,043 sq km, which comprises 25% of the total forest cover of India. North-eastern region is considered as one of the richest biodiversity centers of India. The tropical evergreen forests of north-east are mostly dominated by Angiosperms which contribute a vital part in floral diversity.

In Systematic study of plants, documentation and diversity assessment are of basic level of research. Several attempts have been made throughout the World to study and document plant species in different areas. Regional floras, district floras, state, country and continental floras are now available for most of the countries. The various conservational programs have also been launched world over for the conservation of natural resources. India has also established a network of Protected Areas including National Parks, Wildlife Sanctuaries, Biosphere Reserves, etc., for assessment of their floral and faunal wealth. McNeely (1990) categorized India as one of the twelve mega diversity countries in the world and paved the way for its placement in world's conservation map. Subsequently, Myers (1988, 2000) recognized worldwide 'biodiversity hotspots' that are areas with rich biological diversity and endemism but under threat due to various anthropogenic activities. According to the great Plant taxonomist and Plant Geographer Amen L. Takhtajan, North-east India is the primary centre of Angiosperms origin. He rightly considered that "the cradle of flowering plants lies in between Assam and Fiji".

Topologically, Assam can be widely divided into Brahmaputra Valley, Barak Valley and intervening Hill ranges of karbi Anglong and North Cachar Hills. Presently, the state Assam includes five National Parks and eighteen Wildlife Sanctuaries. Attempts have been made to document the phyto-diversity of some Wildlife Sanctuaries and National Parks of the state, but no baseline information on the floral diversity of Barail Wildlife Sanctuary of Southern Assam (located in Barak valley) was available so far. The flora of the Sanctuary was virgin and unexplored due to its remoteness and inaccessibility. The present study reports that being a part of Indo Burma Biodiversity hotspot (Myers, 2000), Barail Wildlife Sanctuary (BWS), Assam comprises a diverse floral element including a number of endemic taxa. The primary vegetation of the sanctuary is tropical semi-evergreen to moist evergreen forest corresponding to Cachar Tropical Evergreen Forest 1B/C3 and Cachar Tropical Semi evergreen Forest 2B/C2 (Champion and Seth, 1968). The whole BWS is drained by seasonal hill streams which finally drain into the two major rivers of the area Jatinga and Doloo.

A vast destruction of the natural vegetation, resources and environment has also been noticed. Impacts over the sanctuary for meeting up the daily needs of the local tribal people particularly for fire wood are also in a dynamic move. With increasing population, their demands on forest products are also increasing. With advance of modernism, the changes in their socio-economic structure have taken place, which lead them to enter into the trade of forest products. Massive loss of habitat in the buffer zone of BWS due to encroachment also results shrinkage of foraging areas. Human activities coupled with some natural phenomena are causing serious threats to the biodiversity of the sanctuary including loss of wild floras. Hence, taxonomic research in protected areas like Wildlife Sanctuary is more essential for the conservation of biodiversity and maintaining natural ecosystem.

2. REVIEW OF LITERATURE

The publication of 'Flora of British India' by J. D. Hooker (1872 – 1897) initiated the taxonomic studies in our Country (undivided British India) including northeastern region. Before this, Buchanan-Hamilton (1820), Roxburgh (1820 – 24, 1832), Wallich (1820 – 32), Robinson (1841) were some of the earlier naturalists who made significant contributions on the floral wealth of the region. Literature survey revealed that one of the earliest floristic observations on a district of Assam was made by Gammie in 1895. Later, Kanjilal *et al.* (1934 – 40) made the floristic study for the then Assam State as a whole and provided a comprehensive account in 'Flora of Assam'. Das (1942) made significant contribution on the floristic diversity of Assam.

Topographically, the state Assam can be divided into three regions *viz.* Brahmaputra Valley, Barak Valley and Assam hill ranges. Barak Valley covers three districts of Southern Assam: Cachar, Karimganj and Hailakandi. Barail Wildlife Sanctuary falls within the jurisdiction of Cachar district, Southern Assam.

So far as the floristic studies of Assam are concerned, it has been found that Brahmaputra valley of Assam has received a fairly better attention than the Barak Valley. Floristic studies on different areas of Brahmaputra valley by Rao & Rabha (1966), Rao & Verma (1969), Islam (1984, 1986, 1990, 1990a, 1991), Sarma (1990), Barua (1992), Chowdhury *et al.* (1994), Gogoi (1997), Agarwal & Borah (2001), Barooah & Mahanta (2006), Sarma *et al.* (2006) were well documented.

Some valuable information on a particular group of plant or life-form were available in the contributions made by Satyanarayan (1962), Kar & Panigrahi (1963), Naik (1964), Panigrahi (1965), Rao & Verma (1969a, 1970, 1976, 1980), Baruah (1978), Pathak (1990), Barua & Nath (1998), Islam (1998), Barooah (2003).

Contributions were also made on the floristic survey of different protected areas of Assam by Bora & Kumar (2003), Gogoi (2005), Bujarbarua & Sarma (2006), Dey *et al.* (2007), Purkayastha *et al.* (2007).

Several new species and new records were also published from time to time by Guhabakshi (1970), Rao & Verma (1971), Barua & Gogoi (1995), Barua & Neogi (1995), Barua & Barua (1997), Barooah & Borthakur (2001).

In comparison, floristic survey on Barak Valley (Southern Assam), in which Barail Wildlife Sanctuary falls, received a very little attention. Some fragmentary floristic reports have been made by Chowdhury (1982), Dam & Dam (1984), Sharma *et al.* (2002), Das & Dutta Choudhury (2003), Nath & Maiti (2003), Bhattacharjee *et al.* (2005, 2009), Baruah *et al.* (2006), Bhattacharjee & Sharma (2006), Das *et al.* (2006, 2007, 2008), Barbhuiya *et al.* (2009), Bhattacharjee (2009), Darlong & Bhattacharyya (2011), Rout *et al.* (2012), Barbhuiya *et al.* (2014).

Very few floristic works on Barail Wildlife Sanctuary (BWS) are available so far. A tentative checklist of forest flora covering Dicotyledons-Polypetalae of NC Hills and Barail range was enumerated by Dutt *et al.* in 1974. Recently, Barbhuiya *et al.* (2012) and Barbhuiya (2013) described two new species from southern Assam. Barbhuiya *et al.* (2013) also enumerated 96 species of grasses from southern Assam out of which 16 species are from Barail Wildlife Sanctuary. Apart from some fragmentary works in different parts of the southern Assam, no study on the floristic diversity of Barail Wildlife Sanctuary has been done so far. Hence, this project work was planned for comprehensive study and documentation of angiospermic plants of the Sanctuary. The outcome of this project provides a complete picture on floristic of the area for the first time and the assessment will, thus, remove the lacuna prevailing in our knowledge about the plant wealth of the area.

3. STUDY SITE

Barail Wildlife Sanctuary (BWS), Assam is identified as one of the ecologically richest biotic communities in India. It is situated on the northern part of Cachar district of Assam and lies along the foot hills of North Cachar and Barail hills under the administrative control of Southern Assam Forest Circle, Silchar. The sanctuary lies between the coordinates $24^{\circ}58'$ – $25^{\circ}5'$ North latitudes and $92^{\circ}46'$ – $92^{\circ}52'$ East longitudes. The area is declared and notified as Wildlife Sanctuary in June 2004. BWS covers an area of 326.24 sq. km and comprises of tropical moist evergreen and semi-evergreen forests.



Fig. 1a. Satellite map showing the location of Barail Wildlife Sanctuary Assam, India.
(Source: <https://maps.google.com/>)

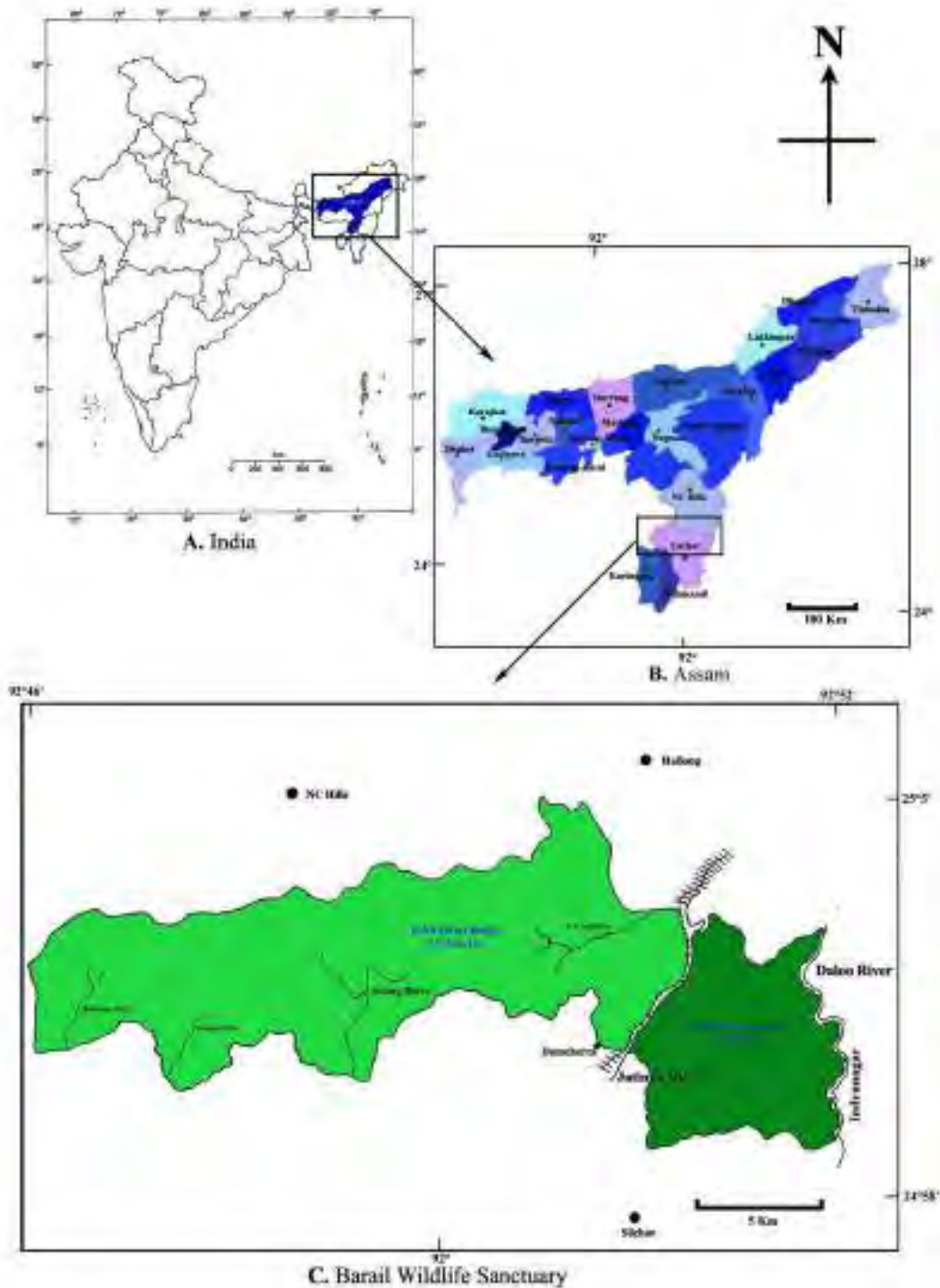


Fig.1b. Map showing the location of Barail Wildlife Sanctuary in Assam, India.

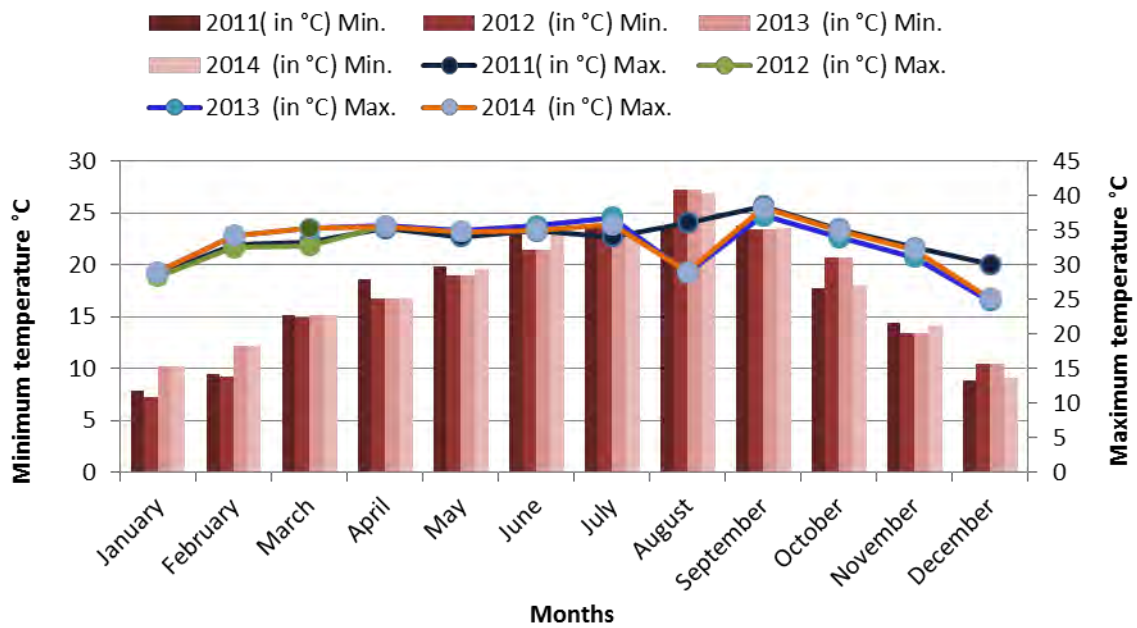
The sanctuary lies within the low to mid altitude hills (*i.e.* less than 30 to 1,100 m) of Cachar, Assam. These low hill ranges are continuous with the more elevated mountains of North Cachar Reserve Forest along with Barail Hill Ranges in NC Hills District. The sanctuary has a network of small perennial or seasonal tributaries that flow through small and narrow valleys and unite with Jatinga River at the western frontier of the Sanctuary. Barail Range is

located in the Patkoi hill range running southwestly from southern Nagaland, through parts of Northern Manipur up to Jaintia hill of Meghalaya. The Barail Range also acts as a barrier between the two large river systems of Northeastern India, the Brahmaputra Valley and Barak Valley. Major rivers draining within the sanctuary are Jatinga, Daloo, Kayong, Gumra and Boleswar. The river Jatinga flows side by side of the western boundary of the BWS and unite with Barak River at “Jatingamukh” below Barkhola village. Another river Dolu flows all the way through the eastern boundary of the BWS. The Silchar-Halfong railway line and the Silchar-Halfong PWD road also pass along the western boundary of BWS. Some of the villages namely Balacherra, Maruacherra, Damcherra, Bandarkhal, Dittockcherra all are located at the western border of Barail wildlife Sanctuary. The southern border of BWS is marked by fringe villages like Naraincherra, Balacherra, Maruacherra, Abongpunjee, subongpunjee. Most of these fringe villagers are dependent on panjhum cultivation (Khasi settlers) in addition to other vegetables and fruits (mainly Pineapple, Banana and Oranges). The Barail hill ranges with the towering peaks of Hamplopet (1867 m), Maheo (1739 m), Kuakaha (1736 m) and Sherpai (1657 m) are one of the most diverse but lesser known ecosystems of the region. Exceptional geographical position, diverse topography, wide range of physiographic condition along with high precipitation have made the area one of the richest treasure houses of floral as well as faunal wealth. Major portion of the sanctuary is consisting of virgin land although there is human habitation in several villages (8 in East Block and 19 in West Block) located in and around the sanctuary (Anonymous, 2006-11).

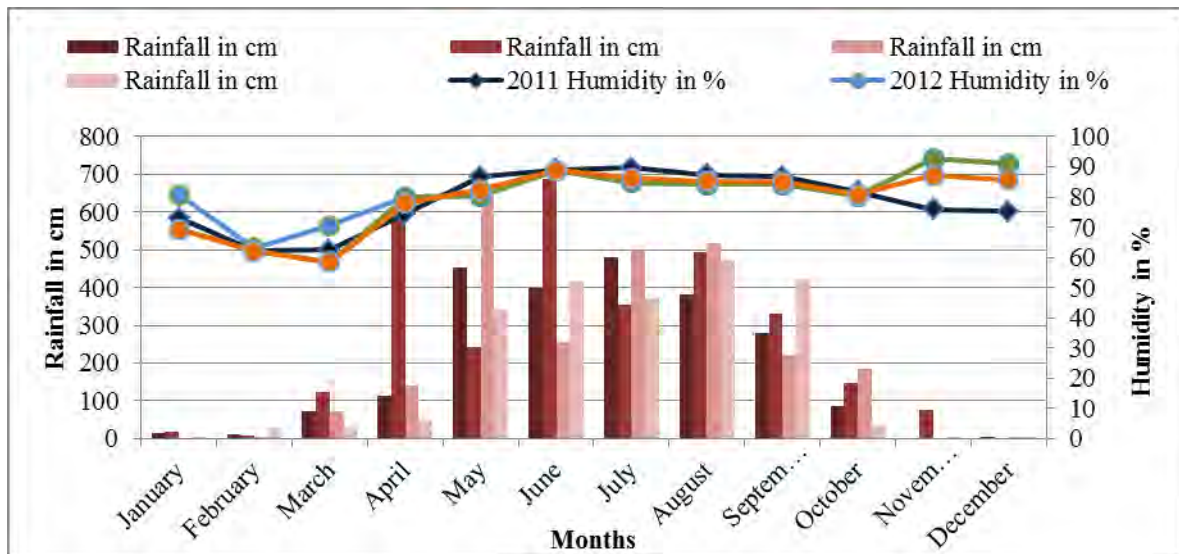
The sanctuary is the homeland of vast wild flora and fauna which may include many rare, endangered and threatened (RET) taxa. The sanctuary also harbours *Ixonanthes khasiana* Hook.f. which is considered as ‘Endangered’ by IUCN. The tropical evergreen and semi evergreen forests of the sanctuary are the dwelling places of many birds, mammals including some rare animals like *Naemorhedus goral* locally called *Pahari Chhagal*, *Nycticebus coucang* (Slow Loris), *Hoolock hoolock* (Hoolock Gibbon), etc. The surrounding area of the sanctuary has also been identified for its highest primate diversity in Assam with eight species.

Soil and Climate

Geologically, the soils are of sandy stony to clayey. The climate of the region is humid tropical to subtropical. Rainfall is high for a brief period of time with predictable rainless phase. The annual rainfall varies from 200 cm to more than 600 cm. The westernmost region of the Barail Range receives the heaviest precipitation in Assam (Choudhury, 1993) with average humidity of 72% to 83%. The minimum and maximum temperatures are found to be about 12.6°C and 32.7°C respectively. Kalain recorded highest temperature of 35.5°C during May and low 5.4°C during January. The following are the graphically representation of monthly average maximum and minimum temperature in °C (Graph 1) and monthly average humidity in % and monthly average rainfall data in millimeters together (Graph 2) of Cachar district for the period of 2011 to 2014. Graph 2 clearly indicates that during the months of May to September heavy precipitation is observed with rapid increase in water levels in rivers and streams.



Graph 1: Graphical representation of monthly average maximum temperature in °C of Cachar district for the period of 2011 to 2014 from Krishi Vigyan Kendra, Cachar.



Graph 2: Graphical representation of monthly rainfall data in mm (Hydromet Division, New Delhi, India Meteorological Department) and monthly average humidity in % (Krishi Vigyan Kendra, Cachar) of Cachar district for the period of 2011 to 2014.

4. OBJECTIVES OF THE PROJECT

- Extensive and intensive field survey and collection of angiospermic plants from different environs of the sanctuary.
- To annotate all the specimens and study various taxa in the field especially for their distribution, variability, habitat, altitudinal variation and phenological data.
- Morpho-taxonomic investigation, identification and documentation of taxa in the form of illustrated flora with up-to-date nomenclature, detailed taxonomic description, habitat and distribution within and outside the study area.
- To assess the variations in gross morphology of both vegetative and reproductive structures.
- To provide identification keys, distribution, maps, illustration and photographs.
- To make a detailed study of different growth forms like climbers, lianas, epiphytes etc.
- Categorization of plants in IUCN red list category and to identify the rare, endangered and threatened (RET) taxa by assessing the status of the species in the field and to map their location by GPS.
- Finally, to provide an up-to-date taxonomic framework of the angiosperm diversity of the sanctuary that can form a benchmark for future studies and monitoring.

5. MATERIALS & METHODS

The project work has been carried out in the Plant Taxonomy & Biosystematics Laboratory, Department of Life Science Bioinformatics, Assam University, Silchar.

In the beginning of the study, a checklist of the angiosperms in Barail Wildlife Sanctuary has been prepared from literature and all known collections housed in various herbaria. The published binomials have been collected from primary and secondary sources i.e., floras, monographs, various articles and books. International Plant Name Index (IPNI) (<http://www.ipni.org>) has also been visited for correct and updated nomenclature.

In the next phase, extensive and intensive field surveys have been done to collect plants from their habitat and to examine and record the range of variation, their habitat, ecology and associated plants, wherever feasible. Various localities in and around the sanctuary like Bandarkhal, Damcherra, Durbintila, Gubicherra, Lakhicherra, Madhura Khuwari, Malidahar, Maruuacherra, Jatinga, N. C. Hills were surveyed. However, some of the specimens were also collected after the duration of the project. Drying, poisoning and mounting of collected specimens have been done following the routine herbarium practices recommended by Jain & Rao (1977) and Singh & Subramaniam (2008). External morphological characteristics of all the species have been studied under Stereo Zoom microscope. The collected flowering specimens are dissected and studied in details. The terminology currently in use (Lawrence, 1951; Stearn, 1966; Hicky and King, 2000) has been followed for taxa description. The vernacular name, phenological data and ecological notes are gathered from the field by communicating with local people and from literature and collector's note of existing herbarium sheets.

After critical studies, a description was made for each species. Illustrations of selected taxa were made to facilitate their easy identification. Nomenclature of all the species were updated following recent International Code of Nomenclature (McNeill *et al.* 2012). Regular extensive and intensive field surveys to collect plant specimens were carried out in different parts of the study area following the same procedure mentioned earlier. Literature survey was done in the next phase of study.

Dichotomous keys were prepared for all the taxa based on vegetative and reproductive characters. Data from related branches of Botany were also collated and collected.

Areas surveyed

Cachar forest Division (East Block)

- **Indranagar:** It is about 25 km away from Udharbond along the Daloo river.
- **Kumba:** Kumba is under Udharbond Tehsil of Cachar District, Assam. It is located 32 km towards East from Silchar and 19 km from Udharbond.
- **Madhura:** Madhura is under Udharbond Tehsil of Cachar district. It is located 16 km towards East from Silchar and 3 km from Udharbond.

- **Gubicherra stream:** An untouched jungle stream having wide vegetations with large rocks. Its coordinate are 24°59.061' N and 92°46.507' E with an elevation of about 200 m. The forest is characterized by having tall trees, banana clumps, bamboo and large trees.
- **Lakhicherra:** It is located on western hill slopes of Barail Wildlife Sanctuary. It lies between the coordinates 24°58.651'N and 92°46.754'E with an elevation of about 55 m. The peak point of this hill range is Nirmatha Tilla (altitude: 1000m). These hill ranges can be reached from Maruacherra village.
- **Malidahar:** It is the border area of Assam and Meghalaya. It is about 100 km away from Silchar, Cachar, Assam. We have done forest tracking along the river that falls under Assam boundary.

Karimganj forest Division (West Block)

- **Bandarkhal:** It is a small village at the buffer area of Barail Wildlife Sanctuary, which is located on the way between Silchar to Halflong. The area comprises of streams and thick streamlines forest. We have explored the stream, forest track and also road sides starting from the village.
- **Damcherra:** It is located at the western fringe of Barail wildlife Sanctuary.
- **Maruacherra:** A khasi settlement located about 10 km away from Barkhola Village at the border of BWS. They practice Pan-Jhum cultivation. We track along the marua stream and the forest.
- **Jatinga:** This village is well known for the mysterious death of Birds (Choudhury, 2000). This village is located on the northern tip of BWS and is about 10 km southeast of Halflong, N. C Hill, Assam. We surveyed the village for collection of plant species along the existing forest and hill slopes.
- **N. C. Hills:** It is located to the north of Cachar district. It is one of the hilly and undulated parts of Assam. It is about 150 km away from Silchar.

Tour Details

Sl. No.	Date	Places Visited During Field Survey
1.	03.03.2012	Malidahar
2.	11.03.2012	Damcherra
3.	05.04.2012	Madhura khuwari
4.	12.12.2012	Damcherra
5.	07.04.2013	Madhura khuwari, Indranagar
6.	18.05.2013	Indranagar
7.	24.09.2013	Bandarkhal
8.	12.12.2013	Damcherra, Ditekcherra & Foot hills of Durbintila
9.	08.03.2014	Durbintila, near Maruwacherra River
10.	24.04.2014	Lakhicherra near Bhaluk Nala

11.	26.11.2014	Kalain Range, Kalaincherra near Kalian Tea Estate 15 No. and Craig Park Tea Estate touching BWS
12.	28.02.2015	Bandarkhal, way to Jatinga, Haflong
13.	25.04.2015	SCF Nala, on the way to Damcherra
14.	12.12.2015	Malidahar
15.	26.02.2016	Bhaluknala, Durbintila

Table 4: Date and places visited during the field tours

Herbaria and libraries visited to match the collected specimens with the available herbarium specimens and for literature consultation:

- Botanical Survey of India, Shillong (ASSAM)
- Botanical Survey of India, Kolkata (CAL)
- National Botanical Research Institute, Lucknow (LWG)
- Botanical Survey of India, Dehradun (BSD)
- Forest Research Institute, Dehradun (DD)
- Gauhati University Herbarium (GUBH)

6. SCHEME OF PRESENTATION

This project report follows the conventional taxonomic method of research currently in use for floristic studies. The general design of data presentation can be seen from the ‘Contents’ at the starting. Some of the sequences and strategies maintained in drafting this work are mentioned in this chapter for easy glance.

In the taxonomic treatment, all the angiosperms under study are first divided into two major groups: dicotyledons and monocotyledons. The bracketed keys for families are followed after Davis & Cullen (1989). Starting from family, followed by genus and species are arranged according to the classification of Angiosperm Phylogeny Group (APG III, 2009). Families and other lower taxa accepted in the most current edition of Mabberley's The Plant Book (Mabberley, 2008) are mostly consistent in APG III classification. Identification keys at each taxonomic level, wherever necessary, have been given. The family, generic and species citations were adopted from The International Plant Name Index (IPNI) (<http://www.ipni.org>). Bracketed keys are provided for the identification of genera under family and species under genera. The keys were prepared with more emphasis on vegetative or morphological characters to enable easy identification. Genera within each family and species within each genus are arranged alphabetically. Illustrations and photographs are provided for interesting species.

In the nomenclature portion, currently accepted name of species with full citation is given followed by basionym and synonyms, wherever applicable. The serial number for each family is provided to account the total number easily. Then synonyms relevant to the floras of Indian subcontinent are cited. The *nomina nuda* are also included. Besides the protologue citation of different species, other revisionary, monographic and floristic works are given in chronological order. The authors of plant names have been

abbreviated as per Brumitt and Powell (1992) or the guidelines provided by them. Full name of the books and the journals have been used for easy access. The nomenclature is followed by vernacular names, if any. Then the taxonomic description of the species is given followed by habitat, distribution, phenology, specimens examined, etc. Critical notes, wherever necessary, are also included at the end. The distribution and phenological data provided here are based on specimens housed in different herbaria, published literature and field observations.

All specimens examined were annotated; the details of specimens cited are in the following sequence: locality (Country, State, District, precise location where available), date of collection, name of the collector, collection number (if absent, then herbarium accession number where available), the acronym of the herbaria where the specimens are preserved in parenthesis, flowering and fruiting. Unless otherwise mentioned, all the collected specimens have been deposited in the herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar.

7. ENUMERATION OF SPECIES

Sl. No.	Family	Genus	Scientific Name	Habit	Phenology	Specimen(s) examined	Occurrence
1.	Acanthaceae Juss.	<i>Andrographis</i> Wall. ex Nees	1. <i>Andrographis paniculata</i> (Burm. f.) Wall. Ex Nees	H	through out the year	A. Bora & D. Bhattacharyya 11680	Lakhicherra near Bhaluk Nala
			2. <i>Codonacanthus pauciflorus</i> Nees	H	August – April	A. Bora & D. Bhattacharyya 11545	Bhaluknala, Durbintila
			3. <i>Eranthemum pulchellum</i> Andrews	US	January – June	A. Bora & D. Bhattacharyya 11501	Kalaincherra, near Kalian Tea Estate 15 No.
		<i>Gymnostachyum</i> Nees	4. <i>Gymnostachyum venustum</i> T. Anderson	H	April – December	A. Bora & D. Bhattacharyya 11699	Craig Park Tea Estate touching BWS
			<i>Hygrophila</i> R.Br. <i>Justicia</i> L.	5. <i>Hygrophila salicifolia</i> (Vahl) Nees	H	October – January	A. Bora & D. Bhattacharyya 11548
		6. <i>Justicia adhatoda</i> L.		S	November – April	A. Bora & D. Bhattacharyya 11547	Bhaluknala, Durbintila
				7. <i>Justicia gendarussa</i> Burm. f.	S	March – August	A. Bora & D. Bhattacharyya 11549
		<i>Nelsonia</i> R.Br.	8. <i>Justicia virgata</i> T. Anderson	H	November – February	H. A. Barbhuiya 767	West Block, 15 No. Hill
			9. <i>Nelsonia canescens</i>	H	November –	A. Bora & D.	Kalaincherra, near

		(Lam.) Spreng.			April	Bhattacharyya 11735	Kalian Tea Estate 15 No.
	<i>Phlogacanthus</i> Nees.	10. <i>Phlogacanthus thyrsiflorus</i> Nees.	S	January – May	A. Bora & D. Bhattacharyya 11505	Kalaincherra, near Kalian Tea Estate 15 No.	
	<i>Pseuderanthemum</i> Radlk.	11. <i>Pseuderanthemum crenulatum</i> Radlk.	S	March – May	A. Bora & D. Bhattacharyya 11620	Madhura khuwari (Indranagar)	
	<i>Rhinacanthus</i> Nees	12. <i>Rhinacanthus calcaratus</i> Nees	S	March – May	A. Bora & D. Bhattacharyya 11546	Bhaluknala, Durbintila	
	<i>Rungia</i> Nees	13. <i>Rungia pectinata</i> Nees	H	November – April	A. Bora & D. Bhattacharyya 11404	Damcherra	
	<i>Strobilanthes</i> Blume	14. <i>Strobilanthes elongata</i> C. B. Clarke	US	May	A. Bora & D. Bhattacharyya 11700	Craig Park Tea Estate touching BWS	
	<i>Thunbergia</i> Retz.	15. <i>Thunbergia grandiflora</i> (Roxb. ex Rottl.) Roxb.	WC	September – January	A. Bora & D. Bhattacharyya 11421, 11693	Craig Park Tea Estate touching BWS and Durbintila	
2.	<i>Acorus</i> L. Martinov	16. <i>Acorus calamus</i> L.	H	April – September	A. Bora & D. Bhattacharyya 11550	Damcherra	
3.	<i>Actinidia</i> Lindl.	17. <i>Actinidia callosa</i> Lindl.	S	April – October	A. K. Dutt 187	Barail Range	
	<i>Saurauia</i> Willd.	18. <i>Saurauia cerea</i> Griff.	T	July –	A. Bora & D.	Lakhicherra	

			ex Dyer		November	Bhattacharyya	
			19. <i>Saurauia roxburghii</i> Wall.	T	March – August	A. Bora & D. Bhattacharyya 11606	Madhura khuwari (Indranagar)
4.	Aizoaceae Martinov	<i>Trianthema L.</i>	20. <i>Trianthema portulacastrum</i> L.	H	June – December	A. K. Dutt 129	Barail Range
5.	Amaryllidaceae J. St. Hilaire	<i>Allium L.</i>	21. <i>Allium cepa</i> L.	H	May – August	A. Bora & D. Bhattacharyya 11552	Ditekherra
			22. <i>Allium tuberosum</i> Rox b.	H	July – September	A. Bora & D. Bhattacharyya 11551	Damcherra
		<i>Zephyranthes</i> Herb.	23. <i>Zephyranthes carinata</i> Herb.	H	Summer – Autumn	A. Bora & D. Bhattacharyya 11587	Balacherra
6.	Amaranthaceae Juss.	<i>Achyranthes</i> L.	24. <i>Achyranthes aspera</i> L.	H	June – October	A. Bora & D. Bhattacharyya 11397	Damcherra
		<i>Amaranthus</i> L.	25. <i>Amaranthus spinosus</i> L.	H	through out the year	A. Bora & D. Bhattacharyya 11553	Malidahar
		<i>Chenopodium</i> L.	26. <i>Chenopodium album</i> L.	H	May – October	A. Bora & D. Bhattacharyya 11741	way to Bandarkhal
7.	Anacardiaceae R.Br.	<i>Drimycarpus</i> Hook.f.	27. <i>Drimycarpus racemosus</i> (Roxb.) Hook.f.	T	April – June	A. K. Dutt 314	Barail Range and N. C. Hills

		<i>Eryngium</i> L.	49. <i>Eryngium foetidum</i> L.	H	April – December	W. G. Craib 186036	Barail Range and N. C. Hills
		<i>Hydrocotyle</i> L.	50. <i>Hydrocotyle javanica</i> Thunb.	H	October – May	W. G. Craib 88	Barail Range and N. C. Hills
			51. <i>Hydrocotyle sibthorpioides</i> Lam.	H	May – November	A. Bora & D. Bhattacharyya 11628	Madhura khuwari (Indranagar)
10.	Apocynaceae Juss.	<i>Alstonia</i> R.Br.	52. <i>Alstonia scholaris</i> (L.) R.Br.	T	June – December	A. Bora & D. Bhattacharyya 11515	Bandarkhal, way to Jatingas
		<i>Alyxia</i> Banks R.Br.	53. <i>Alyxia fascicularis</i> Benth. & Hook.f.	WC	September – November	Kanjilal et al. 1939	Cachar
		<i>Anodendron</i> A.DC.	54. <i>Anodendron paniculatum</i> A. DC.	WC	April – December	A. Bora & D. Bhattacharyya 11612	Madhura khuwari (Indranagar)
		<i>Calotropis</i> R.Br.	55. <i>Calotropis gigantea</i> (L.) W. T. Aiton	S	almost throughout the year	A. Bora & D. Bhattacharyya 11562	Madhura khuwari (Indranagar)
		<i>Catharanthus</i> G.Don.	56. <i>Catharanthus roseus</i> (L.) G.Don	H or US	Spring – Autumn	A. Bora & D. Bhattacharyya 11557	Bandarkhal
		<i>Hoya</i> R.Br.	57. <i>Hoya globulosa</i> Hook.f.	WC	April – July	A. Bora & D. Bhattacharyya 11460	Lakhicherra
			58. <i>Hoya parasitica</i> Wall.	C	March – October	A. Bora & D. Bhattacharyya 11516	SCF Nala, on the way to Damcherra

		<i>Holarrhena R.Br.</i>	59. <i>Holarrhena pubescens</i> Wall.	S or T	April – December	A. Bora & D. Bhattacharyya 11734	Ditekcherra
		<i>Periploca Tourn. ex L.</i>	60. <i>Periploca calophylla</i> (Wight) Falc.	S	March – October.	H. A. Barbhuiya 833, 834	West Block, 15 No. Hill
		<i>Plumeria L.</i>	61. <i>Plumeria rubra</i> L.	T	June – December	A. Bora & D. Bhattacharyya 11558	Bandarkhal
		<i>Rauvolfia L.</i>	62. <i>Rauvolfia serpentina</i> Benth. ex Kurz	S	February – December	A. Bora & D. Bhattacharyya 11559	Madhura khuwari (Indranagar)
		<i>Tabernaemontana L.</i>	63. <i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	S or T	April – November	A. Bora & D. Bhattacharyya 11443, 11689	Durbintila and Craig Park Tea Estate touching BWS
		<i>Wrightia R.Br.</i>	64. <i>Wrightia coccinea</i> Sims.	T	January – December	Kanjilal et al. 1939	Cachar
11.	Aquifoliaceae Bercht. & J.Presl	<i>Ilex L.</i>	65. <i>Ilex excelsa</i> (Wall.) Voigt	T	April – November	A. K. Dutt 282	Barail Range and N. C. Hills
			66. <i>Ilex godajam</i> (Colebr.) Wall. ex Hook.f.	S or T	January – September	A. K. Dutt 280	Barail Range and N. C. Hills
12.	Araceae Juss.	<i>Alocasia</i> (Schott) G.Don	67. <i>Alocasia cucullata</i> (Lour.) G.Don	H	May – August	A. Bora & D. Bhattacharyya 11736	Indranagar
			68. <i>Alocasia macrorrhizos</i> (L.) G.Don	H	January – July	A. Bora & D. Bhattacharyya 11737	Durbintila

		<i>Colocasia</i> Schott	69. <i>Colocasia esculanta</i> (L.) Schott.	H	May – October	A. Bora & D. Bhattacharyya 11560	Bandarkhal
			70. <i>Colocasia fallax</i> Schott	H	March – October	H. A. Barbhuiya 32, 56, 128	West Block, Near Sindhuri
13.	Araliaceae Juss.	<i>Aralia</i> L.	71. <i>Aralia armata</i> Seem.	S	August – December	Kanjilal et al. 1938	Cachar
			72. <i>Aralia foliolosa</i> Seem.	S or T	September – March	A. K. Dutt 545	Barail Range and N. C. Hills
			73. <i>Aralia thomsonii</i> Seem.	S or T	May – November	W. G. Craib 191840, 191848	Barail Range and N. C. Hills
		<i>Brassaiopsis</i> Decne. & Planch.	74. <i>Brassaiopsis glomerulata</i> Regel	T	June – February	Kanjilal et al. 1938	Cachar
		<i>Macropanax</i> Miq.	75. <i>Macropanax undulata</i> Seem.	T	Summer – Spring	W. G. Craib 193387	Barail Range and N. C. Hills
		<i>Schefflera</i> J.R.Forst. & G.Forst.	76. <i>Schefflera venulosa</i> Harms.	T	March – June	A. K. Dutt 519	Barail Range and N. C. Hills
		<i>Trevesia</i> Vis.	77. <i>Trevesia palmata</i> Vis.	T	October – July	A. Bora & D. Bhattacharyya 11431	Durbintila
14.	Arecaceae C.H. Schultz	<i>Areca</i> L.	78. <i>Areca catechu</i> L.	T	April – September	A. Bora & D. Bhattacharyya 11561	Maruwacherra
		<i>Arenga</i> Labill.	79. <i>Arenga westerhoutii</i> Griff.	T	June – September	H. A. Barbhuiya 684	Nimatripahar
		<i>Caryota</i> L.	80. <i>Caryota urens</i> L.	T	June- September	A. Bora & D. Bhattacharyya	Bandarkhal

		<i>Licuala Wurm</i>	81. <i>Licuala peltata</i> Roxb. ex Buch.-Ham.	T	June – September	A. Bora & D. Bhattacharyya 11498	Lakhicherra near Bhaluk Nala
15.	Aristolochiaceae Juss.	<i>Aristolochia</i> L.	82. <i>Aristolochia tagala</i> Cham	H	May – December	Kanjilal et al. 1940	N. C.Hills
16.	Asparagaceae Juss.	<i>Peltosanthus</i> Andrews	83. <i>Peltosanthus griffithii</i> Baker	H	June – October	H. A. Barbhuiya 727	Kalain Range, Near Kalaincherra
			84. <i>Peltosanthus</i> <i>teta</i> Andrews	H	January	A. Bora & D. Bhattacharyya 11633	Madhura khuwari (Indranagar)
17.	Asteraceae Bercht. & J.Presl	<i>Ageratum</i> L.	85. <i>Ageratum conyzoides</i> L.	H	Most part of the year, mostly in January – May	A. Bora & D. Bhattacharyya113 63, 11646	Madhura khuwari (Indranagar)
			86. <i>Blumea</i> <i>balsamifera</i> DC.	S or US	almost throughout the year	A. Bora & D. Bhattacharyya 11739	Madhura khuwari (Indranagar)
			87. <i>Eclipta alba</i> L.	H	almost throughout the year	A. Bora & D. Bhattacharyya 11306	Malidahar
		<i>Eupatorium</i> L.	88. <i>Eupatorium odoratum</i> L.	S	November – February	A. Bora & D. Bhattacharyya 11563	Ditekcherra

	<i>Helichrysum</i> Mill.	89. <i>Helichrysum luteoalbum</i> (L.) Rehb.	H	February – May	A. Bora & D. Bhattacharyya 11626	Madhura khuwari (Indranagar)
	<i>Mikania</i> Willd.	90. <i>Mikania scandens</i> (L.) Willd.	TH	throughout the year	A. Bora & D. Bhattacharyya 11368	Ditekcherra
	<i>Parthenium</i> L.	91. <i>Parthenium hysterophorus</i> L.	H	April – November (throughout the year)	A. Bora & D. Bhattacharyya 11649	Madhura khuwari (Indranagar)
	<i>Sphaeranthus</i> L.	92. <i>Sphaeranthus indicus</i> L.	H	December – April	A. Bora & D. Bhattacharyya 11402, 11629	Damcherra and Madhura khuwari (Indranagar)
	<i>Spilanthes</i> L.	93. <i>Spilanthes paniculata</i> Wall.	H	throughout the year	A. Bora & D. Bhattacharyya 11653	Damcherra and Madhura khuwari (Indranagar)
	<i>Tridax</i> L.	94. <i>Tridax procumbens</i> L.	H	almost throughout the year	A. Bora & D. Bhattacharyya 11367, 11513	Durbintila (way to Bandarkhal) and Bandarkhal, way to Jatinga
	<i>Vernonia</i> Schreb.	95. <i>Vernonia subsessilis</i> DC.	US	October – December	H. A. Barbhuiya 830	Kalain Range, 15 No Hill
18.	Balanophoraceae Rich.	<i>Balanophora</i> J.R.Forst. & G.Forst.	RP	November – April	H. A. Barbhuiya 85155	15 No Hill
19.	Balsaminaceae A.Rich.	<i>Impatiens</i> L.	H	February – August	A. Bora & D. Bhattacharyya	Damcherra and Lakhicherra

20.	Begoniaceae C. Agardh	<i>Begonia</i> L.	98. <i>Begonia annulata</i> K. Koch 99. <i>Begonia palmata</i> D.D. on 100. <i>Begonia roxburghii</i> (Miq.) A.DC.	H H H	May – August June – November June – September	A. Bora & D. Bhattacharyya 11353 A. K. Dutt 234 H. A. Barbhuiya 85044	11379, 11399, 11465	Damcherra Barail Range and N. C. Hills near Kalain Range
21.	Berberidaceae Juss.	<i>Berberis</i> L.	101. <i>Berberis sublevis</i> W. W. Sm.	S	May – November	A. K. Dutt 188		Barail Range and N. C. Hills
22.	Betulaceae Gray	<i>Betula</i> L.	102. <i>Betula alnoides</i> Buch.-Ham.	T	October – May	Kanjilal et al. 1940		N. C. Hills
23.	Bignoniaceae Juss.	<i>Oroxylum</i> Vent <i>Pajanelia</i> DC.	103. <i>Oroxylum indicum</i> (L.) Vent 104. <i>Pajanelia longifolia</i> Schum	T T	January – March December – May	A. Bora & D. Bhattacharyya 11564 A. Bora & D. Bhattacharyya 11565		Durbintila on the way to Haflong
24.	Bixaceae Kunth	<i>Bixa</i> L.	105. <i>Stereospermum chelonoides</i> DC. 106. <i>Stereospermum tetragonum</i> DC. 107. <i>Bixa orellana</i> L.	T T T	April – Cold season May – July October – December	A. Bora & D. Bhattacharyya 11761 J. C. Prazer 334003 Kanjilal et al. 1934		Indranagar Cachar Lakhipur, Cachar

25.	Boraginaceae Juss.	<i>Cordia</i> L.	108. <i>Cordia myxa</i> L.	S or T	May – December	I. C. Prage 304433	Kala Naga Hills
			109. <i>Cordia fragrantissima</i> Kurz 25	T	November – April	Kanjilal et al. 1939	Cachar and N. C. Hills
26.	Brassicaceae Burnett	<i>Ehretia</i> P.Browne <i>Heliotropium</i> L.	110. <i>Ehretia acuminata</i> R. Br.	T	March – cold season	A. Bora & D. Bhattacharyya 11524	Damcherra
			111. <i>Heliotropium indicum</i> L.	H	April – December	A. Bora & D. Bhattacharyya 11568	Maruwacherra
27.	Burseraceae Kunth	<i>Cardamine</i> L. <i>Rorippa</i> Scop.	112. <i>Cardamine</i> <i>trichocarpa</i> Hochst. Ex. A. Rich.	H	December – February	A. K. Dutt 355	Barail Range and N. C. Hills
			113. <i>Rorippa indica</i> (L.) Hiern.	H	throughout the year	A. K. Dutt 165	Barail Range and N. C. Hills
28.	Cannabaceae Martinov	<i>Protium</i> Burm.f. <i>Canarium</i> L.	114. <i>Protium serratum</i> Eng l.	T	April – June	A. K. Dutt 124	Barail Range and N. C. Hills
			115. <i>Canarium resiniferum</i> Bruce ex King	T	April – Cold season	A. K. Dutt 260	Barail Range and N. C. Hills
			116. <i>Canarium bengalense</i> Roxb.	T	May – October	Sajem et al. 2008	N C. Hills
29.	Cannabaceae Martinov	<i>Garuga</i> Roxb.	117. <i>Garuga pinnata</i> Roxb.	T	March – October	A. Bora & D. Bhattacharyya 11569	Durbintila
			118. <i>Cannabis sativa</i> L.	H	April – December	A. Bora & D. Bhattacharyya 11324	Malidahar

29.	Capparaceae Juss.	<i>Capparis</i> L.	119. <i>Capparis cantoniensis</i> Lour. 120. <i>Capparis multiflora</i> Hook.f. & Thomson 121. <i>Capparis tenera</i> Dalzell 122. <i>Crateva religiosa</i> G.F orst. 123. <i>Viburnum</i> <i>cylindricum</i> Buch.-Ham. ex D.Don 124. <i>Carica papaya</i> L.	S S or T S or C T or S S or T T	throughout the year June – December February – August March – September June – October March – December	A. K. Dutt 114 J. C. Prazer 28914 A. K. Dutt 211 A. Bora & D. Bhattacharyya 11771 A. Bora & D. Bhattacharyya 11413 A. Bora & D. Bhattacharyya 11578 W. G. Craib 43173, 43171 A. K. Dutt 7, 107	Barail Range and N. C. Hills Cachar Barail Range and N. C. Hills Madhura khuwari (Indranagar) Damcherra Bandarkhal N. C. Hills Barail Range and N. C. Hills Barail Range and N. C. Hills Malidabar an d Madhura khuwari (Indranagar) Barail Range and N. C. Hills
30.	Caprifoliaceae Juss.	<i>Crateva</i> L. <i>Viburnum</i> L. <i>Carica</i> L.	125. <i>Drymaria cordata</i> (L.) Willd. ex Schult. 126. <i>Polycarpon</i> <i>prostratum</i> (Forssk.) Asch. & Schweinf. 127. <i>Stellaria uliginose</i> Murr. 128. <i>Stellaria wallichiana</i> Benth. ex Haines	H H H H	April – December February – June July March – September		
31.	Caricaceae Dumort.	<i>Drymaria</i> Willd. ex Roem. & Schult. <i>Polycarpon</i> Loefl. <i>Stellaria</i> L.	129. <i>Bhesa robusta</i> (Roxb.) Ding Hou	T	Not seen	A. K. Dutt 434	Barail Range and N. C. Hills
32.	Caryophyllaceae Juss.						
33.	Celastraceae R.Br.	<i>Bhesa</i> Buch.-Ham. ex Arn.					

		<i>Celastrus</i> L.	130. <i>Celastrus monospermus</i> Roxb.	S	March – October	A. K. Dutt 248	Barail Range and N. C. Hills
		<i>Euonymus</i> L.	131. <i>Euonymus vagans</i> Wall.	S	May – November	A. K. Dutt 217	Barail Range and N. C. Hills
		<i>Microtropis</i> Wall.	132. <i>Microtropis discolor</i> (Wall.) Wall.	T or S	September – March	A. K. Dutt 306	Barail Range and N. C. Hills
		<i>Reissantia</i> N.Hallé	133. <i>Reissantia indica</i> (Willd.) N.Halle	WC	April – September	A. K. Dutt 501	Barail Range and N. C. Hills
34.	Cleomaceae Horan	<i>Cleome</i> L.	134. <i>Cleome gynandra</i> L.	H	June – September	A. Bora & D. Bhattacharyya 11577	Bandarkhal
			135. <i>Cleome rutidosperma</i> DC.	H	August – November	A. Bora & D. Bhattacharyya 11530	SCF Nala, on the way to Damcherra
			136. <i>Cleome viscosa</i> L.	H	March – July	S. R. Talukdar 85290	Nalapara
35.	Clusiaceae Lindl.	<i>Calophyllum</i> L.	137. <i>Calophyllum polyanthum</i> L.	T	April – October	H. A. Barbhuiya 833, 834	West Block, 15 No. Hill
		<i>Garcinia</i> L.	138. <i>Garcinia cowa</i> Roxb.	T	May – October	Shaik Mokim s.n.	Kookicherra
			139. <i>Garcinia lanceifolia</i> Roxb.	S	November – May	A. K. Dutt 198	Barail Range and N. C. Hills
			140. <i>Garcinia morella</i> Desr.	T	February – August	A. K. Dutt 17, 220	Barail Range and N. C. Hills
			141. <i>Garcinia xanthochymus</i> Hook.f. ex T. T. Anderson	T	March – November	Borah et al. 2016	Cachar

		<i>Hypericum L.</i>	142. <i>Hypericum japonicum</i> Thunb.	H	June – November	A. Bora & D. Bhattacharyya 11333	Malidahar
			143. <i>Hypericum patulum</i> Thunb.	S	May – October	A. K. Dutt 361	Barail Range and N. C. Hills
		<i>Mesua L.</i>	144. <i>Mesua ferrea L.</i>	T	March – October	A. Bora & D. Bhattacharyya 11755	Indranagar
36.	Colchicaceae DC.	<i>Gloriosa L.</i>	145. <i>Gloriosa superba L.</i>	H	July – August	Sajem et al. 2008	N C. Hills
37.	Combretaceae R.Br.	<i>Anogeissus (DC.) Wall. ex Guillem. & Perr.</i>	146. <i>Anogeissus acuminata</i> (Roxb. ex DC.) Wall. ex Guillem. & Perr.	T	February – March	A. K. Dutt 588	Barail Range and N. C. Hills
		<i>Combretum Loefl.</i>	147. <i>Combretum decandrum</i> Jacq.	WC	December – April	A. K. Dutt 550	Barail Range and N. C. Hills
			148. <i>Combretum indicum</i> (L.) DeFilipps	WC	March – November	A. Bora & D. Bhattacharyya 11742	Madhura khuwari (Indranagar)
			149. <i>Combretum latifolium</i> Blume	WC	January – October	A. K. Dutt 418	Barail Range and N. C. Hills
			150. <i>Combretum pilosum</i> Roxb.	WC	December – March	A. Bora & D. Bhattacharyya 11579	Damcherra
			151. <i>Combretum wallichii</i> DC. var. <i>deciduum</i> Gang. & T. Chakrab.	WC	March – November	A. Bora & D. Bhattacharyya 11426	Durbintila

		<i>Terminalia</i> L.	152. <i>Terminalia bellerica</i> (Gaertn.) Roxb.	T	March – July	A. Bora & D. Bhattacharyya 11756	Indranagar
			153. <i>Terminalia chebula</i> Retz.	T	May – December	A. Bora & D. Bhattacharyya 11580	Bandarkhal
			154. <i>Terminalia myriocarpa</i> Van Heurck & Müll. Arg.	T	August – January	A. Bora & D. Bhattacharyya 11757	Madhura, Indranagar
38.	Commelinaceae Mirb.	<i>Commelina</i> L.	155. <i>Commelina diffusa</i> Brum. F.	H	May – December	A. Bora & D. Bhattacharyya 11581	Craig Park Tea Estate touching BWS
		<i>Floscopa</i> Lour.	156. <i>Floscopa scandens</i> Lour.	H	July – November	A. Bora & D. Bhattacharyya 11374	foot hills of Durbintila
		<i>Murdannia</i> Royle	157. <i>Murdannia nudiflora</i> (L.) Brenan	H	June – October	A. Bora & D. Bhattacharyya 11303	Malidahar
39.	Connaraceae R.Br.	<i>Connarus</i> L.	158. <i>Connarus paniculatus</i> Roxb.	WC	October – May	P. C. Praze 100828	Mokhoe hill jungle, Cachar
		<i>Rourea</i> Aubl.	159. <i>Rourea caudata</i> Planch.	WC	Not seen	A. K. Dutt 457	Barail Range and N. C. Hills
40.	Convolvulaceae Juss.	<i>Argyreia</i> Lour.	160. <i>Argyreia nervosa</i> (Burm.f.) Bojer	WC	October – March	A. Bora & D. Bhattacharyya 11687	Craig Park Tea Estate touching BWS
		<i>Cuscuta</i> L.	161. <i>Cuscuta reflexa</i> Roxb.	C	November –	A. Bora & D.	Malidahar

					February	Bhattacharyya 11582	
<i>Evolvulus</i> L.	162. <i>Evolvulus nummularius</i> L.	H	Through out the year	A. Bora & D. Bhattacharyya 11533	SCF Nala, on the way to Damcherra		
<i>Ipomoea</i> L.	163. <i>Ipomoea alba</i> L.	C	February – August	A. Bora & D. Bhattacharyya 11622	Madhura khuwari (Indranagar)		
	164. <i>Ipomoea aquatica</i> Forsk.	C	August – February	A. Bora & D. Bhattacharyya 11583	Kayang River		
	165. <i>Ipomoea obscura</i> (L.) Ker Gawl.	C	October – March	H. A. Barbhuiya 85065	near Gumra		
	166. <i>Ipomoea quamoclit</i> L.	C	June – December	A. T. Gage CAL 000009781	Silchar neighbourhood		
	167. <i>Ipomoea rubriflora</i> O'Donnell	C	July – November	A. Bora & D. Bhattacharyya 11539	Bhaluknala, Durbintila		
<i>Merremia</i> Dennst. ex Endl.	168. <i>Merremia hirta</i> (L.) Merrill	C	March – July	A. Bora & D. Bhattacharyya 11584	Tiprapunji		
<i>Alangium</i> Lam.	169. <i>Alangium barbatum</i> (R.Br. ex C. B. Clarke) Baill. ex Kuntze	T or S	December – May (Through out the year)	Kanjilal et al. 1938	Cachar		
<i>Cornus</i> L.	170. <i>Cornus capitata</i> Wall.	T or S	May –	A. K. Dutt 537	Barail Range and N.		

							November			C. Hills
		<i>Nyssa</i> L.	171. <i>Nyssa javanica</i> Wangerin	T			April – October	A. K. Dutt 516		Barail Range and N. C. Hills
42.	Costaceae Nakai	<i>Cheilocostus</i> C.D. Specht	172. <i>Cheilocostus speciosus</i> (J. Koenig) C. D. Specht	H			July – November	A. Bora & D. Bhattacharyya 11743		Bandarkhal
43.	Crypteroniaceae A.DC.	<i>Crypteronia</i> Blume	173. <i>Crypteronia paniculata</i> Blume	T			July – November	A. K. Dutt 175		Barail Range and N. C. Hills
44.	Cucurbitaceae Juss.	<i>Benincasa</i> Savi	174. <i>Benincasa hispida</i> Cogn. n.	H			June – November	Rout et al. 2012		N. C. Hills
		<i>Coccinia</i> Wight & Arn.	175. <i>Coccinia grandis</i> (L.) Voigt	H			April – August	A. K. Dutt 24		Barail Range and N. C. Hills
		<i>Hodgsonia</i> Hook.f. & Thomson	176. <i>Hodgsonia macrocarpa</i> (Blume) Cong.	C			March – December	H. A. Barbhuiya 85157		Kalaincherra
		<i>Momordica</i> L.	177. <i>Momordica charantia</i> L.	C			March – October	A. Bora & D. Bhattacharyya 11744		Balacherra
		<i>Solena</i> Lour.	178. <i>Momordica dioica</i> Roxb. ex Willd	C			June – October	A. Bora & D. Bhattacharyya 11745		near Balacherra
		<i>Solena</i> Lour.	179. <i>Solena heterophylla</i> Lour.	C			April – October	A. K. Dutt 103		Barail Range and N. C. Hills
		<i>Thladiantha</i> Bunge	180. <i>Thladiantha cordifolia</i> Cogn.	C			May – November	A. Bora & D. Bhattacharyya 11488		Lakhicherra
		<i>Trichosanthes</i> L.	181. <i>Trichosanthes cordata</i>	C			July –	Shaik Mokim 56		Jatinga

45.	Cyperaceae Juss.	Cyperus L.	Roxb.	H	August	A. Bora & D. Bhattacharyya 11639	Madhura khuwari (Indranagar)			
			182. <i>Cyperus cyperoides</i> (L.) Kuntze	H	April – December	A. Bora & D. Bhattacharyya 11639	Madhura khuwari (Indranagar)			
			183. <i>Cyperus digitatus</i> Roxb.	H	August – December	A. Bora & D. Bhattacharyya 11323, 11678	Damcherra and Lakhicherra near Bhaluk Nala			
			184. <i>Cyperus dubius</i> Rottb.	H	September – November	A. Bora & D. Bhattacharyya 11671	Lakhicherra near Bhaluk Nala			
			185. <i>Cyperus iria</i> L.	H	August – November	A. Bora & D. Bhattacharyya 11674	Lakhicherra near Bhaluk Nala			
			186. <i>Cyperus rotundus</i> L.	H	July – December	A. Bora & D. Bhattacharyya 11392, 11676	Damcherra and Lakhicherra near Bhaluk Nala			
			187. <i>Cyperus tenuispica</i> Steud.	H	September – November	A. Bora & D. Bhattacharyya 11585	Bandarkhal			
			188. <i>Fimbristylis dichotoma</i> (L.) Vahl.	H	July – October	A. Bora & D. Bhattacharyya 11673	Lakhicherra near Bhaluk Nala			
			189. <i>Fimbristylis quinqueangularis</i> (M. Vahl) Kunth	H	August – October	A. Bora & D. Bhattacharyya 11675	Lakhicherra near Bhaluk Nala			
			190. <i>Hypolytrum nemorum</i>	H	April –	A. Bora & D.	Durbintila			

			(Vahl.) Streng.			August	Bhattacharyya 114 59	
	<i>Kyllinga</i> Rottb.		191. <i>Kyllinga brevifolia</i> Rottb.	H	H	May – October	A. Bora & D. Bhattacharyya 11617	Madhura khuwari (Indranagar)
	<i>Pycreus</i> P.Beauv.		192. <i>Pycreus sanguinolentus</i> (Vahl) Nees	H	H	July – December	A. Bora & D. Bhattacharyya 11677	Lakhicherra near Bhaluk Nala
	<i>Scleria</i> P. J. Bergius		193. <i>Scleria terrestris</i> (L.) Fassett	H	H	May – October	A. Bora & D. Bhattacharyya 11330, 11401, 11450, 11672	Malidahar, Damcherra, Durbintila and Lakhicherra near Bhaluk Nala
46.	Datisaceae Dumort.	<i>Tetrameles</i> R.Br.	194. <i>Tetrameles nudiflora</i> R.Br.	T	T	March – May	A. K. Dutt 583	Barail Range and N. C. Hills
47.	Dichapetalaceae Baill.	<i>Dichapetalum</i> Thouars	195. <i>Dichapetalum gelonioides</i> (Roxb.) Engl.	T or S	T or S	March – October	A. K. Dutt 333	Barail Range and N. C. Hills
48.	Dilleniaceae Salisb	<i>Dillenia</i> L.	196. <i>Dillenia indica</i> L.	T	T	July – January	A. Bora & D. Bhattacharyya 11586	Kalaincherra, near Kalian Tea Estate 15 No.
			197. <i>Dillenia pentagyna</i> Roxb.	T	T	April – September	A. Bora & D. Bhattacharyya 11763	Madhura khuwari (Indranagar)
		<i>Tetracera</i> L.	198. <i>Tetracerasarmentosa</i> Vahl.	WC	WC	April – September	J. C. Prazer 8369	Cachar
49.	Dioscoreaceae	<i>Dioscorea</i> L.	199. <i>Dioscorea bulbifera</i> L.	C	C	July –	W. G. Craib	Haflong

R.Br.					November	476790, 476792	
					May – September	Sajem et al. 2008	N C. Hills
50.	Dipterocarpaceae Blume	<i>Dipterocarpus</i> Gaertn.f.	200. <i>Dioscorea deltoidea</i> Wall. ex Griseb.	C		A. K. Dutt 444	Barail Range and N. C. Hills
			201. <i>Dipterocarpus retusus</i> Blume	T	May – January	A. K. Dutt 443	Barail Range and N. C. Hills
			202. <i>Dipterocarpus turbinatus</i> Gaertn.	T	March – August	A. Bora & D. Bhattacharyya 11746	Malidahar
		<i>Shorea</i> Roxb. ex Gaertn.f.	203. <i>Shorea robusta</i> Gaerth.	T	October – January	A. K. Dutt 592	Barail Range and N. C. Hills
51.	Droseraceae Salisb.	<i>Drosera</i> L.	204. <i>Drosera burmanni</i> Vahl.	H	April – September	H. A. Barbhuiya85988	Mamtripahar
52.	Ebenaceae Gürke	<i>Diospyros</i> L.	205. <i>Diospyros cacharensis</i> (Das & P. C. Kanjilal) H.B.Naithani	T	March – June	G. Mann 17558	Cachar
			206. <i>Diospyros montana</i> Roxb.	T	February – May	G. Mann 41856	Cachar
			207. <i>Diospyros racemosa</i> Roxb.	T	October – April	A. Bora & D. Bhattacharyya 11768	Madhura khuwari (Indranagar)
53.	Elaeocarpaceae Juss. ex DC.	<i>Sloanea</i> L.	208. <i>Sloanea sterculiacea</i> Rehder & E.H.Wilson var. <i>assamica</i> (Benth.) Coode	T	May – December	A. Bora & D. Bhattacharyya 11748	Kalaincherra, near Kalian Tea Estate 15 No.
		<i>Elaeocarpus</i> L.	209. <i>Elaeocarpus floribundus</i> Blume	T			

						11521		
<i>Bridelia</i> Willd.	221. <i>Bridelia monoica</i> (Lour.) Merr.	S		September – January		Kanjilal et al. 1940	N. C. Hills	
	222. <i>Bridelia retusa</i> A.Juss.	T		April – January		Kanjilal et al. 1940	N. C. Hills	
<i>Chaetocarpus</i> Thwaites	223. <i>Bridelia stipularis</i> (L.) Blume	S		December – March		A. Bora & D. Bhattacharyya 11438, 11492	Durbintila and Lakhicherra near Bhaluk Nala	
	224. <i>Chaetocarpus castanocarpus</i> Thwaites	T		November – March		Kanjilal et al. 1940	N. C. Hills	
	225. <i>Croton tiglium</i> L.	T		January – September		A. T. Gage 411107	Lakhipur on Barak valley	
<i>Croton</i> L.	226. <i>Croton caudatus</i> Geiseler	S		May – October		A. Bora & D. Bhattacharyya 11332	Malidahar	
	227. <i>Croton joufra</i> Roxb.	T		Almost throughout year		H. A. Barbhuiya 85919, 85920	BWS	
<i>Euphorbia</i> L.	228. <i>Euphorbia hirta</i> L.	H		Almost throughout year		A. Bora & D. Bhattacharyya 11340	Damcherra	
	229. <i>Euphorbia thymifolia</i> L.	H		Almost throughout year		W. G. Craib 397679, 476792	Haflong	
<i>Glochidion</i> J.R.Forst. & G.Forst.	230. <i>Glochidion khasicum</i> Hook.f.	T or S		June – November		A. Bora & D. Bhattacharyya 11434	Durbintila	

			241. <i>Mallotus repandus</i> (Rottler) Mull. Arg.	S	March – September	A. Bora & D. Bhattacharyya 11770	Madhura khuwari (Indranagar)
			242. <i>Mallotus roxburghianus</i> Mull. Arg.	S	July – September	Kanjilal et al. 1940	N. C. Hills
	<i>Margaritaria</i> L.f.		243. <i>Margaritaria indica</i> (Dalziel) Airy Shaw	T	April – January	Kanjilal et al. 1940	N. C. Hills
	<i>Phyllanthus</i> L.		244. <i>Phyllanthus emblica</i> L.	T	April – September	A. Bora & D. Bhattacharyya 11749	Indranagar
	<i>Ricinus</i> L.		245. <i>Ricinus comunis</i> L.	H	June – December	A. Bora & D. Bhattacharyya 11747	on the way to Damcherra
56.	Fabaceae Lindl.	<i>Abrus</i> Adans.	246. <i>Abrus precatorius</i> L.	WC	March – October	A. K. Dutt 137	Barail Range and N. C. Hills
			247. <i>Abrus pulchellus</i> Wall. ex Vojgt	WC	October – November	S. Mokim 124607	Way to Haflong
		<i>Acacia</i> Mill.	248. <i>Acacia caesia</i> (L.) Willd. var. <i>subnuda</i> (Craib) I.C.Nielsen	C	September – November	SCF Nala, on the way to Damcherra	A. Bora & D. Bhattacharyya 11526
			249. <i>Acacia pruinescens</i> Kurz.	WC	April – October	A. K. Dutt 370	Barail Range and N. C. Hills
		<i>Acrocarpus</i> Wight ex Arn.	250. <i>Acrocarpus fraxinifolius</i> Arn.	T	February – May	A. K. Dutt 295	Barail Range and N. C. Hills
		<i>Aganope</i> Miq.	251. <i>Aganope thyrsiflora</i> (Benth.) Polhill	WC	May – November	A. K. Dutt 506	Barail Range and N. C. Hills

<i>Albizia</i> Durazz.	252. <i>Albizia chinensis</i> Merr	T	March – December	Borah et al. 2016	Cachar
	253. <i>Albizia odoratissima</i> (L.f.) Benth.	T	May – January	Sajem et al. 2008	N C. Hills
	254. <i>Albizia procera</i> (Roxb.) Benth.	T	July – January	Borah et al. 2016	Cachar
	255. <i>Alysicarpus vaginalis</i> (L.) DC.	H	September – November	A. Bora & D. Bhattacharyya 11529	SCF Nala, on the way to Damcherra
	256. <i>Archidendron chypearia</i> (Jack) I.C.Nielsen	T	February – August	H. A. Barbhuiya 85888	near Malidahar
	257. <i>Bauhinia acuminata</i> L.	T	April – December	A. Bora & D. Bhattacharyya 11437	Durbintila
	258. <i>Bauhinia malabarica</i> Roxb.	T	September – March	Kanjilal et al. 1938	N. C. Hills
	259. <i>Bauhinia purpurea</i> L.	T	September – March	A. Bora & D. Bhattacharyya 11388, 11688	Damcherra and Craig Park Tea Estate touching BWS
	260. <i>Bauhinia variegata</i> L.	T	December – September	A. Bora & D. Bhattacharyya 11740	on the way to Bandarkhal
	261. <i>Butea monosperma</i> Kuntze	T	March – April	Borah et al. 2016	Cachar
	262. <i>Caesalpinia crista</i> L.	WC	April –	A. K. Dutt 474	Barail Range and N.

				December			C. Hills
				March – November	WC	263. <i>Caesalpinia digyna</i> Rottler.	Jatinga
				September – February	C or S	264. <i>Caesalpinia enneaphylla</i> Roxb.	Cachar
				May – February	S	265. <i>Caesalpinia microphylla</i> Mart.	Mahmudpur
				Throughout the year	T or S	266. <i>Caesalpinia pulcherrima</i> (L.) Sw.	Malidabar
				February – November	S	267. <i>Callerya cinerea</i> (Benth.) Schot	Barail Range and N. C. Hills
				August – March	S	268. <i>Calliandra umbrosa</i> Benth.	Barail Range and N. C. Hills
				May – October	H	269. <i>Canavalia ensiformis</i> (L.) DC.	Madhura khuwari (Indranagar)
				September – March	S	270. <i>Cassia alata</i> L.	Bandarkhal, way to Jatinga
				April – January	T	271. <i>Cassia fistula</i> L.	Madhura khuwari (Indranagar)
				Rainy season – Cold season	T	272. <i>Cassia javanica</i> L. subsp. <i>nodosa</i> (Buch.-Ham. ex Roxb.) K.Larsen &	Durbintila

	S.S.Larsen								
<i>Crotalaria</i> L.	273. <i>Crotalaria assamica</i> Benth.	H	May – December	A. K. Dutt 182	Barail Range and N. C. Hills				
	274. <i>Crotalaria humifusa</i> Benth.	H	October – May	A. Bora & D. Bhattacharyya 11750	Malidahar				
	275. <i>Crotalaria pallida</i> Aiton	H	September – December	A. Bora & D. Bhattacharyya 11685	Malidahar				
<i>Dalbergia</i> L.f.	276. <i>Crotalaria trifoliatrum</i> Willd.	H or US	August – December	A. K. Dutt 429	Barail Range and N. C. Hills				
	277. <i>Dalbergia rimosa</i> Roxb.	WC	April – December	A. T. Gage 121189	Alnee on the Barak River				
	278. <i>Dalbergia sericea</i> Spreng.	T	April – September	A. Bora & D. Bhattacharyya 11604, 11684	Madhura khuwari (Indranagar) and Malidahar				
<i>Derris</i> Lour.	279. <i>Dalbergia stipulacea</i> Roxb.	WC	April – December	H. A. Barbhuiya 85846	near Kalaincherra				
	280. <i>Dalbergia thomsonii</i> Benth.	WC	July – January	A. K. Dutt 579	Barail Range and N. C. Hills				
	281. <i>Derris cuneifolia</i> Benth.	WC	April – December	A. K. Dutt 525	Barail Range and N. C. Hills				
<i>Desmodium</i> Desv.	282. <i>Desmodium heterocarpon</i> (L.) DC.	S or US	July – October	H. A. Barbhuiya 85076	near Gumra				
	283. <i>Desmodium laxiflorum</i> DC.	S or US	August – November	H. A. Barbhuiya 85074, 85669	Gumra and Bihar				

		303. <i>Phanera wallichii</i> J. F. Macbr.	WC	April – July	A. Bora & D. Bhattacharyya 11601	Madhura khuwari (Indranagar)
<i>Phyllodium</i> Desv.		304. <i>Phyllodium pulchellum</i> (L.) Desv.	S	July – November	A. Bora & D. Bhattacharyya 11506	Kalaincherra, near Kalian Tea Estate 15 No.
<i>Pongamia</i> Vent.		305. <i>Pongamia pinnata</i> (L.) Pierre	T	May – October	A. Bora & D. Bhattacharyya 11522	SCF Nala, on the way to Damcherra
<i>Pueraria</i> DC.		306. <i>Pueraria montana</i> (Lour.) Merr. var. <i>lobata</i> (Willd.) Maesen & S. M. Almeida ex Sanjappa & Predeep	WC	July – October	A. Bora & D. Bhattacharyya 11696	Craig Park Tea Estate touching BWS
		307. <i>Pueraria phaseoloides</i> Benth.	WC	August – November	Kanjilal et al. 1938	Surma Valley
<i>Saraca</i> L.		308. <i>Saraca asoca</i> (Roxb.) de Wilde	T	March – July	A. Bora & D. Bhattacharyya 11474	Lakhicherra
<i>Senna</i> Mill.		309. <i>Senna occidentalis</i> (L.) Link	S	Throughout the year	A. Bora & D. Bhattacharyya 11648	Madhura khuwari (Indranagar)
		310. <i>Senna tora</i> (L.) Roxb.	H	July – November	A. Bora & D. Bhattacharyya 11575	Kalaincherra, near Kalian Tea Estate 15 No.
<i>Spatholobus</i> Hassk.		311. <i>Spatholobus</i>	WC	October –	Shaik Mokim	Cachar

			<i>parviflorus</i> Kuntze		March	126209		
	<i>Tamarindus</i> L.		312. <i>Tamarindus indica</i> L.	T	May – April	A. Bora & D. Bhattacharyya 11576	Craig Park Tea Estate touching BWS	
	<i>Tephrosia</i> Pers.		313. <i>Tephrosia candida</i> DC.	H	October – December	Bro. Godfrey 163172	Haflong	
	<i>Uraria</i> Desv.		314. <i>Uraria alopecuroides</i> Sweet	S	November – December	A. K. Dutt 55	Barail Range and N. C. Hills	
			315. <i>Uraria picta</i> (Jacq.) DC.	S	April – October	A. T. Gage 121189	Monier Khal on the Sonai Road	
57.	Fagaceae Dumort.	<i>Castanopsis</i> (D. Don) Spach	316. <i>Castanopsis hystrix</i> A. DC.	T	April – November	Kanjilal et al. 1940	N. C. Hills	
		<i>Lithocarpus</i> Blume	317. <i>Lithocarpus fenestratus</i> Rehder	T	August – December	W. G. Craib 440141	Haflong	
		<i>Quercus</i> L.	318. <i>Quercus semiserrata</i> Roxb.	T	November – March	Kanjilal et al. 1940	Cachar and N. C. Hills	
58.	Geraniaceae Juss.	<i>Geranium</i> L.	319. <i>Geranium nepalense</i> Sweet.	H	April – October	A. K. Dutt 328	Barail Range and N. C. Hills	
59.	Gesneriaceae Dumort.	<i>Rhynchochotium</i> Blume	320. <i>Rhynchochotium ellipticum</i> (Wall. ex D. Dietr.) A. DC.	US	June – January	H. A. Barbhuiya 85776	15 No Hills	
		<i>Stauranthera</i> Benth.	321. <i>Stauranthera grandifolia</i> Benth.	H	June – September	H. A. Barbhuiya 756	Near Bihara	
60.	Hernandiaceae Blume	<i>Illigera</i> Blume	322. <i>Illigera grandiflora</i> W. W. Sm. & Jeffrey	WC	June – October	A. K. Dutt 558	Barail Range and N. C. Hills	

				323. <i>Illigera khasiana</i> C.B.Clarke	WC	August – April	A. Bora & D. Bhattacharyya 11427	Durbintila
61.	Hydroleaceae R.Br.	<i>Hydrolea</i> L.		324. <i>Hydrolea zeylanica</i> (L.) Vahl	H	November – March	A. Bora & D. Bhattacharyya 11389	Damcherra
62.	Icacinaceae Miers	<i>Apodytes</i> E.Mey. ex Arn.		325. <i>Apodytes dimidiata</i> E.Mey. ex Bernh.	T or S	All seasons	A. K. Dutt 488	Barail Range and N. C. Hills
63.	Ixonanthaceae Planch. ex Miq.	<i>Ixonanthes</i> Jack		326. <i>Ixonanthes khasiana</i> Hook. f.	T	April – December	U. Kanjilal 65995	Bhuban Hill
64.	Juglandaceae A. Richard ex Kunth	<i>Engelhardtia</i> Lesch. ex Blume		327. <i>Engelhardtia spicata</i> Lechen. ex Blume	T	November – April	Kanjilal et al. 1940	Cachar and N. C. Hills
65.	Juncaceae Juss.	<i>Juncus</i> L.		328. <i>Juncus prismatocarpus</i> R.Br.	H	January – November	A. Bora & D. Bhattacharyya 11310	Tiprapunji, Damcherra
66.	Lamiaceae Martinov	<i>Callicarpa</i> L.		329. <i>Callicarpa macrophylla</i> Vahl	S	August – December	Kanjilal et al. 1939	N. C. Hills
				330. <i>Callicarpa arborea</i> Roxb.	T	May – December	A. Bora & D. Bhattacharyya 11531	SCF Nala, on the way to Damcherra
		<i>Epimeredi</i> Adans.		331. <i>Epimeredi indicus</i> (L.) Rothm.	H	November – January	A. Bora & D. Bhattacharyya 11403, 11642	Damcherra and Madhura khuwari (Indranagar)
		<i>Gomphostemma</i> Wall. ex Benth.		332. <i>Gomphostemma parviflorum</i> Wall. ex Benth.	US	August – December	A. Bora & D. Bhattacharyya 11698	Craig Park Tea Estate touching BWS

		<i>Hyptis</i> Jacq.	333. <i>Hyptis capitata</i> Jacq.	S	September – January	A. Bora & D. Bhattacharyya 11364	Bandarkhal
			334. <i>Hyptis suaveolens</i> (L.) Poit.	US	September – February	A. Bora & D. Bhattacharyya 11386, 11643	Damcherra and Madhura khuwari (Indranagar)
		<i>Leucas</i> R.Br.	335. <i>Leucas aspera</i> (Willd.) Link.	H	Most part of the year	A. Bora & D. Bhattacharyya 11656	Madhura khuwari (Indranagar)
		<i>Holmskioldia</i> Retz.	336. <i>Holmskioldia</i> <i>sanguinea</i> Retz.	S	September – March	A. Bora & D. Bhattacharyya 11690	Craig Park Tea Estate touching BWS
		<i>Ocimum</i> L.	337. <i>Ocimum sanctum</i> L.	H	November – February	A. Bora & D. Bhattacharyya 11731	SCF Nala, on the way to Damcherra
		<i>Premna</i> L.	338. <i>Premna bengalensis</i> Clarke	T	May – November	A. Bora & D. Bhattacharyya 11760	Madhura, Indranagr
		<i>Scutellaria</i> L.	339. <i>Scutellaria</i> <i>discolor</i> Colebr.	H	September – February	A. Bora & D. Bhattacharyya 11406	Kayang River bank
		<i>Teucrium</i> L.	340. <i>Teucrium</i> <i>viscidum</i> Blume	H	June – November	A. Bora & D. Bhattacharyya 11473	Lakhicherra
67.	Lardizabalaceae R.Br.	<i>Holboellia</i> Wall.	341. <i>Holboellia latifolia</i> Wall.	C	April – September	A. K. Dutt 199	Barail Range and N. C. Hills

68.	Lauraceae Juss.	<i>Actinodaphne</i> Nees	342. <i>Actinodaphne obovata</i> (Nees) Blume	T	April – March	H. A. Barbhuiya 84828, 84829	Malidahar
		<i>Alseodaphne</i> Nees	343. <i>Alseodaphne keenanii</i> Gamble	T	July – March	Kanjilal et al. 1940	Cachar
			344. <i>Alseodaphne owdeni</i> R. Parker	T	May	Kanjilal et al. 1940	Cachar
		<i>Cinnamomum</i> Schaeffer	345. <i>Alseodaphne petiolaris</i> (Meisn.) Hook.f.	T	October – May	Kanjilal et al. 1940	Cachar and N. C. Hills
			346. <i>Cinnamomum bejolghota</i> (Buch.-Ham.) Sweet	T	March – July	H. A. Barbhuiya 85192	near Malidahar area
			347. <i>Cinnamomum curvifolium</i> Nees	T	March – October	Kanjilal et al. 1940	Cachar Hills
			348. <i>Cinnamomum glanduli ferum</i> (Wall.) Meisn.	T	March – September	A. Bora & D. Bhattacharyya 11762	Madhura khuwari (Indranagar)
			349. <i>Cinnamomum tamala</i> (Buch.-Ham.) T.Nees & C.H.Eberm.	T	April – October	A. Bora & D. Bhattacharyya 11730	Madhura khuwari (Indranagar)
		<i>Litsea</i> Lam.	350. <i>Litsea cubeba</i> Pers.	T or S	February – August	A. Bora & D. Bhattacharyya 11502	Kalaincherra, near Kalian Tea Estate 15 No.
			351. <i>Litsea glutinosa</i> (Lour.) C.B.Rob.	T	May – October	A. Bora & D. Bhattacharyya 11625	Madhura khuwari (Indranagar)
				S	March –	A. Bora & D.	Lakhicherra

			Vill.		August	Bhattacharyya	
			353. <i>Litsea monopetala</i> (Roxb.) Pers.	T	May – November	A. Bora & D. Bhattacharyya 11447	Durbintila
			354. <i>Litsea salicifolia</i> (Roxb. ex. Wall.) Hook.f.	S	February – June	H. A. Barbhuiya 85150	Kalain Range, near Khasiapunji
		<i>Neocinnamomum</i> H. Liou.	355. <i>Neocinnamomum caudatum</i> (Nees) Merr.	T	June – February	Kanjilal et al. 1940	Cachar
		<i>Ocotea</i> Aubl.	356. <i>Ocotea lancifolia</i> Mez	T	April – September	H. A. Barbhuiya 85949, 85950	Kalaincherra
69.	Lecythydaceae Poiteau	<i>Barringtonia</i> J.R.Forst. & G.Forst.	357. <i>Barringtonia acutangula</i> (L.) Gaertn.	T	March – October	A. Bora & D. Bhattacharyya 11729	Madhura khuwari
		<i>Careya</i> Roxb.	358. <i>Careya arborea</i> Roxb.	T	April – July	A. K. Dutt 410	Barail Range and N. C. Hills
70.	Linaceae DC. ex Perleb	<i>Reinwardtia</i> Dumort.	359. <i>Reinwardtia indica</i> Dumort.	S	April – January	A. K. Dutt 241	Barail Range and N. C. Hills
71.	Loganiaceae R.Br. ex Mart.	<i>Fagraea</i> Thunb.	360. <i>Fagraea ceilanica</i> Thunb.	T or S	April – Cold season	Kanjilal et al. 1939	Cachar
72.	Loranthaceae Juss.	<i>Dendrophthoe</i> Mart.	361. <i>Dendrophthoe falcate</i> (L.f.) Ettingsh.	S	November – Throughout the year	A. Bora & D. Bhattacharyya 11752	Indranagar
		<i>Tolypanthus</i> (Blume) Blume	362. <i>Tolypanthus involucratius</i> (Roxb.) Tiegh.	S	November – March	R. N. De & D. C. F. 25856, 25857	Gormura
73.	Lythraceae J.St.-	<i>Ammannia</i> L.	363. <i>Ammannia baccifera</i>	H	August –	A. K. Dutt 566	Barail Range and N.

Hil.	L.			December		C. Hills
			H	July – September	A. K. Dutt 181	Barail Range and N. C. Hills
	<i>Duabanga</i> Buch.-Ham.	<i>Duabanga grandiflora</i> Walp	T	February – June	A. Bora & D. Bhattacharyya 11416	Durbintila
	<i>Lagerstroemia</i> L.	<i>Lagerstroemia parviflora</i> Roxb.	T	February – May	Dy. Assam forest herbarium 176930	Barail Range and N. C. Hills
		<i>Lagerstroemia speciosa</i> Pers.	T or S	Summer season	A. K. Dutt 450	Barail Range and N. C. Hills
	<i>Rotala</i> L.	<i>Rotala indica</i> Koehne	H	September – April	A. K. Dutt 423	Barail Range and N. C. Hills
		<i>Rotala rotundifolia</i> (Buch.-Ham. ex Roxb.) Koehne	H	November – May	11309, 11320, 11608	Malidabar, Damcherra and Madhura khuwari (Indranagar)
	<i>Trapa</i> L.	<i>Trapanatans</i> L. var. <i>bispinosa</i> (Roxb.) Makino	H	August – December	A. Bora & D. Bhattacharyya 11591	Bdarkhal
74.	Magnoliaceae Juss.	<i>Magnolia</i> L.	T	June – July	A. K. Dutt 98	Barail Range and N. C. Hills
		<i>Magnolia champaca</i> (L.) Baill. ex Pierre	T	June – October	U. Kanjilal 328	Jatinga
		<i>Magnolia doltsopa</i> Buch.-Ham. ex DC.	T	January – May	A. K. Dutt 89	Barail Range and N. C. Hills

			374. <i>Magnolia hodgsonii</i> (Hook.f. & Thomson) H. Keng	T	April – August	A. K. Dutt 95	Barail Range and N. C. Hills
75.	Malpighiaceae Juss.	<i>Aspidopterys</i> A.Juss.	375. <i>Aspidopterys elliptica</i> A Juss.	C	February – June	H. A. Barbhuiya 84924	BWS, 15 No. Hill
			376. <i>Aspidopterys glabriuscula</i> A. Juss.	WC	August – November	A. K. Dutt 38	Barail Range and N. C. Hills
			377. <i>Hiptage benghalensis</i> Kurz.	WC	February – May	A. K. Dutt 327	Barail Range and N. C. Hills
76.	Malvaceae Juss.	<i>Abroma</i> Jacq.	378. <i>Abroma augustum</i> (L.) L.f.	T or S	June – November	H. A. Barbhuiya 85879	BWS
			379. <i>Abutilon indicum</i> D. Don.	H or S	July – October	A. K. Dutt 153	Barail Range and N. C. Hills
			380. <i>Azanza lampas</i> Alef. ex DC.	S	August – December	A. K. Dutt 69	Barail Range and N. C. Hills
			381. <i>Bombax cieba</i> L.	T	January – May	A. Bora & D. Bhattacharyya 11566	Malidahar
				T	November – March	A. Bora & D. Bhattacharyya 11567	Craig Park, Kalain
			382. <i>Bombax insigne</i> Wall.	WC	Spring and summer	A. Bora & D. Bhattacharyya 11463	Lakhicherra
			383. <i>Byttneria aspera</i> Colebr. ex Roxb.	T	June – October	Kanjilal et al. 1934	N. C. Hills
384. <i>Colona floribunda</i> Craib							

<i>Firmiana Marsili</i>	385. <i>Firmiana colorata</i> (Roxb.) R.Br.	T	January – June	A. K. Dutt 321	Barail Range and N. C. Hills
<i>Grewia L.</i>	386. <i>Grewia abutilifolia</i> Vent. ex Juss.	T or S	Throughout the year	W. G. Craib 61633	Haflong
	387. <i>Grewia eriocarpa</i> Juss.	T or S	February – November	A. K. Dutt 240	Barail Range and N. C. Hills
	388. <i>Grewia nervosa</i> (Lour.) Panigrahi	S	August – April	A. Bora & D. Bhattacharyya 11331, 11343	Madhura khuwari and Damcherra
	389. <i>Grewia serrulata</i> DC.	T or S	April – March	J. C. Prazer61427	Cachar
	390. <i>Heritiera papilio</i> Bedd.	T	January – October	A. K. Dutt 27	Barail Range and N. C. Hills
<i>Hibiscus L.</i>	391. <i>Hibiscus macrophyllus</i> Roxb. Ex Hornem.	T	March – July	A. K. Dutt 122	Barail Range and N. C. Hills
<i>Kydia</i> Roxb.	392. <i>Kydia calycina</i> Roxb.	T	September – November	A. K. Dutt 332	Barail Range and N. C. Hills
<i>Pterospermum Schreb.</i>	393. <i>Pterospermum acerifolium</i> Willd.	T	March – July	Borah et al. 2016	Cachar
	394. <i>Pterospermum lanceifolium</i> Roxb.	T	Spring – Summer	J. C. Prazer59118	Cachar
<i>Sida L.</i>	395. <i>Sida acuta</i> Burm. f.	H	Winter – Spring	A. K. Dutt 451	Barail Range and N. C. Hills
	396. <i>Sida cordata</i> (Burm.f.) Borss. Waalk.	SS	July – February	A. K. Dutt 319	Barail Range and N. C. Hills
	397. <i>Sida cordifolia</i> L.	US	June –	A. Bora & D.	Bandarkhal

					September	Bhattacharyya 11728		
		398. <i>Sida rhombifolia</i> L.	US		June – November	A. Bora & D. Bhattacharyya 11391	Damcherra	
	<i>Sterculia</i> L.	399. <i>Sterculia versicolor</i> W all.	T		March – June	A. Bora & D. Bhattacharyya 11514	Bandarkhal	
		400. <i>Sterculia villosa</i> Roxb. ex Sm.	T		February – October	H. A. Barbhuiya 85108	Kalain Range	
	<i>Triumfetta</i> L.	401. <i>Triumfetta rhomboidea</i> Jacq.	H or SS		Summer – Autumn	A. K. Dutt 204	Barail Range and N. C. Hills	
	<i>Urena</i> L.	402. <i>Urena lobata</i> L.	US		October – April	A. Bora & D. Bhattacharyya 11641	Madhura khuwari (Indranagar)	
		403. <i>Urena repanda</i> Roxb. ex Sm.	H		August – November	A. K. Dutt 231	Barail Range and N. C. Hills	
	<i>Melastoma</i> L.	404. <i>Melastoma malabathricum</i> L.	S		August – December	A. Bora & D. Bhattacharyya 11645	Madhura khuwari (Indranagar)	
	<i>Osbeckia</i> L.	405. <i>Osbeckia capitata</i> D. Don ex Wight & Arn.	H or S		June – September	A. K. Dutt 350	Barail Range and N. C. Hills	
		406. <i>Osbeckia chinensis</i> L.	H or S		July – December	A. K. Dutt 384	Barail Range and N. C. Hills	
		407. <i>Osbeckia nepalensis</i> Hook.	S		August – December	A. K. Dutt 452	Barail Range and N. C. Hills	
77.	Melastomaceae Juss.							

		<i>Oxyspora</i> DC.	408. <i>Oxyspora cernua</i> Hook.f. & Thom. ex Triana 409. <i>Oxyspora vagans</i> Hook. 410. <i>Aglaia edulis</i> A. Gray. 411. <i>Aglaia perviridis</i> Hiern. 412. <i>Aglaia spectabilis</i> (Miq.) S. S. Jain & Bennet 413. <i>Aphanamixis polystachya</i> (Wall.) R.Parker 414. <i>Azadirachta indica</i> Juss. 415. <i>Chisocheton paniculatus</i> Hiern. 416. <i>Chukrasia tabularis</i> A Juss. 417. <i>Dysoxylum excelsum</i> Blume 418. <i>Dysoxylum gotadhora</i> (Buch.-Ham.)	S S T T T Tor S T T T T T T	September – November October – March November – January March – December September – November May – April March – July June – October June – October September – June March – November	A. K. Dutt 273 Bro. Goodfrey 172788 Kanjilal et al. 1934 A. K. Dutt 168 Kanjilal et al.1934 A. Bora & D. Bhattacharyya 11727 A. Bora & D. Bhattacharyya 11726 U. Kanjilal 79925 A. Bora & D. Bhattacharyya 11758 U. Kanjilal 79319 A. Bora & D. Bhattacharyya	Barail Range and N. C. Hills Haflong, NC Hills N. C. Hills Barail Range and N. C. Hills Surma Valley on the way to Haflong way to Durbintila Barak Reserve Indranagar Chuttacherra Indranagar
78.	Meliaceae Juss.	<i>Aglaia</i> Lour.					

80.	Molluginaceae Bartl.	<i>Glinus</i> L. <i>Mollugo</i> L.	430. <i>Glinus oppositifolius</i> (L.) Aug.DC. 431. <i>Mollugo pentaphylla</i> L. 432. <i>Artocarpus heterophyllus</i> Lam. 433. <i>Artocarpus chama</i> Buch.-Ham. 434. <i>Artocarpus integer</i> (Thunb.) Merr. 435. <i>Artocarpus lacucha</i> Buch.-Ham. 436. <i>Ficus abelii</i> Miq. 437. <i>Ficus bengalensis</i> L. 438. <i>Ficus benjamina</i> L.	H H T T T T S T T	almost throughout the year September – October March – August March – Rainy season February – September February – Rainy season May – July April – November October – April	11523 A. K. Dutt 37 A. K. Dutt 50 A. Bora & D. Bhattacharyya 11570 A. Bora & D. Bhattacharyya 11764 A. Bora & D. Bhattacharyya 11765 A. Bora & D. Bhattacharyya 11766 H. A. Barbhuiya 85106, 85107 A. Bora & D. Bhattacharyya 11570 A. Bora & D. Bhattacharyya 11571	Barail Range and N. C. Hills Barail Range and N. C. Hills Durbintila Indranagar Madhura khuwari (Indranagar) Indranagar Kalain Range Madhura khuwari (Indranagar) Damcherra
81.	Moraceae Gaudich.	<i>Artocarpus</i> J.R.Forst. & G.Forst. <i>Ficus</i> L.					

		<i>Poikilospermum</i> Zipp. ex Miq.	450. <i>Poikilospermum</i> <i>suaveolens</i> (Blume) Merr.	WC	May	A. Bora & D. Bhattacharyya 11478	Lakhicherra					
		<i>Streblus</i> Lour.	451. <i>Streblus indicus</i> (Bure au) Corner	T	October – Cold season	Kanjilal et al. 1940	Cachar					
82.	Moringaceae Martinov	<i>Moringa</i> Adans.	452. <i>Moringa oleifera</i> Lam.	T	Throughout the year	A. Bora & D. Bhattacharyya 11725	Balacherra					
83.	Musaceae Juss.	<i>Musa</i> L.	453. <i>Musa paradisiaca</i> L.	H	Almost throughout the year	A. Bora & D. Bhattacharyya 11724	on the way to Damcherra					
84.	Myricaceae Rich. ex Kunth	<i>Myrica</i> L.	454. <i>Myrica</i> <i>farquhariana</i> Wall.	T	Februray – May	Sajem et al. 2008	N. C. Hills					
85.	Myristicaceae R.Br.	<i>Horsfieldia</i> Willd.	455. <i>Horsfieldia glabra</i> (Blume) Warb.	T	March – May	Kanjilal et al. 1940	Barail Range and N. C. Hills					
86.	Myrtaceae Juss.	<i>Eugenia</i> L.	456. <i>Eugenia</i> <i>roxburghii</i> DC.	T or S	March – April	A. K. Dutt 572	Barail Range and N. C. Hills					
		<i>Psidium</i> L.	457. <i>Psidium guajava</i> L.	T	April – August	A. Bora & D. Bhattacharyya 11723	Indranagar					
		<i>Syzygium</i> Gaertn.	458. <i>Syzygium cumini</i> (L.) Skeels	T	February – September	A. Bora & D. Bhattacharyya 11722	roadside, Bandarkhal					
			459. <i>Syzygium fruticosum</i>	T	May – July	A. K. Dutt 517	Barail Range and N.					

			DC.									
			460. <i>Syzygium grande</i> (Wight) Walp.	T	March – June	A. K. Dutt 136	Barail Range and N. C. Hills					
			461. <i>Syzygium kurzii</i> (Duthie) N. P. Balakr.	T	Summer season	A. Bora & D. Bhattacharyya 11415	roadside, Damcherra					
			462. <i>Syzygium oblatum</i> (Roxb.) Wall. ex Steud.	T	April – January	A. K. Dutt 540	Barail Range and N. C. Hills					
			463. <i>Syzygium tetragonum</i> Wall. ex Wight	T	July – January	A. K. Dutt 580	Barail Range and N. C. Hills					
87.	Nelumbonaceae A. Rich.	<i>Nelumbo</i> Adans.		H	June – December	A. Bora & D. Bhattacharyya 11721	in a roadside pond, way to Kalaincherra					
88.	Nymphaeaceae Salisb.	<i>Euryale</i> Salisb.		H	June – December	A. K. Dutt 455, 14	Barail Range and N. C. Hills					
		<i>Nymphaea</i> L.		H	July – December	A. K. Dutt 382	Barail Range and N. C. Hills					
89.	Oleaceae Juss. ex R.Br.	<i>Erythrolpalum</i> Blume		WC	March – September	A. K. Dutt 216	Barail Range and N. C. Hills					
		<i>Lepionurus</i> Blume		S	July – November	U. Kanjilal 5131	Halflong					
		<i>Olax</i> L.		S	March – September	A. K. Dutt 322	Barail Range and N. C. Hills					
90.	Oleaceae Hoffmanns. &	<i>Jasminum</i> L.		S	November – March	H. A. Barbhuiya 123	Near Sindhuri					

Link	<i>Nyctanthes</i> L.	471. <i>Nyctanthes arbortritis</i> L.	T	August – cold season	A. Bora & D. Bhattacharyya 11720	Kalaincherra, near Kalian Tea Estate 15 No.
91.	Onagraceae Juss.	<i>Ludwigia</i> L.	H	April – November	H. A. Barbhuiya 85075	Gumra
			H	July – November	A. T. Gage s.n.	Barail Range and N. C. Hills
			H	January – December	A. Bora & D. Bhattacharyya 11719	Madhura khuwari (Indranagar)
92.	Orchidaceae Juss.	<i>Arundina</i> Blume	SS	May – August (sometimes all the year)	A. Bora & D. Bhattacharyya 11335	Damcherra
		<i>Chiloschista</i> Lindl.	H	April – July	A. Bora & D. Bhattacharyya 11718	Lakhicherra near Bhaluk Nala
		<i>Cymbidium</i> Sw.	H	April – August	A. Bora & D. Bhattacharyya 11717	Churaibari
		<i>Dendrobium</i> Sw.	H	March – June	A. Bora & D. Bhattacharyya 11716	Malidahar
		<i>Goodyera</i> R.Br.	H	April – May (occasionally in Sept. – Oct also)	A. Bora & D. Bhattacharyya 11326	Malidahar

		<i>Ornithochilus</i> (Wall. ex Lindl.) Benth. & Hook.f.	480. <i>Ornithochilus cacharensis</i> Barbhuiya, B.K.Dutta & Schuit.	H	June – October	H. A. Barbhuiya 665	BWS, eastern sector
		<i>Renanthera</i> Lour.	481. <i>Renanthera inschootiana</i> Rolfe	H	March – September	Sajem et al. 2008	N. C. Hills
		<i>Rhynchosylys</i> Blume	482. <i>Rhynchosylys reitusa</i> (L.) Blume	H	April – February	A. Bora & D. Bhattacharyya 11507	Kalaincherra, near Kalian Tea Estate 15 No.
		<i>Vanda</i> Jones ex R.Br.	483. <i>Vanda coerulea</i> Griff. ex Lindl.	H	July – November	Sajem et al. 2008	N. C. Hills
93.	Oxalidaceae R.Br.	<i>Averrhoa</i> R.Br.	484. <i>Averrhoa carambola</i> L.	H	April – December	A. Bora & D. Bhattacharyya 11715	way to Bandarkhal
		<i>Oxalis</i> L.	485. <i>Oxalis acetosella</i> L.	H	July – September	A. K. Dutt 382	Barail Range and N. C. Hills
			486. <i>Oxalis corniculata</i> L.	H	June – December	A. Bora & D. Bhattacharyya 11308	Damcherra
			487. <i>Oxalis</i> griffithii Edgew. & Hook.f.	H	March – October	A. K. Dutt 108	Barail Range and N. C. Hills
94.	Pandanaceae R.Br.	<i>Benstonea</i> Callm. & Buerki	488. <i>Benstonea humilis</i> (Lour.) Callm. & Buerki	S	April – August	H. A. Barbhuiya 956	Kalain Range, Kalaincherra
95.	Papaveraceae Juss.	<i>Argemone</i> L.	489. <i>Argemone Mexicana</i> L.	H	March – October	A. Bora & D. Bhattacharyya 11753	Indranagar

		<i>Dactylicapnos</i> Wall.		C	July – December	March – July	March – July
		<i>Dactylicapnos scandens</i> Hutch.		C	March – June	A. K. Dutt 346	Barail Range and N. C. Hills
		<i>Fumaria</i> L.		H	July – May	A. K. Dutt 67	Barail Range and N. C. Hills
96.	Passifloraceae Juss. ex Roussel	<i>Passiflora</i> L.	490. <i>Dactylicapnos scandens</i> Hutch. 491. <i>Fumaria indica</i> (Hausskn.) Pugsley 492. <i>Passiflora foetida</i> L. 493. <i>Passiflora edulis</i> Sims	WC C	June – November	A. Bora & D. Bhattacharyya 11714	Haflong
		<i>Turnera</i> L.	494. <i>Turnera ulmifolia</i> L.	S	November – March	A. Bora & D. Bhattacharyya 11411	Damcherra
97.	Piperaceae Giseke.	<i>Piper</i> L.	495. <i>Piper nigrum</i> L.	WC	June – October	A. Bora & D. Bhattacharyya 11713	Bandarkhal
			496. <i>Piper thomsoni</i> Hook.f.	C	April – July	H. A. Barbhuiya 758	Near Bihara
98.	Pitosporeae R.Br.	<i>Pitosporum</i> Banks ex Gaertn.	497. <i>Pitosporum humile</i> Hook. f. and Thomson	S or US	April – November	A. K. Dutt 309	Barail Range and N. C. Hills
99.	Poaceae Barnhart	<i>Arundinella</i> Raddi	498. <i>Arundinella bengalensis</i> (Spreng.) Druce	H	August – October	H. A. Barbhuiya 35, 41, 423	BWS
		<i>Axonopus</i> P. Beauv.	499. <i>Axonopus compressus</i> (Sw.) Beauv.	H	Summer – Autumn	A. Bora & D. Bhattacharyya 11362	Durbintila (way to Bandarkhal)
		<i>Bambusa</i> Schreb.	500. <i>Bambusa balcooa</i>	H	January –	H. A.	Monierkhal

					H	August – November	Kanjilal et al. 1934	Cachar
					T	March – July	A. K. Dutt 283	Barail Range and N. C. Hills
101.	Polygonaceae Juss.	<i>Xanthophyllum</i> Roxb. <i>Persicaria</i> (L.) Mill.	<i>Persicaria chinensis</i> (L.) H. Gross	H	H	July – December	A. Bora & D. Bhattacharyya 115 20, 11686	SCF Nala, on the way to Damcherra and Craig Park Tea Estate touching BWS
		<i>Polygonum</i> L.	<i>Polygonum perfoliatum</i> L.	H	H	June – October	Medhi et al. 2012	N. C. Hills
102.	Pontederiaceae Kunth	<i>Eichhornia</i> Kunth <i>Monochoria</i> C.Presl.	<i>Eichhornia crassipes</i> (Mart.) Solms	H	H	July – November	A. Bora & D. Bhattacharyya 11707	Kalain Range
		<i>Portulaca</i> L.	<i>Monochoria hasata</i> (L.) Solms	H	H	June – December	A. Bora & D. Bhattacharyya 11317	Malidahar
103.	Portulacaceae Juss.	<i>Portulaca</i> L.	<i>Portulaca oleracea</i> L.	H	H	May – September	A. K. Dutt 150	Barail Range and N. C. Hills
		<i>Ardisia</i> Sw.	<i>Ardisia keenanii</i> Clarke	S	H	Through out the year	A. K. Dutt 9	Barail Range and N. C. Hills
104.	Primulaceae Batsch ex Borkh.	<i>Ardisia</i> Sw.	<i>Ardisia depressa</i> C.B. Clarke	T or S	T or S	April – September	H. A. Barbhuiya 653	near Kalaincherra area
			<i>Ardisia paniculata</i> Roxb.	T or S	T or S	January – December	J. C. Prazer 278538	Cachar
				T or S	T or S	Throughout the year	A. Bora & D. Bhattacharyya	Malidahar

								11683		
	<i>Maesa</i> Forssk.		559. <i>Maesa indica</i> (Roxb.) A.DC.	S	April – November	A. Bora & D. Bhattacharyya 11440	Durbintila			
			560. <i>Maesa ramentacea</i> Wall.	T or S	January – December	Ditekcherra (on the way to Bandarkhal)	<i>A. Bora & D. Bhattacharyya</i> 11376			
105.	Proteaceae Juss.	<i>Helicia</i> Lour.	561. <i>Helicia robusta</i> (Roxb.) R.Br. ex Blume	T	September – February	Sajem et al. 2008	N. C. Hills			
106.	Ranunculaceae Juss.	<i>Anemone</i> L.	562. <i>Anemone elongata</i> D. Don	H	Not seen	A. K. Dutt 8	Barail Range and N. C. Hills			
		<i>Clematis</i> L.	563. <i>Clematis gouriana</i> Roxb. ex DC.	WC	September – December	A. K. Dutt 25, 28	Barail Range and N. C. Hills			
		<i>Naravelia</i> Adans.	564. <i>Clematis montana</i> Buch.-Ham. ex DC.	WC	April – September	A. K. Dutt 55, 75	Barail Range and N. C. Hills			
		<i>Ranunculus</i> L.	565. <i>Naravelia zeylanica</i> DC.	S	October – November	A. K. Dutt 84	Barail Range and N. C. Hills			
		<i>Thalictrum</i> L.	566. <i>Ranunculus diffusus</i> DC.	H	March – July	A. K. Dutt 35, 46	Barail Range and N. C. Hills			
		<i>Gouania</i> Jacq.	567. <i>Thalictrum foliolosum</i> DC.	S	August – November	A. K. Dutt 105	Barail Range and N. C. Hills			
107.	Rhamnaceae Juss.	<i>Hovenia</i> Thunb.	568. <i>Gouania leptostachya</i> DC.	S	August – December	Kanjilal et al. 1934	N. C. Hills			
		<i>Sageretia</i> Brongn.	569. <i>Hovenia dulcis</i> Thunb.	T or S	May – October	Kanjilal et al. 1934	Cachar			
			570. <i>Sageretia</i>	T or S	June –	A. K. Dutt 139	Barail Range and N. C. Hills			

		<i>filiformis</i> G. Don		August			August		C. Hills
	<i>Ventilago</i> Gaertn.		S	October – April		571. <i>Ventilago calyculata</i> Tulasne.		A. K. Dutt 274	Barail Range and N. C. Hills
	<i>Ziziphus</i> Mill.		T	May – October		572. <i>Ziziphus jujuba</i> Mill.		A. Bora & D. Bhattacharyya 11706	Bandarkhal
			T	November – January		573. <i>Ziziphus rugosa</i> Lamk.		A. Bora & D. Bhattacharyya 11705	Kalain Range
108.	<i>Carallia</i> Roxb.		T	Winter – Summer		574. <i>Carallia brachiata</i> Merr.		H. A. Barbhuiya 85958	Kalaincherra
109.	<i>Prunus</i> L.		T	July – February		575. <i>Prunus ceylanica</i> Miq.		Kanjilal et al. 1938	Cachar, Barak Reserve
	<i>Rubus</i> L.		S	March – May		576. <i>Rubus ellipticus</i> Sm.		Kanjilal et al. 1938	N. C. Hills
			S	March – July		577. <i>Rubus rosifolius</i> Sm.		Kanjilal et al. 1938	N. C. Hills
110.	<i>Acranthera</i> Arn. ex Meisn.		E	July – October		578. <i>Acranthera tomentosa</i> Hook.f.		Kanjilal et al. 1939	Cachar
	<i>Aidia</i> Lour.		T	February – August		579. <i>Aidia densiflora</i> (Benth.) Masam.		Kanjilal et al. 1939	Cachar
	<i>Argostemma</i> Wall.		H	August		580. <i>Argostemma sarmentum</i> Wall.		H. A. Barbhuiya 85184	Near Bihara
	<i>Canthium</i> Lam.		T	July – March		581. <i>Canthium glabrum</i> Blume		Kanjilal et al. 1939	Cachar

<i>Mussaenda</i> L.	593. <i>Mussaenda roxburghii</i> Hook.f.	S	April – November	A. Bora & D. Bhattacharyya 11301	Malidahar
<i>Metadina</i> Bakh.f.	594. <i>Metadina trichotoma</i> (Zoll. & Moritzi) Bakh.f.	T	April – December	Kanjilal et al. 1939	Cachar
<i>Meyna</i> Roxb. ex Link	595. <i>Meyna spinosa</i> Roxb. ex Link	T or S	April – October	Kanjilal et al. 1939	Cachar
<i>Morinda</i> L.	596. <i>Morinda angustifolia</i> Roxb.	T or S	April – October	A. Bora & D. Bhattacharyya 1481, 11627	Lakhicherra and Madhura khuwari (Indranagar)
<i>Nauclea</i> L.	597. <i>Nauclea orientalis</i> L.	T	July – January	Kanjilal et al. 1939	Cachar
<i>Neolamarckia</i> Bosser	598. <i>Neolamarckia cadamba</i> a (Roxb.) Bosser	T	June – January	A. Bora & D. Bhattacharyya 11704	Bandarkhal
<i>Neonauclea</i> Merr.	599. <i>Neonauclea sessilifolia</i> Merr.	T	July – October	Kanjilal et al. 1939	Cachar
<i>Oldenlandia</i> L.	600. <i>Oldenlandia corymbosa</i> L.	H	August – November	A. Bora & D. Bhattacharyya 11318	Damcherra
	601. <i>Oldenlandia diffusa</i> (Willd.) Roxb.	H	August – November	A. Bora & D. Bhattacharyya 11304	Malidahar
	602. <i>Oldenlandia verticillata</i> L.	H	March – November	A. Bora & D. Bhattacharyya 11644	Madhura khuwari (Indranagar)

			603. <i>Oldenlandia vestita</i> Drake.	H	July – November	A. Bora & D. Bhattacharyya 11439	Durbintila
	<i>Ophiorrhiza</i> L.		604. <i>Ophiorrhiza succirubra</i> King ex Hook.f.	SS	July – April	A. Bora & D. Bhattacharyya 11489, 11619	Lakhicherra near Bhaluk Nala and Madhura khuwari (Indranagar)
	<i>Paederia</i> L.		605. <i>Paederia foetida</i> L.	C	May – December	A. Bora & D. Bhattacharyya 11703	Kalain Range
	<i>Pavetta</i> L.		606. <i>Pavetta indica</i> L.	T or S	Not seen	Kanjilal et al. 1939	Cachar and N. C. Hills
	<i>Prismatomeris</i> Thwaites		607. <i>Prismatomeris tetrandra</i> K. Schum.	T or S	May – December	H. A. Barbhuiya 85178	near Kalaincherra
	<i>Psychotria</i> L.		608. <i>Psychotria erratica</i> Hook.f.	S	May – July	H. A. Barbhuiya 85178	15 No. Hill
			609. <i>Psychotria monticola</i> Kurz	S	November	H. A. Barbhuiya 85172	near Kalaincherra
	<i>Tarennoidea</i> Tirveng. & Sastre		610. <i>Tarennoidea wallichii</i> (Hook.f.) Tirveng. & Sastre	T	March – July	Kanjilal et al. 1939	Cachar and N. C. Hills
	<i>Wendlandia</i> Willd.		611. <i>Wendlandia budleioides</i> Wall. ex Wight & Arn.	T	August – December	A. Bora & D. Bhattacharyya 11424	Durbintila
111.	Rutaceae Juss.	<i>Acronychia</i> J.R.Forst. & G.Forst.	612. <i>Acronychia pedunculata</i> Miq.	T or S	April – August	A. K. Dutt 238	Barail Range and N. C. Hills

	<i>Aegle</i> Corrêa ex Koenig	613. <i>Aegle marmelos</i> (L.) Correa	T	April – August	A. Bora & D. Bhattacharyya 11702	Lakhicherra
	<i>Atalantia</i> Corrêa	614. <i>Atalantia monophylla</i> (L.) DC.	T	December – March	A. K. Dutt 251	Barail Range and N. C. Hills
		615. <i>Atalantia simplicifolia</i> (Roxb.) Engl.	T or S	November	J. C. Prazer 76477	Cachar
	<i>Citrus</i> L.	616. <i>Citrus maxima</i> (Burm.) Merr.	T	April – December	A. Bora & D. Bhattacharyya 11701	Indranagar
		617. <i>Citrus medica</i> L.	T or S	April – November	W. G. Craib 76577	Haflong
	<i>Clausena</i> Burm.f.	618. <i>Clausena excavate</i> Burm.f.	S	April – August	Shaik Mokim 265	Mahoon
		619. <i>Clausena heptaphylla</i> (Roxb. ex DC.) Wight & Arn. ex Steud.	T or S	April – July	A. Bora & D. Bhattacharyya 11634	Madhura khuwari (Indranagar)
	<i>Glycomis</i> Corrêa	620. <i>Glycomis pentaphylla</i> (Retz.) DC.	T	July – March	A. Bora & D. Bhattacharyya 11602	Madhura khuwari (Indranagar)
		621. <i>Micromelum integerrimum</i> (Roxb. ex DC.) Wight & Arn. ex M.Roem.	T	February – September	A. Bora & D. Bhattacharyya 11527	SCF Nala, on the way to Damcherra
	<i>Murraya</i> J.Koenig	622. <i>Murraya koenigii</i> (L.) Spreng.	T	March – June	A. Bora & D. Bhattacharyya 11600	Malidahar

			623. <i>Murraya paniculata</i> (L.) Jack.	T or S	April – February	A. K. Dutt 43	Barail Range and N. C. Hills
	<i>Tetradium</i> Lour.		624. <i>Tetradium ruticarpum</i> (A.Juss.) T.G.Hartley	T or S	April – November	A. K. Dutt 128	Barail Range and N. C. Hills
	<i>Zanthoxylum</i> L.		625. <i>Zanthoxylum armatum</i> DC.	T	April – October	A. Bora & D. Bhattacharyya 11599	Bandarkhal
112.	Sabiaceae Blume	<i>Meliosma</i> Blume	626. <i>Meliosma arnotiana</i> (Wight) Walp.	T	May – October	A. K. Dutt 467	Barail Range and N. C. Hills
			627. <i>Meliosma pinnata</i> (Roxb.) Maxim.	T	May – October	A. Bora & D. Bhattacharyya 11598	Bandarkhal
			628. <i>Meliosma simplicifolia</i> (Roxb.) Walp.	T	April – June	H. A. Barbhuiya 85769	Kalain Range
	<i>Sabia</i> Colebr.		629. <i>Sabia lanceolata</i> Colebr.	WC	October – December	A. Bora & D. Bhattacharyya 11369, 11430	Detekcherra (on the way to Bandarkhal) and Durbintila
			630. <i>Sabia purpurea</i> Hook.f. & Thomson	WC	May – August	A. K. Dutt 481	Barail Range and N. C. Hills
113.	Salicaceae Mirb.	<i>Casearia</i> Jacq.	631. <i>Casearia graveolens</i> Dalzell	T	March – November	A. K. Dutt 125	Barail Range and N. C. Hills
			632. <i>Casearia kurzii</i> Clarke	T	July – March	A. K. Dutt 242, 16	Barail Range and N. C. Hills

			633. <i>Casearia vareca</i> Roxb.	S	Not seen	A. Bora & D. Bhattacharyya 11407	Kayang River bank
	<i>Flacourtia</i> Comm. ex L'Hér.	634. <i>Flacourtiaindica</i> (Burm.f.) Merr.	T or S	January – July	A. K. Dutt 223	Barail Range and N. C. Hills	
		635. <i>Flacourtia</i> <i>jangomas</i> (Lour.) Raeusch.	T or S	April – October	A. K. Dutt 264	Barail Range and N. C. Hills	
	<i>Gynocardia</i> Roxb.	636. <i>Gynocardia</i> <i>odorata</i> Roxb.	T	January – August	A. Bora & D. Bhattacharyya 11494	Lakhicherra near Bhaluk Nala	
	<i>Hydnocarpus</i> Gaertn.	637. <i>Hydnocarpus</i> <i>kurzii</i> Warb.	T	May – December	S. Mokim 55	Catlicherra	
114.	Sapindaceae Juss.	638. <i>Acer laurinum</i> Hassk.	T	June – December	Kanjilal et al. 1934	Bhuban Hills (Cachar)	
	<i>Aesculus</i> L.	639. <i>Aesculus</i> <i>assamica</i> Griff.	T	January – November	A. K. Dutt 6, 100	Barail Range and N. C. Hills	
	<i>Allophylus</i> L.	640. <i>Allophylus zeylanicus</i> L.	S	November	H. A. Barbhuiya 84926	15 No. Hill, BWS	
	<i>Cardiospermum</i> L.	641. <i>Cardiospermum</i> <i>helicacabum</i> L.	C	June – November	A. K. Dutt 6, 131	Barail Range and N. C. Hills	
	<i>Harpullia</i> Roxb.	642. <i>Harpullia cupanioides</i> Roxb.	T	Spring – Late autumn	Kanjilal et al. 1934	N. C. Hills	
	<i>Lepisanthes</i> Blume	643. <i>Lepisanthes</i> <i>senegalensis</i> (Poir.) Leenh.	T or S	March – May	A. K. Dutt 469	Barail Range and N. C. Hills	
	<i>Sapindus</i> L.	644. <i>Sapindus mukorossi</i>	T	May –	A. Bora & D.	Bandarkhal	

			Gaertn.			November	Bhattacharyya	
115.	Sapotaceae Juss.	<i>Chrysophyllum</i> L.	645. <i>Sapindus rarak</i> DC. 646. <i>Chrysophyllum roxburghii</i> G. Don 647. <i>Mimusops elengi</i> L. 648. <i>Palaquium polyanthum</i> Engl. 649. <i>Planchonella grandifolia</i> Pierre 650. <i>Houttuynia cordata</i> Thunb. 651. <i>Buddleja asiatica</i> Loureiro 652. <i>Lindernia anagallis</i> (Burm.f.) Pennell 653. <i>Mecardonia procumbens</i> Small 654. <i>Scoparia dulcis</i> L.	T T T T T H T or S H H H	Summer – Autumn April – November March – December May Throughout the year April – October January – December April – November Spring – Autumn	A. K. Dutt 209 Kanjilal et al. 1939 A. Bora & D. Bhattacharyya 11596 Kanjilal et al. 1939 Kanjilal et al. 1939 A. Bora & D. Bhattacharyya 11754 A. Bora & D. Bhattacharyya 11509 H. A. Barbhuiya 85088 A. Bora & D. Bhattacharyya 11614 A. Bora & D. Bhattacharyya	Barail Range and N. C. Hills Cachar and N. C. Hills Bandarkhal Cachar Cachar Cachar Indranagar Kalaincherra Gumra Madhura khuwari (Indranagar) Malidahar	
116.	Saururaceae Rich. ex T. Lestib.	<i>Mimusops</i> L. <i>Palaquium</i> Blanco <i>Planchonella</i> Tiegh. <i>Houttuynia</i> Thunb.						
117.	Scrophulariaceae Juss.	<i>Buddleja</i> L. <i>Lindernia</i> All. <i>Mecardonia</i> Ruiz & Pav. <i>Scoparia</i> L.						

		<i>Torenia</i> L.						11302	
			655. <i>Torenia vagans</i> Roxb.	H	August – November	A. Bora & D. Bhattacharyya 11345, 11650	Durbintila (way to Bandarkhal) and Madhura khuwari (Indranagar)		
			656. <i>Torenia violacea</i> (Azaola ex Blanco) Pennell	H	August – November	W. G. Craib 322742	Haflong		
118.	Simaroubaceae DC.	<i>Ailanthus</i> Desf.	657. <i>Ailanthus integrifolia</i> Lam. subsp. <i>calycina</i> (Pierre) Nooteb.	T	January – April	Kanjilal et al. 1934	Cachar and N. C. Hills		
119.	Smilacaceae Ventenat	<i>Smilax</i> L.	658. <i>Smilax zeylanica</i> L.	WC	June – December	A. Bora & D. Bhattacharyya 11535	Malidahar		
120.	Solanaceae Juss.	<i>Datura</i> L.	659. <i>Datura metel</i> L.	US	November – March	A. Bora & D. Bhattacharyya 11647	Madhura khuwari (Indranagar)		
			660. <i>Datura stramonium</i> L.	H or US	June – November	A. Bora & D. Bhattacharyya 11595	Kalain Range		
		<i>Physalis</i> L.	661. <i>Physalis minima</i> L.	H	October – March	A. Bora & D. Bhattacharyya 11442	Durbintila		
		<i>Solanum</i> L.	662. <i>Solanum nigrum</i> L.	H	May – November	A. Bora & D. Bhattacharyya 11594	Kalain Range		

					T or S	Through out the year	A. Bora & D. Bhattacharyya	Indranagar
			663. <i>Solanum torvum</i> Sw.				A. Bora & D. Bhattacharyya 11751	Indranagar
			664. <i>Solanum violaceum</i> Ortega		US	May – November	W. G. Craib 316022	Haflong
			665. <i>Solanum xanthocarpum</i> Schrad. & Wendl.		H	December – February	A. Bora & D. Bhattacharyya 11593	Damcherra
121.	Stemonaceae Caruel	<i>Stemona</i> Lour.	666. <i>Stemona tuberosa</i> Lour.		H	June – December	A. Bora & D. Bhattacharyya 11592	Craig Park Tea Estate touching BWS
122.	Styracaceae DC. & Spreng.	<i>Styrax</i> L.	667. <i>Styrax serrulatus</i> Roxb		T	March – November	H. A. Barbhuiya 84918	Near Bihar area
123.	Symplocaceae Desf.	<i>Symplocos</i> Jacq.	668. <i>Symplocos cochinchinensis</i> S. Moore		T or S	November – June	W. G. Craib 283824	Haflong
124.	Theaceae Mirb. ex Ker Gawl.	<i>Camellia</i> L.	669. <i>Camellia oleifera</i> C. Abel		T or S	December – October	H. A. Barbhuiya 85205	Kalain Range
		<i>Eurya</i> Thunb.	670. <i>Eurya acuminata</i> Candolle		T or S	November – June	W. G. Craib 48585	Haflong
			671. <i>Eurya nitida</i> Korth.		T or S	November – January	U. N. Kanjilal No. 6780	Dehing Bank, N. C. Hills
			672. <i>Eurya stenophylla</i> Merr.		S	February – August	H. A. Barbhuiya 86008	Kalain Range
		<i>Schima</i> Reinw. ex Blume	673. <i>Schima wallichii</i> (DC.) Korth.		T	April – December	A. Bora & D. Bhattacharyya 11422	Durbintila

		<i>Ternstroemia Mutis</i> ex L.f.	674. <i>Ternstroemia gymnanthera</i> (Wight & Arn.) Bedd.	S	May – November	A. K. Dutt 399	Barail Range and N. C. Hills
125.	Thymelaeaceae Juss.	<i>Aquilaria</i> Lam.	675. <i>Aquilaria malaccensis</i> Lam.	T	April – September	Kanjilal et al. 1940	Cachar
126.	Ulmaceae Mirbel	<i>Aphananthe</i> Planch.	676. <i>Aphananthe cuspidata</i> (Blume) Planch.	T	March – December	Kanjilal et al. 1940	Cachar
		<i>Trema</i> Lour.	677. <i>Trema orientalis</i> Blume	T	April – December	A. Bora & D. Bhattacharyya 11528	SCF Nala, on the way to Damcherra
127.	Urticaceae Juss.	<i>Boehmeria</i> Jacq.	678. <i>Boehmeria nivea</i> (L.) Gaudich.	S or SS	May – November	A. Bora & D. Bhattacharyya 11484	Lakhicherra
		<i>Dendrocnide</i> Miq.	679. <i>Dendrocnide sinuata</i> (Blume) Chew	T or S	September – April	H. A. Barbhuiya 84918	15 No. Hill, BWS
		<i>Oreocnide</i> Miq.	680. <i>Oreocnide integrifolia</i> (Gaudich.) Miq.	T or S	March – September	A. Bora & D. Bhattacharyya 11387, 11609	Damcherra and Madhura khuwari (Indranagar)
		<i>Pilea</i> Lindl.	681. <i>Pilea glaberrima</i> (Blume) Blume	H	May – November	A. Bora & D. Bhattacharyya 11519, 11610	SCF Nala, on the way to Damcherra and Madhura khuwari (Indranagar)
128.	Verbenaceae J.St.-Hil.	<i>Clerodendrum</i> L.	682. <i>Clerodendrum indicum</i> Kuntze	S or SS	August – November	H. A. Barbhuiya 85069	near Gumra
			683. <i>Clerodendrum viscosum</i> Vent.	US	March – July	A. Bora & D. Bhattacharyya	Damcherra

131.	Zingiberaceae Martinov	<i>Globba</i> L.	700. <i>Globba orixensis</i> Roxb.	H	July – August	D. Bhattacharyya 2501, L. Darlong & D. Bhattacharyya 10063	Kumbhirgram and Dargakona	Cachar			
			<i>Vitex</i> L.	699. <i>Vitex pinnata</i> L.	T	October – March	Kanjilal et al. 1939		Cachar and N. C. Hills		
				698. <i>Tetrastigma lanceolarium</i> Planch.	C	April – November	Kalaincherra		H. A. Barbhuiya 85948		
			<i>Parthenocissus</i> Planch.	697. <i>Parthenocissus semicordata</i> Planch.	S	May – October	A. Bora & D. Bhattacharyya 11435		Durbintila		
				696. <i>Leea indica</i> (Burm.f.) Merr.	T or S	June – December	A. K. Dutt 278		Barail Range and N. C. Hills		
			<i>Cissus</i> L.	Leea D.Royen	695. <i>Leea compactiflora</i> Kurz	S	May – January		A. Bora & D. Bhattacharyya 11430	Durbintila	
					694. <i>Cissus repens</i> Lam.	C	July – May		R. B. Majumdar 54035	Amraghat	
					693. <i>Cissus quadrangularis</i> L.	T	June – December		Kanjilal et al. 1934	Cachar	
						692. <i>Cissus assamica</i> Craib	WC		May – October	Kanjilal et al. 1934	Cachar

		<i>Larsenianthus</i> W. J. Kress & Mood	701. <i>Larsenianthus assamensis</i> S.Dey	H	October – December	S. Dey 1012	Bhaluknala, narrow sub-stream of Lakhicherra
132.	Zygophyllaceae R.Br.	<i>Tribulus</i> L.	702. <i>Tribulus cistoides</i> L.	H	May – August	A. K. Dutt 381	Barail Range and N. C. Hills

E: Epiphyte, H: Herbs, TH: Twinning herb, S: Shrubs, US: Undershrub, SS: Straggling shrub, C: Climbers, WC: Woody Climbers

Table 5: List of all the species recorded in Barail Wildlife Sanctuary

1. TAXONOMIC TREATMENT

Keys to the Major Groups of Angiosperms

1a. Leaves usually with reticulate venation, simple to variously compound, petiole present; stipules present or absent; flowers parts usually in 2s, 4s or 5s or numerous; vascular bundles in stem usually arranged in a ring; embryo with 2 cotyledons.....**DICOTYLEDONS**

1b. Leaves usually with parallel venation, simple or rarely compound or lobed, leaves rarely with a petiole but base usually sheathing the stem at least partly; flowers usually in 3s; vascular bundles scattered in stem; embryo with 1 cotyledon.....**MONOCOTYLEDONS**

KEY TO DICOTYLEDONS

- 1a. Gynoecium composed of 2 or more free carpels with separate styles and stigmas.....2
1b. Gynoecium composed of 1 carpel or 2 or more united carpels with united or free styles, or if carpels free below then styles or stigmas united.....3
2a. Corolla absent; perianth members almost similar..... **Group 1**
2b. Corolla present..... **Group 2**
3a. Placentation parietal or marginal: ovules 2 or more in the ovary, borne on its outer wall or sometimes on intrusions thereof.....4
3b. Placentation axile, basal or apical: 1 or more ovules in the ovary, borne on the central axis, or the base or apex of the ovary, or placentation indistinct.....6
4a. Ovary superior.....5
4b. Ovary inferior..... **Group 6**
5a. Corolla absent; perianth members, if present, all similar..... **Group 3**
5b. Corolla free..... **Group 4**
5c. Corolla united..... **Group 5**
6a. Ovary superior.....7
6b. Ovary inferior.....8
7a. Corolla absent; perianth members, if present, all more or less similar..... **Group 7**
7b. Corolla free (polypetalous) **Group 8**
7c. Corolla more or less united..... **Group 9**
8a. Corolla absent; perianth members, if present, all more or less similar..... **Group 10**
8b. Corolla free..... **Group 11**
8c. Corolla more or less united..... **Group 12**

GROUP 1 (*Carpels free*)

1a. Stamens perigynous, always in a complete ring at margin of or above disk; calyx united, imbricate; leaves alternate, rarely opposite, simple or compound; stipules present; trees, shrubs or herbs, sometimes scrambling and with prickles.....**ROSACEAE**

- 1b. Stamens hypogynous; calyx free or if connate near base then valvate; stamens numerous, free or united into a column.....2
- 2a. Stamens united into a column.....**MALVACEAE**
- 2b. Stamens free.....3
- 3a. Leaves variously compound or simple; calyx petaloid or sepaloid; herbs or herbaceous or woody vines; stamen numerous, free; flowers Flowers bisexual, sometimes unisexual, actinomorphic, large and conspicuous, solitary or few together.....**RANUNCULACEAE**
- 3b. Leaves simple; woody climbers with alternate leaves; perianth 3 – 9 lobed; stamens 3 – many, usually 6; flowers unisexual, actinomorphic, in cymes or racemes.....**MENISPERMACEAE**

GROUP 2 (*Carpels free but sometimes pressed together*)

- 1a. Aquatic herbs with floating leaves on long petioles; leaf blades more or less peltate; flowers solitary, on long scapes, often large and conspicuous; carpels sunk in a fleshy disc; corolla many**NYMPHAEACEAE**
- 1b. Terrestrial plants; leaf blades not peltate.....2
- 2a. Stamens perigynous, always in a complete ring at margin of or above disk; leaves pinnate or digitate; stipules present; trees, shrubs or herbs, sometimes scrambling and with prickles.....**ROSACEAE**
- 2b. Stamens hypogynous, not arising on calyx.....3
- 3a. Perianth 3 – 9 lobed, free or inner ones united; dioecious shrublets or woody climber.....**MENISPERMACEAE**
- 3b. Calyx 3 – 6 lobed or more, free or united.....4
- 4a. Leaves compound or deeply divided.....5
- 4b. Leaves simple, entire.....7
- 5a. Herbs, sometimes subshrubs or herbaceous or woody vines.....**RANUNCULACEAE**
- 5b. Trees or shrubs.....6
- 6a. Stamens 5 – 10.....**CONNARACEAE**
- 6b. Stamens 8 to numerous.....**ELAEOCARPACEAE**
- 7a. Trees or shrubs, leaves palmatinerved.....**MALVACEAE**
- 7b. Leaves penninerved or venation more or less invisible.....8
- 8a. Calyx 2 or 3, valvate, free or united; anthers often longer than filaments; flowers solitary or fasciculate or in few-flowered cymes.....**ANNONACEAE**
- 8b. Calyx 5, imbricate, free; Stamens many, anthers much shorter than filaments; ovules few to many per carpel.....**DILLENIAEAE**

GROUP 3 (*Placentation parietal; ovary superior; perianth present*)

- 1a. Leaves pinnately compound or simple or 2-foliolate.....**FABACEAE**
- 1b. Leaves simple or digitately 3-foliolate, sometimes reduced to scales.....2
- 2a. Flowers with a fimbriate corona outside stamens; plants herbaceous or woody; often climbing with axillary tendrils.....**PASSIFLORACEAE**
- 2b. Flowers without corona; tendrils absent.....3

- 3a. Herbs or shrubs; ovules 1 to many per locule; fruit a capsule, with 1- or 2-seeded locules divided by a persistent, often membranous partition.....**BRASSICACEAE**
- 3b. Trees, shrubs or woody climbers; fruit a capsule or drupe with more than 2 seeds per locule.....4
- 4a. Inflorescences axillary or superaxillary, racemose, corymbose, subumbellate, or paniculate.....**CAPPARACEAE**
- 4b. Catkins erect or pendulous.....**SALICACEAE**

GROUP 4 (*Placentation parietal; ovary superior; corolla free*)

- 1a. Stamens tetradynamous; calyx 4; corolla 4 or absent; leaves exstipules; herbs or shrubs.....**BRASSICACEAE**
- 1b. Stamens not tetradynamous.....2
- 2a. Gynoecium with 1 carpel, only 1 placenta in the ovary.....3
- 2b. Gynoecium with 2 or more united carpels, with 2 or more placentas.....8
- 3a. Flowers regular; corolla 5 or fewer; leaves simple or compound; trees or shrubs or herbs, sometimes climbers.....**FABACEAE**
- 3b. Flowers irregular.....4
- 4a. Leaves 2-pinnate, compound or simple; stipules present; flowers in spikes or heads.....**FABACEAE**
- 4b. Leaves simple, 1-pinnate or 1 – 3-foliolate.....5
- 5a. Leaves pinnate or 3-foliolate, the leaflets dotted with pellucid glands, at least at margin; trees or shrubs.....**RUTACEAE**
- 5b. Leaves simple or 1-foliolate, without pellucid glands.....6
- 6a. Leaves toothed; stipules present; stamens many, united into a column; herbs or small shrubs.....**MALVACEAE**
- 6b. Leaves entire; stipules absent; trees or shrubs, sometimes climbers.....7
- 7a. Calyx 5; corolla 5; flowers in racemes.....**CONNARACEAE**
- 7b. Calyx 3; corolla 6; flowers solitary.....**ANNONACEAE**
- 8a. Leaves opposite or whorled, simple; herbs.....9
- 8b. Leaves alternate10
- 9a. Stamens more than twice as many as corolla, often grouped into bundles.....**CLUSIACEAE**
- 9b. Stamens as many as corolla.....**DROSERACEAE**
- 10a. Flowers unisexual.....11
- 10b. Flowers bisexual or polygamous.....12
- 11a. Flowers often with corona; disc often present; herbaceous or woody climbers, shrubs or small trees, often with tendrils.....**PASSIFLORACEAE**
- 11b. Flowers without corona; disc present or absent; trees or shrubs without tendrils; resinous trees or shrubs; calyx, corolla and stamens all.....**PITOSPORACEAE**
- 12a. Ovary borne on a gynophore.....13
- 12b. Ovary sessile or subsessile.....15
- 13a. Flowers with a hairy corona; often with axillary tendrils.....**PASSIFLORACEAE**

13b. Flowers without a corona; tendrils absent.....	14
14a. Flowers mostly 4-merous; leaves mostly glabrous; ovary 1-locular throughout.....	CAPPARACEAE
14b. Flowers 5-merous; leaves hairy; ovary 3 – 5-locular, sometimes 1-locular towards apex.....	DIPTEROCARPACEAE
15a. Flowers irregular.....	16
15b. Flowers regular.....	18
16a. Leaves 2- or 3-pinnate; trees; flowers axillary; stamens 5, alternating with 5 staminodes.....	MORINGACEAE
16b. Leaves simple or digitate; herbs or sometimes shrubs or small trees.....	17
17a. Flowers mostly solitary; leaves simple.....	VIOLACEAE
17b. Flowers in terminal racemes or spikes; leaves simple or digitate....	CAPPARACEAE
18a. Stamens more than corolla or as many and opposite to them.....	19
18b. Stamens as many as and alternating with corolla.....	22
19a. Flowers with a disc and/or a corona.....	20
19b. Flowers without a disc or a corona.....	21
20a. Flowers often with corona; herbaceous or woody climbers, shrubs or small trees, often with tendrils; leaves sometimes digitate or palmately lobed....	PASSIFLORACEAE
20b. Flowers without corona; trees or shrubs without tendrils; leaves simple, not lobed; branches and inflorescence axis with rusty scales.....	BIXACEAE
21a. Perennial or annual herbs.....	PAPAVERACEAE
21b. Trees or shrubs.....	DIPTEROCARPACEAE
22a. Styles 2 – 5, free or shortly united at base.....	23
22b. Style 1.....	24
23a. Insectivorous herb.....	DROSERACEAE
23b. Plants not insectivorous; Flowers with a conspicuous or inconspicuous, hairy corona outside stamens or without a corona; herbs or shrubs, often climbing with or without tendrils.....	PASSIFLORACEAE
24a. Stamens variously united; leaves with stipules.....	VIOLACEAE
24b. Stamens free; leaves without stipules.....	PITTOSPORACEAE

GROUP 5 (*ovary superior; corolla united*)

1a. Gynoecium consisting of 1 carpel; leaves with or without stipules.....	2
1b. Gynoecium consisting of 2 or more united carpels; leaves without stipules.....	3
2a. Leaves simple or compound, with stipules or stipular spines; fruit a legume.....	FABACEAE
2b. Leaves simple; stipules absent; fruit a drupe or achene.....	MENISPERMACEAE
3a. Flowers irregular.....	4
3b. Flowers regular; stamens as many as corolla lobes or more numerous.....	7
4a. Leaves pinnately or ternately compound.....	5
4b. Leaves simple, sometimes reduced to scales; herbs.....	6

5a. Leaves alternate; annual herbs, sometimes with tendrils; outer corolla often spurred or saccate at base.....	PAPAVERACEAE
5b. Leaves opposite; trees, shrubs or climbers; fruit capsule, usually winged.....	BIGNONIACEAE
6a. Plants some half-parasitic on roots; leaves reduced to scales; stamens 4.....	SCROPHULARIACEAE
6b. Plants not parasitic; leaves (or solitary leaf) well-developed; stamens 2.....	GESNERIACEAE
7a. Leaves usually opposite or whorled, entire, exstipulate; corolla 5-lobed; shrubs or climbers, mostly with milky sap; fruit a large berry.....	APOCYNACEAE
7b. Leaves alternate or basal, sometimes small and scale-like.....	8
8a. Flowers unisexual; plants monoecious or dioecious, with large leaves clustered at and near apex of unbranched to sparsely branched, sometimes prickly stems and branches.....	CARICACEAE
8b. Flowers bisexual; Leaves well-developed	9
9a. Stamens more numerous than corolla; corolla twice as many as calyx; trees or shrubs, sometimes climbing.....	ANNONACEAE
9b. Stamens, Corolla and calyx all 5 (6); Small trees or shrubs; stamens free from tube.....	PITTOSPORACEAE

GROUP 6 (*ovary inferior*)

1a. Calyx absent; perianth members all similar.....	2
1b. Petals present; perianth differentiated into calyx and corolla.....	3
2a. Flowers irregular, usually with an S-shaped tube, medium-sized to large.....	ARISTOLOCHIACEAE
2b. Flowers regular; tepals fused only towards base; fruit winged, horned or spiny.....	AIZOACEAE
3a. Flowers unisexual; plants usually climbing with tendrils; leaves often palmately lobed or deeply divided.....	CUCURBITACEAE
3b. Flowers bisexual; plants without tendrils; leaves mostly entire; leaves opposite or alternate; petals fewer than 10.....	4
4a. Leaves opposite or whorled, with interpetiolar stipules.....	RUBIACEAE
4b. Leaves alternate; aquatic herbs with usually floating peltate leaves.....	NYMPHAEACEAE

GROUP 7 (*ovary superior; corolla absent*)

1a. Ovary with 2 or more ovules in each locule.....	2
1b. Ovary with 1 ovule in each locule.....	17
2a. Leaves opposite or whorled or all radical.....	3
2b. Leaves alternate, not all radical.....	8
3a. Flowers unisexual; shrubs or shrublets; leaves with stipules; stamens many.....	EUPHORBIACEAE

3b. Flowers bisexual; herbs.....	4
4a. Calyx spurred, spur adnate to pedicel; ovary beaked; leaves toothed or lobed.....	GERANIACEAE
4b. Calyx not spurred; ovary without stout central axis; leaves entire.....	5
5a. Sepals fused below; stamens perigynous, arising on calyx tube.....	6
5b. Sepals free or almost so; stamens hypogynous.....	7
6a. Style 1; ovary 1–5-locular, with many ovules in each locule; fruit a capsule.....	LYTHRACEAE
6b. Styles 2–5, or if 1 then ovary 1-locular with few ovules; fruit a circumscissile capsule.....	AIZOACEAE
7a. Ovary 2 – 5-locular, with axile placentas.....	MOLLUGINACEAE
7b. Ovary 1-locular with basal or free-central placentation.....	CARYOPHYLLACEAE
8a. Leaves pinnately compound.....	9
8b. Leaves digitate.....	10
9a. Stamens 4 or 5.....	SABIACEAE
9b. Stamens 5 –10.....	SAPINDACEAE
10a. Ovary 1-locular; flowers in racemes or spikes.....	11
10b. Ovary 2- or more-locular.....	13
11a. Flowers mostly bisexual but plants sometimes polygamous.....	12
11b. Flowers unisexual; plants dioecious; perianth present.....	EUPHORBIACEAE
12a. Calyx scarious; fruit a circumscissile capsule; herbs.....	AMARANTHACEAE
12b. Calyx of 4 thickish lobes; fruit consisting of 1 or more follicles; gland-dotted shrubs.....	RUTACEAE
13a. Gynoecium composed of 3 or more loosely united carpels, in fruit separating into as many follicles (or fewer by abortion); trees or shrubs with flowers both bi- and unisexual; leaves simple or digitate; sepals valvate, united below; stamens united into a column.....	MALVACEAE
13b. Gynoecium composed of completely united carpels, in fruit forming a capsule, or indehiscent or finally separating into winged cocci.....	14
14a. Ovary borne on a distinct gynophore; flowers bisexual; shrubs with solitary, pedunculate, axillary flowers.....	CAPPARACEAE
14b. Ovary sessile or subsessile.....	15
15a. Flowers bisexual; perianth segments sepaloid externally and petaloid internally.....	AIZOACEAE
15b. Flowers mostly unisexual; plants occasionally polygamous.....	16
16a. Leaves with stipules; fruit a capsule, or indehiscent, or separating into 2 winged cocci; trees or shrubs or herbs.....	EUPHORBIACEAE
16b. Leaves without stipules; fruit a septicidal capsule with 2 or more longitudinal, membranous wings; shrubs or trees.....	SAPINDACEAE
17a. Ovary 2- or more-locular.....	18
17b. Ovary 1-locular.....	25
18a. Leaves pinnate or 3-foliolate.....	19

18b. Leaves simple, sometimes lobed or much divided or reduced to scales or stipular spines.....	20
19a. Leaves pinnate, alternate; trees or shrubs.....	SAPINDACEAE
19b. Leaves 3-foliolate, opposite; subshrubs.....	ZYGOPHYLLACEAE
20a. Flowers unisexual or plants polygamous.....	21
20b. Flowers bisexual.....	22
21a. Ovary 5-locular, carpels loosely united and becoming separate in fruit; calyx present, valvate, sepals united below; stamens 5 – 10, united into a column; leaves alternate; trees or shrubs.....	MALVACEAE
21b. Ovary 2 – 4-locular, carpels completely united and not becoming separate in fruit; leaves alternate or sometimes opposite, sometimes reduced to scales or stipular spines; calyx present or absent, sepals valvate or imbricate; stamens 1 – many, free or variously united; habit varying from annuals to trees.....	EUPHORBIACEAE
22a. Sepals fused into a very short to long tube; stamens perigynous or hypogynous.....	23
22b. Sepals free; stamens hypogynous or almost so.....	24
23a. Stamens arising on upper portion of calyx tube, in 2 whorls; fruit a drupe; shrubs.....	THYMELAEACEAE
23b. Stamens not arising on calyx, sometimes in groups; fruit a capsule or flat samara with membranous wings; Herbs, shrublets.....	AIZOACEAE
24a. Leaves toothed or pinnately lobed or divided; style 1; fruit a flattened silicle or separating into 2 cocci.....	BRASSICACEAE
24b. Leaves entire; styles 2 or more, free or united at base; Ovary 2 – 5-locular; fruit a loculicidal capsule.....	MOLLUGINACEAE
25a. Leaves absent or reduced to scales; flowers spicate.....	26
25b. Leaves present, well-developed, not reduced to scales.....	27
26a. Slender, twining, parasitic plants; flowers not immersed in rachis of spike; stamens 6 – 9, accompanied by staminodes.....	LAURACEAE
26b. Succulent, maritime herbs with articulated branches, not parasitic; flowers immersed in rachis of spike; stamens 1 or 2.....	CHENOPODIACEAE
27a. Leaves with stipules, sometimes forming a sheath (ocrea) surrounding the stem.....	28
27b. Leaves without stipules.....	37
28a. Leaves 3- or 4-pinnate; calyx petaloid; fruit a stipitate achene borne on a slender pedicel; herbs.....	RANUNCULACEAE
28b. Leaves simple or digitate.....	29
29a. Ovule pendulous from apex or near apex of ovary; flowers unisexual or plants polygamous.....	30
29b. Ovule arising from base or near base of ovary.....	33
30a. Flowers densely spicate or capitate or crowded in or on an open or flat receptacle or inside a hollow; trees, shrubs or herbs.....	MORACEAE
30b. Flowers solitary or fasciculate or in cymes or racemes or panicles.....	31
31a. Trees, shrubs or herbs; dioecious or monoecious; leaves alternate or opposite.....	32

31b. Trees or shrubs; leaves alternate; Stamens more numerous than calyx segments; style unbranched, sometimes very short; Flowers solitary or paired in axils of leaves.....	ROSACEAE
32a. Annual herbs; usually dioecious; fruit an achene.....	CANNABACEAE
32b. Trees or shrubs; monoecious; fruit samara, drupes or winged nutlets.....	ULMACEAE
33a. Leaves opposite, marked with cystoliths; flowers unisexual; herbs or shrubs.....	URTICACEAE
33b. Leaves alternate.....	34
34a. Perianth absent; flowers minute, in dense spikes; shrubs, sometimes climbing.....	PIPERACEAE
34b. Perianth present.....	35
35a. Styles 2 or 3, free or united below; stamens 4 – 8; fruit a small nut; stipules often forming an ocrea surrounding the stem; herbs or shrubs, sometimes climbing.....	POLYGONACEAE
35b. Style 1 or absent; stamens 5 or fewer.....	36
36a. Flowers bisexual; sepals united below, free portions alternating with lobes of an epicalyx; style arising laterally from near base of ovary; herbs with palmately lobed leaves.....	ROSACEAE
36b. Flowers unisexual; sepals free or united, without an epicalyx; style or sessile stigma terminal; herbs, subshrubs or shrubs, sometimes softwooded small trees or climbers; leaves simple; plants monoecious or dioecious; stamens inflexed in bud.....	URTICACEAE
37a. Aquatic herbs, rhizomatous; leaves arising from rhizome, emerged or floating; flowers solitary, bisexual, hypogynous, actinomorphic, borne above water surface.....	NELUMBONACEAE
37b. Plants not aquatic; leaves alternate or opposite, undivided or sometimes pinnately divided.....	38
38a. Perianth absent.....	39
38b. Perianth present, at least in male flowers.....	43
39a. Trees or shrubs.....	40
39b. Herbs; flowers bisexual; stamens usually 3, 6 or 8.....	SAURURACEAE
40a. Style 1.....	JUGLANDACEAE
40b. Styles 2.....	41
41a. Plant monoecious or dioecious, aromatic.....	MYRICACEAE
41b. Plant monoecious.....	42
42a. Ovary 3 – 6-loculed.....	FAGACEAE
42b. ovary 2-loculed.....	BETULACEAE
43a. Stamens twice as many as calyx segments or more numerous; flowers bisexual; sepals united into an elongated tube; stamens arising on calyx tube; style elongated, slender; shrubs or sometimes trees.....	THYMELAEACEAE

43b. Stamens fewer than twice as many as calyx segments, sometimes accompanied by staminodes.....	44
44a. Anthers opening by valves; calyx 6-lobed; stamens 6 – 9, accompanied by staminodes; trees.....	LAURACEAE
44b. Anthers opening by longitudinal slits; calyx with 3 – 5 segments or lobes.....	45
45a. Leaves opposite or subopposite; perianth lobes dry and scarious, free or shortly united at base; stamens as many as and opposite calyx segments, often alternating with staminodes; herbs or shrubs.....	AMARANTHACEAE
45b. Leaves alternate.....	46
46a. Perianth of 2 – 4 valvate segments; trees or shrubs.....	47
46b. Perianth of 3 – 5 imbricate segments or sometimes almost completely tubular with indistinct segments; herbs, shrubs or woody climbers.....	48
47a. Flowers bisexual, in bracteate heads or in elongated spikes or racemes; stamens 4, free, opposite to and arising on calyx segments; fruit a nut; seed not arillate.....	PROTEACEAE
47b. Flowers unisexual, solitary or clustered.....	49
48a. Perianth dry and scarious, free or shortly united at base; leaves entire.....	AMARANTHACEAE
48b. Perianth herbaceous, free or united into a tube; leaves entire or toothed or pinnately divided.....	CHENOPODIACEAE
49a. Flowers small, solitary or clustered heads; stamens 3 – 5, united into a column; fruit with a thick, fleshy, dehiscent pericarp; seed arillat.....	MYRISTICACEAE
49b. Flowers large, solitary; stamens many; fruit apocarpous or sometimes syncarpous.....	MAGNOLIACEAE

GROUP 8 (*Ovary superior; petals free but may adhere to base of staminal tube*)

1a. Ovary 1-locular, sometimes septate towards base.....	2
1b. Ovary 2- or more-locular; if carpels free then they are united by their fused styles.....	22
2a. Calyx 1 or 2, free, sometimes caducous.....	3
2b. Calyx lobes 3 or more, sometimes obsolete.....	5
3a. Flowers unisexual; plants dioecious; calyx 1 or 2; corolla 1 – 4; stamens united into a synandrium; leaf blades peltate or subpeltate; woody climbers.....	MENISPERMACEAE
3b. Flowers bisexual or if unisexual, then stamens free; calyx 2; corolla 4 or 5; leaf blades not peltate; herbs.....	4
4a. Flowers irregular; ovary with 1 ovule; fruit a nut; leaves much divided.....	PAPAVERACEAE
4b. Flowers regular; ovary with many ovules; fruit a capsule; leaves entire, fleshy.....	PORTULACACEAE
5a. Leaves opposite or whorled, not all radical.....	6
5b. Leaves alternate, sometimes all radical.....	11

6a. Leaves with stipules; herbs or shrublets.....	CARYOPHYLLACEAE
6b. Leaves without stipules.....	7
7a. Petals and stamens perigynous, arising on calyx tube.....	8
7b. Petals and stamens hypogynous or only slightly perigynous, not arising on calyx.....	9
8a. Ovary with 1 apical, pendulous ovule; fruit indehiscent, dry or fleshy; often heath-like.....	THYMELAEACEAE
8b. Ovary with many ovules on a basal or free-central placenta; stamens twice as many as petals or fewer; herbs, shrubs or trees.....	LYTHRACEAE
9a. Herbs; ovary with 1 – many ovules on a basal or free-central placenta; fruit a capsule.....	CARYOPHYLLACEAE
9b. Trees or shrubs; ovary with 1 or 2 ovules; fruit drupaceous; stamens as many as and alternating with petals.....	10
10a. Ovule 1; styles 3, free or united at base; flowers unisexual; plants dioecious or polygamous.....	ANACARDIACEAE
10b. Ovules 2 – 8; style 1 or stigma sessile; flowers bisexual.....	CELASTRACEAE
11a. Leaves compound with 3 or more leaflets; trees or shrubs, sometimes climbing.....	12
11b. Leaves simple or 1-foliolate.....	13
12a. Leaves 2-pinnate; flowers bisexual; fruit winged, indehiscent.....	FABACEAE
12b. Leaves 1-pinnate or 3-foliolate; flowers unisexual; plants polygamous or dioecious; fruit drupaceous.....	ANACARDIACEAE
13a. Ovary with 1 ovule.....	14
13b. Ovary with 2 or more ovules.....	18
14a. Flowers irregular; the inner 2 sepals larger than the others, the lowest (median) petal forming a keel, the upper 2 petals vestigial or absent; fruit long-winged, indehiscent; trees or shrubs, sometimes climbing.....	POLYGALACEAE
14b. Flowers regular; fruit unwinged, but sometimes surrounded by persistent wing-like sepals.....	15
15a. Leaves with stipules; stamens as many as petals; herbs.....	CARYOPHYLLACEAE
15b. Leaves without stipules.....	16
16a. Sepals united into an elongated tube; stamens mostly twice as many as petals, arising on calyx tube; shrubs, sometimes heath-like.....	THYMELAEACEAE
16b. Sepals free or almost so; calyx sometimes reduced to a rim.....	17
17a. Stamens united into a synandrium; leaf blade peltate or subpeltate; woody, dioecious climbers.....	MENISPERMACEAE
17b. Stamens free or almost so; leaf blade not peltate; stamens 1 – 10; trees or shrubs.....	ANACARDIACEAE
18a. Anthers opening by 2 upcurving valves; shrubs with 3-partite spines at the nodes; fruit a berry.....	BERBERIDACEAE

18b. Anthers opening by longitudinal slits; combination of characters not as above.....	19
19a. Leaves with stipules.....	20
19b. Leaves without stipules; trees or shrubs.....	21
20a. Stamens as many as and opposite petals; stamens with filaments united into a tube; subshrubs or shrublets with stellate.....	MALVACEAE
20b. Stamens more numerous than petals, free; petals and stamens perigynous, arising at mouth of calyx tube.....	ROSACEAE
21a. Petals imbricate; stamens as many as and opposite petals.....	PRIMULACEAE
21b. Petals valvate; stamens as many as and opposite petals or up to twice as many or reduced to 3 and accompanied by staminodes.....	OLACACEAE
22a. Stamens opposite to and usually as many as petals.....	23
22b. Stamens, at least those of inner whorl, alternating with petals, as many as or more numerous or fewer than petals.....	26
23a. Filaments united into a tube or cup, alternating with staminodes; calyx lobes valvate; herbs or shrubs, often with stellate hairs.....	MALVACEAE
23b. Filaments connate only at base or quite free, not alternating with staminodes or staminodes absent; stellate hairs present or absent.....	24
24a. Ovary with few to many ovules in each locule; fruit a loculicidal capsule; flowers in mainly terminal panicles; stipules often foliaceous, rarely absent; flowers bisexual; styles 5, rarely.....	MALVACEAE
24b. Ovary with 1 or 2 ovules in each locule; fruit drupaceous or baccate.....	25
25a. Inflorescences leaf-opposed; herbaceous or woody plants, often climbing with tendrils; leaves simple (often lobed or divided) or digitate; ovules 2 in each locule; fruit a berry.....	VITACEAE
25b. Inflorescences axillary; trees or shrubs, often spiny, without tendrils; leaves simple, undivided; ovules 1 in each locule; fruit drupaceous.....	RHAMNACEAE
26a. Leaves compound, with 2 or more leaflets.....	27
26b. Leaves simple or 1-foliolate, sometimes deeply divided.....	39
27a. Inflorescences bearing tendrils; climbing shrubs or herbs; leaves pinnate or 2-ternate.....	SAPINDACEAE
27b. Inflorescences without tendrils.....	28
28a. Herbs; stamens mostly twice as many as petals, sometimes as many as petals.....	29
28b. Trees or shrubs, sometimes climbing.....	30
29a. Style simple or stigma sessile; leaves mostly opposite, rarely alternate, 2- or 3-foliolate or pinnate.....	ZYGOPHYLLACEAE
29b. Styles 5, rarely fewer; leaves alternate or radical, digitately or pinnately compound.....	OXALIDACEAE
30a. Anthers 1-theous; leaves digitate, 3 – 9-foliolate; stamens 10 or more, filaments united below.....	MALVACEAE

30b. Anthers 2-theous; leaves pinnate or 2-pinnate or 2- or 3-foliolate.....	31
31a. Leaves opposite or subopposite; Leaves imparipinnate or 3-foliolate, dotted with pellucid glands, at least at margin; fruit baccate or separating into 2 – 4 mericarps.....	RUTACEAE
31b. Leaves alternate.....	32
32a. Filaments united into a tube; leaves pinnate or 2-pinnate.....	MELIACEAE
32b. Filaments free or only shortly united at base.....	33
33a. Leaflets dotted with pellucid glands; leaves pinnate or 3-foliolate.....	RUTACEAE
33b. Leaflets without pellucid glands.....	34
34a. Ovary with 2 or more ovules in each locule.....	35
34b. Ovary with 1 ovule in each locule.....	36
35a. Ovules many in each locule; styles 5; fruit baccate; leaves pinnate.....	OXALIDACEAE
35b. Ovules 2 in each locule; fruit drupaceous; plants resinous.....	BURSERACEAE
36a. Styles 3 – 5, free and separated at base.....	37
36b. Style or styles central or terminal, not separated at base; fruit a drupe or capsule, sometimes bladderly or winged, if separating into carpels suspended from a central axis then carpels 4 or 8.....	38
37a. Carpels almost free, joined only at the base; young stems and leaves ferruginous-pubescent or tomentose.....	SIMAROUBACEAE
37b. Carpels fused except for the styles.....	ANACARDIACEAE
38a. Ovules erect or ascending; leaves paripinnate or 2-pinnate or 2- or 3-foliolate.....	SAPINDACEAE
38b. Ovules pendulous; leaves imparipinnate; branches unarmed or with prickles; fruit a berry or of separate drupaceous mericarps.....	SIMAROUBACEAE
39a. Perianth irregular; sepals 3 or 5, the median one extended into a hollow nectariferous spur or sac; Leaves basifixed; petals 3; stamens 5.....	BALSAMINACEAE
39b. Perianth regular or slightly irregular, not spurred.....	40
40a. Leaves opposite or whorled, not all radical.....	41
40b. Leaves alternate or fascicled, sometimes all radical.....	53
41a. Stamens more than twice as many as petals.....	42
41b. Stamens up to twice as many as petals.....	44
42a. Leaves with stipules.....	43
42b. Leaves without stipules; sepals free; stamens and petals hypogynous; filaments irregularly arranged or united into bundles; styles 1 – 5 or absent; leaves usually dotted or streaked with pellucid or opaque glands; trees, shrubs or herbs.....	CLUSIACEAE
43a. Trees or shrubs; stipules interpetiolar; petals fringed at apex; stamens 15 – 45, filaments not united into bundles.....	RHIZOPHORACEAE
43b. Herbs; stipules not interpetiolar; petals not fringed; stamens 15, filaments united below into 5 bundles.....	GERANIACEAE
44a. Sepals united below into a tube.....	45

44b. Sepals free or almost so.....	48
45a. Petals perigynous, arising at mouth of calyx tube; ovary with many ovules in each locule.....	46
45b. Petals hypogynous, not arising on calyx tube; ovary with 1 – 3 ovules per locule.....	47
46a. Anthers opening by apical pores; connective often appendaged below anther; leaves with 3 or more parallel longitudinal nerves; herbs or shrubs.....	MELASTOMATACEAE
46b. Anthers opening by longitudinal slits; connective unappendaged; leaves without parallel longitudinal nerves; herbs, shrubs or trees.....	LYTHRACEAE
47a. Succulent annuals.....	ZYGOPHYLLACEAE
47b. Trees or shrubs; Stamens twice as many as petals; leaves with interpetiolar stipules; petals fringed at apex; plants not spiny.....	RHIZOPHORACEAE
48a. Ovary with 1 ovule in each fertile locule (sometimes 1 or 2 of the locules empty); stamens twice as many as petals; fruit winged; shrubs, often climbing.....	MALPIGHIACEAE
48b. Ovary with 2 or more ovules in each locule.....	49
49a. Leaves lobed or deeply divided; ovary beaked; herbs or shrublets.....	GERANIACEAE
49b. Leaves not lobed or divided; ovary without a stout central axis.....	50
50a. Styles 3 – 5; Ovary with 2 ovules in each locule; sepals toothed or lobed at apex; leaves without stipules.....	LINACEAE
50b. Style 1.....	51
51a. Herbs or subshrubs; leaves succulent or glaucous.....	ZYGOPHYLLACEAE
51b. Trees or shrubs, sometimes climbing; Stamens as many as or fewer than petals.....	52
52a. Stamens as many as petals, alternating with petaloid staminodes; leaves dotted with pellucid glands.....	RUTACEAE
52b. Stamens as many as or fewer than petals, not alternating with staminodes; leaves without translucent glands.....	CELASTRACEAE
53a. Ovary with 1 ovule in each fertile locule.....	54
53b. Ovary with 2 or more ovules in each locule.....	62
54a. Flowers unisexual or plants polygamous.....	55
54b. Flowers bisexual.....	58
55a. Ovary of 1 – 6 free carpels; fruit of separate follicles, each with 1 large seed.....	MALVACEAE
55b. Ovary of fused carpels.....	56
56a. Ovary 2-locular with 1(2) pendulous ovules per locule; stigma large, sessile; fruit a 2-valved capsule, each valve prolonged by 2 foliaceous wings.....	MALVACEAE
56b. Combination of characters not as above.....	57

57a. Leaves with or without stipules; stipules sometimes spiny; inflorescences basically cymose, sometimes flowers in cyathia; fruit often a 3-lobed capsule dehiscently into 3 bivalved cocci.....	EUPHORBIACEAE
57b. Leaves without stipules, or stipules small, never spiny; plants not succulent; latex absent; flowers in racemes, narrow panicles or fascicles; fruit a drupe or capsule, sometimes bladderly or winged.....	SAPINDACEAE
58a. Anthers 1-theous; stamens many, filaments united into a tube around the style; sepals valvate, with or without an epicalyx; plants often with stellate hairs.....	MALVACEAE
58b. Anthers 2-theous.....	59
59a. Styles 2 or more, sometimes fused towards base.....	60
59b. Style 1.....	61
60a. Herbs or low subshrubs; fruit of 2 hemispherical mericarps, often with a rough surface.....	MOLLUGINACEAE
60b. Trees, shrubs or perennial scramblers; fruit a drupe or separating into 2 or 3 broadly winged mericarps; perennial scramblers, rarely shrubs with medifixed unicellular hairs; fruit separating into 2 (3) broadly winged mericarps.....	MALPIGHIACEAE
61a. Herbs or subshrubs; sepals and petals 4; stamens 6, tetradynamous (inner 4 long, outer 2 short); fruit an indehiscent, dehiscent or splitting capsule.....	BRASSICACEAE
61b. Trees, shrubs or rhizomatous subshrubs; sepals and petals usually 5; stamens mostly more than 6; petals and stamens hypogynous; ovary free from calyx; Carpels free.....	MALVACEAE
62a. Stamens as many as or fewer than petals; Ovules 2 in each locule.....	63
62b. Stamens more numerous than petals.....	67
63a. Ovary 5-locular.....	64
63b. Ovary 2 – 4-locular; petals not 2-lobed.....	66
64a. Petals imbricate; leaves lobed or divided; ovary and fruit beaked; herbs or shrublets.....	GERANIACEAE
64b. Petals contorted; leaves simple, entire; ovary and fruit without a stout central axis.....	65
65a. Herbs; petals not persistent; styles 5.....	LINACEAE
65b. Trees or shrubs; petals persistent; style 1.....	IXONANTHACEAE
66a. Flowers unisexual; styles 2 or 3, free or united at base, often lobed or branched.....	EUPHORBIACEAE
66b. Flowers bisexual; style 1.....	CELASTRACEAE
67a. Leaves without stipules, or stipules minute and early caducous.....	68
67b. Leaves with stipules.....	75
68a. Filaments united into a tube.....	MELIACEAE
68b. Filaments free or united only at base.....	69
69a. Leaves dotted with translucent glands.....	RUTACEAE
69b. Leaves without translucent glands.....	70
70a. Herbs with tubers or a woody rootstock.....	OXALIDACEAE

70b. Trees, shrubs, or climbers; petals 4 or 5 (6); stamens fewer than 20, or if more, then aggregated into fascicles or clusters.....	71
71a. Trees or shrubs, secreting resin; bark often peeling or flaking; stamens 8 (4), arising on a disc; ovary 2-locular with 2 ovules per locule.....	BURSERACEAE
71b. Trees, shrubs or woody climbers without resin and without peeling bark.....	72
72a. Stamens many or 10 to numerous.....	73
72b. Stamens twice, sometimes equal in number to corolla lobes.....	STYRACACEAE
73a. Ovary inferior to half inferior.....	SYMPLOCACEAE
73b. Ovary superior.....	74
74a. styles as many as carpels, generally persistent.....	ACTINIDIACEAE
74b. Styles 5 or 6, free with papillose stigmas.....	THEACEAE
75a. Sepals imbricate; plants without stellate hairs; ovary 5-locular with 2 ovules in each locule.....	76
75b. Sepals valvate; plants often with stellate hairs; Filaments free or united into a tube or into groups of 2 or 3; trees, shrubs or herbs; Anthers 2-theous or 1-theous.....	MALVACEAE
76a. Petals imbricate; ovary beaked, with a 5-branched style; herbs or shrublets.....	GERANIACEAE
76b. Petals contorted; ovary without a stout central axis, with 5 free styles; trees or shrubs, sometimes climbing.....	LINACEAE

GROUP 9 (*Ovary superior; petals united*)

1a. Ovary 1-locular, sometimes septate towards base.....	2
1b. Ovary 2- or more-locular.....	10
2a. Flowers unisexual; plants dioecious; male flowers with united petals, female flowers with 1 – 4 free petals; stamens united into a synandrium; leaf blades peltate or subpeltate; woody climbers.....	MENISPERMACEAE
2b. Flowers bisexual; stamens free or with united filaments.....	3
3a. Ovary with 1 ovule.....	4
3b. Ovary with 2 or more ovules.....	6
4a. Flowers irregular, papilionaceous, lowermost 2 petals united and forming a keel; stamens 10, diadelphous: uppermost 1 free, other 9 with united filaments; herbs.....	FABACEAE
4b. Flowers regular; stamens not diadelphous.....	5
5a. Sepals 2; petals united only near base; succulent twining herbs or stout shrubs; leaves opposite.....	PORTULACACEAE
5b. Sepals more than 2; Stamens arising on elongated calyx tube, usually twice as many as calyx lobes; corolla ring-like; shrubs, sometimes climbing.....	THYMELAEACEAE
6a. Stamens fewer than petals; corolla only slightly irregular, tube not spurred; leaves undivided, without bladders.....	SCROPHULARIACEAE
6b. Stamens as many as petals; flowers regular or almost so.....	7

7a. Stamens opposite petals; trees, shrubs, lianes or herbs; fruit indehiscent; leaves opposite or alternate	PRIMULACEAE
7b. Stamens alternating with petals; trees or shrubs.....	8
8a. Leaves opposite; shrubs or woody climbers with milky sap.....	APOCYNACEAE
8b. Leaves alternate; stamens 5 or 10 or more; ovules 2 or 10 or more.....	9
9a. Trees, shrubs or lianas; sepals (3) 4 or 5; stamens 5; fruit a drupe.....	ICACINACEAE
9b. Subshrubs or perennial herbs, often with fleshy leaves; sepals 2; stamens 10 or more; fruit a chartaceous capsule.....	PORTULACACEAE
10a. Petals 10 or more; style 1; trees or shrubs, sometimes climbing; stamens mostly fewer than 20; petals opening regularly in 1 – 3 whorls.....	11
10b. Petals fewer than 10.....	12
11a. Petals in 2 or 3 whorls, imbricate; stamens twice as many as inner petals, or as many as and opposite inner petals and alternating with staminodes; ovary with 1 ovule in each locule; leaves alternate.....	SAPOTACEAE
11b. Petals in 1 whorl, imbricate; stamens 2; ovary with 4 or 5 ovules in each locule.....	OLEACEAE
12a. Stamens more numerous than petals.....	13
12b. Stamens as many as or fewer than petals.....	15
13a. Leaves with stipules, often digitate or palmately lobed; flowers unisexual; trees, shrubs or herbs.....	EUPHORBIAEAE
13b. Leaves without stipules or stipules minute and early caducous.....	14
14a. Flowers irregular, lowest petal forming a keel; filaments united into a sheath split on upper side; ovary 2-locular with 1 ovule in each locule; herbs or shrubs.....	POLYGALACEAE
14b. Flowers regular; filaments not united into a sheath but sometimes united at base; trees or shrubs; ovary with 1 or 2 ovules in each locule; fruit indehiscent, baccate; flowers bisexual or unisexual.....	EBENACEAE
15a. Stamens fewer than petals: 2 – 4.....	16
15b. Stamens as many as petals: 4 or more.....	23
16a. Ovary with more than 4 ovules in each locule; flowers mostly irregular.....	17
16b. Ovary with 1 – 4 ovules in each locule; stamens 4 or 2; peduncles not adnate to leaves	19
17a. Leaves pinnate, opposite or ternate; stamens 4; fruit a loculicidal capsule with winged seeds; trees or shrubs, sometimes climbing.....	BIGNONIAEAE
17b. Leaves simple, sometimes deeply divided or reduced to scales; ovary 2-locular.....	18
18a. Ovules arranged in more than 2 series on each placenta; stamens 4 or 2; fruit a capsule or sometimes a berry, seeds not borne on hardened hook-like funicles; leaves	

alternate or opposite or whorled, sometimes reduced to scales; herbs or shrubs or sometimes trees.....	SCROPHULARIACEAE
18b. Ovules arranged in 1 or 2 series on each placenta; Fruit a club-shaped to ellipsoidal, loculicidally, often explosively dehiscent capsule, with seeds mostly borne on hard, hygroscopic, hook-like funicles; leaves opposite, mostly entire; herbs, shrubs or small trees.....	ACANTHACEAE
19a. Perianth regular; stamens 2; leaves opposite or sometimes ternate or alternate; trees or shrubs, sometimes climbing.....	OLEACEAE
19b. Perianth irregular.....	20
20a. Ovary deeply 4-lobed, style gynobasic; leaves simple, opposite or whorled or sometimes alternate; herbs or shrubs, often aromatic.....	LAMIACEAE
20b. Ovary not deeply 4-lobed, style not gynobasic.....	21
21a. Fruit a capsule, loculicidally dehiscent or sometimes failing to dehisce; seeds often borne on hardened, hook-like funicles; ovary 2-locular with 2 – 4 ovules in each locule; herbs or shrubs with opposite, simple leaves.....	ACANTHACEAE
21b. Fruit separating into 2 or more pyrenes or cocci or a capsule, but then seeds not borne on hardened hook-like funicles; flowers grouped in inflorescences; fruit without spines or wings.....	22
22a. Anthers 1-theous; leaves mostly alternate, simple, narrow; ovary 2-locular with 1 apical, pendulous ovule in each locule; herbs or shrubs.....	SCROPHULARIACEAE
22b. Anthers 2-theous; sometimes confluent; ovary 2 – 4 (8)-locular with 1 basal or axile ovule in each locule; leaves opposite or whorled, simple, sometimes lobed or dissected.....	VERBENACEAE
23a. Leaves absent or reduced to scales.....	24
23b. Leaves present, well-developed.....	25
24a. Slender, twining, parasitic plants; ovary with 2 ovules in each locule; fruit a capsule; corolla with or without infrastaminal scales.....	CONVOLVULACEAE
24b. Shrubs or succulent plants, not parasitic; ovary with many ovules in each locule; fruit formed of 2 separate follicular carpels (or 1 by abortion); flowers with corona.....	APOCYNACEAE
25a. Stamens opposite petals, sometimes with staminodes; trees or shrubs with alternate leaves.....	26
25b. Stamens alternating with petals, sometimes partly connate.....	27
26a. Leaves simple, entire; corolla lobes imbricate; stamens sometimes alternating with staminodes.....	SAPOTACEAE
26b. Leaves 2-pinnate; corolla lobes valvate; stamens not accompanied by staminodes, filaments united into a tube.....	VITACEAE
27a. Leaves opposite or whorled, sometimes in opposite or subopposite fascicles on small cushions, not all radical; Stamens arising on corolla tube or variously joined with gynoecium.....	28
27b. Leaves alternate, sometimes all radical.....	34
28a. Petals imbricate in bud.....	29

28b. Petals contorted or valvate; often with milky latex; flowers often with corona.....	APOCYNACEAE
29a. Ovary with 1 or 2 ovules in each locule; fruit drupaceous, or separating into pyrenes or nutlets or a loculicidal capsule.....	30
29b. Ovary with several to many ovules in each locule; fruit a septicidal capsule, sometimes a berry.....	32
30a. Petals and stamens 4 or 5.....	31
30b. Petals and stamens 5; herbs, often with bulbous-based hairs; fruit drupaceous or separating into pyrenes or nutlets; flowers all similar.....	BORAGINACEAE
31a. Shrubs or trees, sometimes climbing shrubs, rarely herbs; Flowers in cymes, these often grouped into thyrses.....	VERBENACEAE
31b. Trees, shrubs, woody climbers, or herbs, sometimes epiphytic; Inflorescences terminal or axillary, racemose, cymose, spicate, or thyrses.....	LOGANIACEAE
32a. Petals and stamens 5 or more; leaves pinnately compound, or simple and then rigid spiny shrubs with solitary or paired flowers.....	BIGNONIACEAE
32b. Petals and stamens 4; herbs, subshrubs, shrubs or trees, not spiny, and if shrubs, flowers not solitary or paired.....	33
33a. Herbs; flowers solitary or paired in leaf axils.....	SCROPHULARIACEAE
33b. Trees, shrubs or subshrubs; flowers in cymes, racemes or panicles.....	BUDDLEJACEAE
34a. Ovary with more than 2 ovules in each locule.....	35
34b. Ovary with 1 or 2 ovules in each locule.....	39
35a. Petals contorted; fruit formed of 2 follicular mericarps; shrubs or trees.....	APOCYNACEAE
35b. Petals not contorted; fruit a capsule or berry.....	36
36a. Styles 2; fruit a capsule; herbs.....	HYDROLEACEAE
36b. Style 1.....	37
37a. Petals plicate or valvate; herbs, shrubs or trees.....	SOLANACEAE
37b. Petals imbricate.....	38
38a. Fruit a capsule with winged seeds; leaves simple or 3-foliolate; spiny shrubs.....	BIGNONIACEAE
38b. Fruit a berry or capsule, seeds unwinged; leaves simple; herbs or spiny shrubs.....	SOLANACEAE
39a. Filaments united into a sheath split on upper side; flowers irregular, lowest (median) corolla lobe forming a keel; fruit drupaceous; shrubs or trees.....	POLYGALACEAE
39b. Filaments not united into a sheath.....	40
40a. Corolla tube split down front, with 4 lobes; anthers 1-theous; ovary 2-locular with 1 apical, pendulous ovule in each locule; herbs or shrublets with spicate flowers.....	SCROPHULARIACEAE
40b. Corolla tube not split; anthers 2-theous.....	41
41a. Style absent; stigma sessile; flowers unisexual; fruit a globose berry.....	AQUIFOLIACEAE

41b. Style(s) present, terminal or gynobasic; flowers bisexual; fruit a schizocarp or drupaceous or a capsule, rarely indehiscent.....	42
42a. Fruit a schizocarp of 4 (rarely 2) nutlets, or drupaceous with 4 (rarely 2) 1-seeded stones; petals imbricate or contorted in bud.....	BORAGINACEAE
42b. Fruit a capsule or indehiscent; petals convolute, folded and valvate in bud; plants often twining or trailing.....	CONVOLVULACEAE

GROUP 10 (*Ovary inferior; petals absent*)

1a. Parasitic plants: either low, fleshy, leafless and growing on roots of woody plants or shrublets growing on trees or shrubs.....	2
1b. Plants not parasitic.....	3
2a. Flowers unisexual, in many-flowered inflorescences; leaves scale-like; ovule 1.....	BALANOPHORACEAE
2b. Flowers usually bisexual, solitary, with a tubular 3- or 4 (5)-lobed perianth resembling a fungus.....	HYDNORACEAE
3a. Ovary 2- or more-locular.....	4
3b. Ovary 1-locular.....	11
4a. Flowers unisexual, in heads, cymes or panicles; leaves with stipules; stamens many; ovary with very many ovules in each locule; sepals petaloid; herbs, sometimes epiphytic, with alternate, often unequal-sided leaves.....	BEGONIACEAE
4b. Flowers bisexual, often solitary, less often in fascicles or clusters, cymes or rarely in spikes; leaves without stipules.....	7
7a. Leaves opposite; flowers solitary and sessile in axils of leaves; herbs.....	ONAGRACEAE
7b. Leaves alternate.....	8
8a. Trees, shrubs or woody climbers.....	9
8b. Herbs or shrubs; stamens, if many, without fused staminodes.....	10
9a. Trees; stamens and staminodes very many.....	LECYTHIDACEAE
9b. Shrubs or woody climbers; stamens 4 or 5.....	CAPRIFOLIACEAE
10a. Perianth fused into an S-shaped to straight tube; usually twining or scrambling herbs or shrubs; fruit a capsule.....	ARISTOLOCHIACEAE
10b. Perianth members free or fused only in the lower half; fruit a nut, often winged or spiny.....	AIZOACEAE
11a. Ovules 2 or more in the ovary; trees, shrubs woody climbers or herbs.....	12
11b. Ovule 1 in the ovary; trees, shrubs or subshrubs.....	13
12a. Inflorescence in racemes, spikes or heads; fruit indehiscent, often with 2 – 5 longitudinal wings.....	COMBRETACEAE
12b. Inflorescences crowded fascicles on long, leafy branches; fruit dehiscent; wings absent.....	DATISCEAE
13a. Leaves opposite; perianth tube deeply urn-shaped; anthers opening by 2 valves.....	LAURACEAE
13b. Leaves mostly alternate.....	14

- 14a. Flowers unisexual, small, enclosed in a syconium or 'fig', or implanted on a flat to top-shaped receptacle, in globose heads or catkins; often with milky or watery latex.....**MORACEAE**
- 14b. Flowers bisexual or unisexual, cymose in axils of upper leaves; latex absent; fruit a bony nut with long wings.....**HERNANDIACEAE**

GROUP 11 (*Ovary inferior; petals free*)

- 1a. Parasitic shrubs growing on other shrubs or trees; stamens as many as and opposite petals and arising on them; leaves simple, entire, opposite or alternate, sometimes reduced to scales.....**LORANTHACEAE**
- 1b. Plants not parasitic; ovule or ovules clearly distinguishable within ovary.....2
- 2a. Ovary 1 or 1 – 6-locular.....3
- 2b. Ovary 2- or more-locular.....7
- 3a. Trees or shrubs, sometimes climbing; style 1, unbranched.....4
- 3b. Herbs or subshrubs; styles or style branches 2 – 6; sepals 2, often deciduous; fruit a circumscissile capsule.....**PORTULACACEAE**
- 4a. Leaves alternate or scattered; stamens 4 or 5; sepals, petals and stamens 4; flowers solitary, axillary.....**CELASTRACEAE**
- 4b. Leaves opposite, rarely alternate; stamens as many as calyx lobes or more than 5.....5
- 5a. Leaves opposite; fruit dehiscent or indehiscent, globose capsule or berry.....6
- 5b. Leaves opposite, subopposite, whorled, spiraled, or alternate; fruit usually indehiscent, dry or sometimes fleshy, often variously winged or ridged.....**COMBRETACEAE**
- 6a. Ovary superior or inferior, 2 – 4-carpelled.....**CRYPTERONIACEAE**
- 6b. Ovary commonly inferior or semi-inferior.....**MELASTOMATAACEAE**
- 7a. Ovule 1 in each locule.....8
- 7b. Ovules 2 or more in each locule.....13
- 8a. Stamens twice as many as petals; herbs; petals 2 – 4; stamens 4 – 8; flowers conspicuous with 4 usually sharply clawed petals.....**ONAGRACEAE**
- 8b. Stamens as many as petals.....9
- 9a. Stamens opposite petals; shrubs, often climbing with tendrils; fruit often separating into cocci, sometimes winged.....**RHAMNACEAE**
- 9b. Stamens alternating with petals; plants without tendrils.....10
- 10a. Flowers solitary in axils of leaves; floating aquatic herbs; leaves alternate, rosulate, with inflated petiole; fruit large, indehiscent, with hard endocarp and armed with 2 or 4 horns.....**LYTHRACEAE**
- 10b. Flowers grouped in inflorescences; plants not aquatic.....11
- 11a. Fruit separating into 2 cocci; herbs, sometimes arborescent; flowers in simple or compound umbels, sometimes capitate; leaves often much divided or compound.....**APIACEAE**
- 11b. Fruit drupaceous or capsular, not separating into cocci; trees or shrubs.....12

12a. Leaves pinnate or digitate or palmately divided; flowers in umbels or racemes or spikes; fruit drupaceous.....	ARALIACEAE
12b. Leaves simple, undivided; petals and stamens 4; fruit a drupe; leaves opposite, entire or toothed; flowers bisexual or unisexual, in panicles or umbel-like cymes.....	CORNACEAE
13a. Leaves alternate.....	14
13b. Leaves opposite; stamens twice as many as petals or more numerous; petals not alternating with scales.....	18
14a. Leaves with stipules, often unequal-sided; flowers unisexual; plants monoecious; stamens many; ovules very many in each locule; herbs, sometimes epiphytic.....	BEGONIACEAE
14b. Leaves without stipules; styles 1 or 2.....	15
15a. Styles 2; flowers unisexual or both bisexual and unisexual on same plant, in axillary panicles; stamens as many as petals; ovary 2-locular; shrubs.....	ESCALLONIACEAE
15b. Style 1, with an entire or lobed stigma; flowers bisexual or sometimes both bisexual and unisexual on same plant; fruit a capsule.....	16
16a. Stamens as many or twice as many as petals; herbs or shrubs, sometimes aquatic; flowers bisexual.....	ONAGRACEAE
16b. Stamens many, more than twice as many as petals; fruit a berry or drupe.....	17
17a. Flowers solitary or paired in axils of leaves; ovary 2-locular; leaves gland-dotted; shrublets.....	MYRTACEAE
17b. Flowers in terminal racemes; ovary 4-locular; leaves not gland-dotted; mangroves.....	LECYTHIDACEAE
18a. Stamens many, more than twice as many as petals; trees or shrubs with gland-dotted leaves; stipules absent or very small.....	MYRTACEAE
18b. Stamens twice as many as petals, if more, then interpetiolar stipules present or a scar line if they have fallen.....	19
19a. Leaves with interpetiolar stipules; ovules 2 in each locule; viviparous mangroves, or forest trees or shrubs.....	RHIZOPHORACEAE
19b. Leaves without stipules or stipules much reduced; ovules many in each locule; plants not viviparous.....	20
20a. Anthers opening by an apical pore; connective often appendaged below anther; leaves with 3 or more parallel, longitudinal nerves; seeds without tuft of hairs; herbs or shrubs or small trees.....	MELASTOMATACEAE
20b. Anthers opening by longitudinal slits; connective unappendaged; leaves without parallel, longitudinal nerves; seeds often with an apical tuft of hairs; herbs.....	ONAGRACEAE

GROUP 12 (*Ovary inferior; petals united*)

- 1a. Parasitic shrubs growing on other shrubs or trees; ovules scarcely distinguishable from surrounding tissue of ovary; calyx truncate or shortly lobed; stamens as many as and opposite corolla lobes and arising on them; leaves simple, entire, opposite or alternate, sometimes ternate.....**LORANTHACEAE**
- 1b. Plants not parasitic; ovule or ovules clearly distinguishable within ovary.....2
- 2a. Ovary 1-locular.....3
- 2b. Ovary 2- or more-locular.....5
- 3a. Ovule 1; flowers regular or irregular, in involucrate heads; fruit indehiscent, often crowned by persistent calyx forming a pappus of bristles or scales; Anthers united into tube surrounding style; ovule erect from base of ovary; herbs, shrubs or trees; corolla of outer (ray) flowers often differing from that of inner flowers.....**ASTERACEAE**
- 3b. Ovules many; flowers regular, not in involucrate heads.....4
- 4a. Calyx composed of 2 often deciduous sepals; fruit a circumscissile capsule; stamens as many as and alternating with corolla lobes or more numerous; herbs.....**PORTULACACEAE**
- 4b. Calyx 4- or 5-lobed; fruit not circumscissile; stamens as many as and opposite corolla lobes; herbs; flowers in terminal racemes; fruit a 5-valved cap.....**PRIMULACEAE**
- 5a. Petals united into a deciduous mass (calyptra); stamens very many; trees or shrubs with gland-dotted leaves.....**MYRTACEAE**
- 5b. Petals more or less united into a tube, not into a deciduous mass; stamens not more than twice as many as corolla lobes; ovary 2- or more-locular, usually without empty locules.....6
- 6a. Trailing or climbing herbs or shrubs often with tendrils; flowers unisexual; stamens 3 – 5, anthers sometimes curved or flexuous or folded; leaves often palmately or pedately lobed or deeply divided.....**CUCURBITACEAE**
- 6b. Plants without tendrils; flowers bisexual or sometimes unisexual.....7
- 7a. Leaves opposite or whorled, with interpetiolar or intrapetiolar stipules and entire margin; trees, shrubs or herbs, sometimes climbing.....**RUBIACEAE**
- 7b. Leaves alternate or opposite, or spirally imbricate, without stipules, sometimes reduced to scales; stamens as many as corolla lobes; fruit a drupe; ovary with 2 or more ovules in each locule; flowers regular; petals bifid or bilobed.....**DICHAPETALACEAE**

KEY TO MONOCOTYLEDONS

- 1a. Flowers white or otherwise brightly coloured; perianth wholly or partly petal-like.....2
- 1b. Flowers with perianth absent or papery, glumaceous to hyaline or sometimes herbaceous, or reduced to hairs or scales; land plants, sometimes rooting in water.....3
- 2a. Ovary superior.....**Group 1**
- 2b. Ovary inferior or half-inferior.....**Group 2**
- 3a. Flowers arranged in small spikes (spikelets) subtended or enclosed by bracts; grasses or grass-like plants.....**Group 3**
- 3b. Flowers not arranged in spikelets.....**Group 4**

GROUP 1 (*Flowers white or otherwise brightly coloured; perianth wholly or partly petal-like; ovary superior*)

- 1a. Aquatic or marsh herbs; perianth of 6 petal-like tepals in 2 whorls, blue, white or yellow; gynoecium with an ovary of 3 fused carpels.....**PONTEDERIACEAE**
- 1b. Land plants, sometimes rooting in water.....2
- 2a. Perianth composed of separate calyx and corolla, the calyx usually herbaceous; Style simple; ovary 2- or 3-locular; flowers in open to congested cymes, with conspicuous corolla often blue or yellow, often subtended by folded or boat-shaped bracts.....**COMMELINACEAE**
- 2b. Perianth composed of similar or subsimilar tepals, all petal-like.....3
- 3a. Fruit a fleshy berry or drupe; anthers dehiscing by longitudinal slits; rootstock a rhizome, bulb or tuber; leaves with 2 basal tendrils; flowers unisexual; plants dioecious.....**SMILACACEAE**
- 3b. Fruit a capsule.....4
- 4a. Flowers in umbels subtended by 2 spatheous bracts and borne on naked peduncles; plants usually smelling of onion or garlic; rootstock a bulb or rhizome.....**AMARYLLIDACEAE**
- 4b. Flowers in spikes or racemes; rootstock a corm or tuber; seeds glabrous, brown; flowers usually opposite the bracts**COLCHICACEAE**

GROUP 2 (*Flowers white or otherwise brightly coloured; perianth wholly or partly petal-like; ovary inferior or half-inferior*)

- 1a. Fertile stamens 5 (6) or 1, but then supported by and not fused to the style; leaves pseudopetiolate with a broad base, midrib prominent and secondary veins pinnate-parallel.....2
- 1b. Fertile stamens 3 (4) 6 or 1, but then fused to the style into a complex columnar structure; leaf venation never pinnate-parallel.....4
- 2a. Fertile stamen 1; outer tepals/sepals united into a tube; anther 2-theous; ovary 2- or 3-locular, usually with many ovules per locule.....3
- 2b. Fertile stamens 5(6); Flowers unisexual, upper 5 tepals fused below; leaves spirally arranged; stems not woody, drying after fruiting, sometimes suckering; fruit a banana with seeds embedded in pith.....**MUSACEAE**
- 3a. Leaves distichous, usually with open sheaths; aerial parts aromatic.....**ZINGIBERACEAE**
- 3b. Leaves spirally arranged, with closed sheaths; aerial parts not aromatic.....**COSTACEAE**
- 4a. Stamen 1, united with style into a column (gynostemium); pollen agglutinated into masses (pollinia); upper or lower median tepal often elaborated and spurred.....**ORCHIDACEAE**
- 4b. Stamens 3(4) or 6; pollen not agglutinated into masses.....5

5a. Flowers unisexual, in spikes or racemes; climbers with heart-shaped leaves.....**DIOSCOREACEAE**

5b. Flowers bisexual; leaves simple and undivided or sometimes absent; stamens 6 or 3, but then opposite inner tepals; inflorescence apparently an umbel (sometimes 1-flowered), subtended by 1 or more spathaceous bracts and borne on a naked scape; rootstock a bulb or rhizome.....**AMARYLLIDACEAE**

GROUP 3 (*Flowers (florets) arranged in small spikes (spikelets) subtended or enclosed by bracts; grasses and grass-like plants*)

1a. Leaves 2-ranked; leaf sheaths usually with free, overlapping margins; stems terete or compressed, usually with hollow internodes; style branches and stigmas usually 2, feathery; anthers deeply sagittate and therefore appearing dorsifixed.....**POACEAE**

1b. Leaves often 3-ranked, mostly crowded in a basal tuft; leaf sheaths usually closed; stems often 3-angled, with solid internodes; style branches and stigmas 2 or 3, not feathery; anthers basifixed.....**CYPERACEAE**

GROUP 4 (*Land plants, sometimes rooting in water; perianth glumaceous to hyaline, or sometimes herbaceous, or reduced to bristles or scales or absent*)

1a. Leaves pinnately or palmately compound; palms.....**ARECACEAE**

1b. Leaves simple.....2

2a. Palm-like dioecious trees with coriaceous, linear-ensiform leaves, often longer than 1 m, arising from apex of stem in 3 spiralling ranks.....**PANDANACEAE**

2b. Subshrubs, vines or herbs; inflorescence various, not as above.....3

3a. Ovary superior or subinferior.....**STEMONACEAE**

3b. Ovary superior.....4

4a. Inflorescence a dense fleshy spike (spadix) subtended by a conspicuous, variously coloured spathe.....5

4b. Inflorescence various, not a spadix; perianth segments dry and glumaceous to hyaline; leaves basal, cauline or reduced to sheaths; plants often rush-like; tufted herbs with radical leaves and small to minute flowers crowded in terminal, compact, head-like inflorescences borne on naked peduncles; flowers bisexual.....**JUNCACEAE**

5a. Stamen 2 – 8.....**ARACEAE**

5b. Stamens 6, in 2 whorls of 3, free.....**ACORACEAE**

SYSTEMATIC TREATMENT

1. NYMPHAEACEAE Salisb.

1a. Leaves and fruit not spinulose; petiole inserted near apex of prominent sinus; ovary semi inferior.....*Nymphae*

1b. Leaves and fruit spinulose; leaf blade centrally peltate, base only slightly indented; ovary inferior.....*Euryale*

Euryale Salisb.

E. ferox Salisb. in Ann. Bot. 2 (1): 74. 1805; Fu *et al.* in Fl. China 6: 118. 2001.

Vernacular Name: Nikori (A)

Aquatic herb. Submerged leaves not spiny; leaf blade sagittate or elliptic, 4 – 10 cm, deeply cordate at base. Floating leaves prickly on petioles; leaf blade to 1.3 – 2.7 m in diam., subleathery, abaxially pubescent, adaxially glabrous, emarginate or sinuate at base. Flower to 5 cm in diam. Peduncle densely prickly. Calyx triangular-vate, 1 – 1.5 cm, abaxially densely prickly. Corolla oblong-lanceolate, 1cm. Ovary 7 – 16-loculed, each locule with 6 – 8 or more ovules. Fruit dark purple, globose, 5 – 10 cm in diam., spongy, prickly. Seeds black, many, globose.

Flowering & Fruiting: June – December

Habitat: Lakes, ponds

Specimens Examined: Included after Dutt *et al.* 1974, D. 455, 14.

Distribution: India, Bangladesh, China, Japan, Kashmir, Korea, Russia

Note: This plant has edible and medicinal uses. The fruit is highly esteemed in China as a cooling tonic food. The seed is usually roasted and then eaten. It is also used as a source of starch. All parts of the plant are considered to be astringent, deobstruent and tonic. The seed is analgesic and aphrodisiac. It is taken internally in the treatment of chronic diarrhoea, vaginal discharge and kidney weakness (Li *et al.*, 2007; PFAF, 2010; Duke, 2010).

Threat status: Least Concern ver 3.1

Nymphaea L.

N. nouchali Burm.f., Fl. India 120. 1768; Deb, Fl. Tripura 2: 126. 1983. Fu *et al.* in Fl. China 6: 118. 2001. *Nymphaea stellata* Willd., Sp. Pl., ed. 4. 2 (2): 1153. 1799; Hook.f. & Thoms. in Hook.f., Fl. Brit. India 1: 114. 1872; Kanjilal *et al.*, Fl. Assam 1 (1): 64. 1934.

Vernacular Name: Blue water lily (E)

Rhizomes erect. Leaf blade elliptic-orbicular to orbicular, 7 – 15 cm in diam., papery, abaxially glabrous, cordate at base, margin subentire to deeply crenate. Flower slightly emergent, 3 – 15 cm in diam. Calyx lanceolate to oblong-lanceolate, 2.5 – 8 cm, persistent. Corolla 10 – 30-lobed, white-purple, blue or purple-red, linear-oblong to lanceolate, 4.5 – 5 cm, transition to stamens gradual. Carpels partially united. Stigma rays 10 – 30; carpellary appendages triangular-tapered. Fruit globose, 1.5 – 4.5 cm in diam. Seeds ellipsoid-globose.

Flowering & Fruiting: July – December

Habitat: Ponds

Specimens Examined: Included after Dutt *et al.* 1974, D. 382.

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

Note: It is used as ornamental plant (mostly from cultivated sources) and it has medicinal value. Lotus honey is very valuable in Ayusha (Indian) and Unanis (Islamic) system of therapeutics. It has antihepatotoxic and antidiabetic properties. It is also used as a vegetable in Lao PDR and Cambodia (Gupta, 2011).

Threat status: Least Concern ver 3.1

2. SAURURACEAE Rich. ex T.Lestib.

Houttuynia Thunb.

H. cordata Thunb., Kongl. Vetensk. Acad. Nya Handl. 4: 149 (152, t. 5). 1783; Kanjilal *et al.*, Fl. Assam 4: 31. 1940; Xia & Brach in Fl. China 4: 109. 1999.

Vernacular Name: Heart-leaved houttuynia, Chameleon Plant (E), Mosondari (A)

Herbs, 5 – 30 cm high. *Stipular sheath* 1 – 2.5 cm, usually ciliate; *petiole* 1 – 3.5 cm, glabrous; *leaf blade* broadly ovate or ovate-cordate, 4 – 10 × 2.5 – 6 cm, papery, cordate at base, shortly acuminate at apex. *Inflorescences* 1.5 – 2.5 cm × 5 – 6 mm; *peduncles* 1.5 – 3 cm, subglabrous; *involucral bracts* oblong or obovate, 10 – 15 × 5 – 7 mm. *Bract* linear, terete, inconspicuous. *Stamens* longer than ovary. *Fruit* a capsule 2 – 3 mm.

Flowering & Fruiting: April – October

Habitat: streamsides, forests, wet fields, slopes, roadsides; near sea level to 2500 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11754, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Japan (including Ryukyu Islands), Korea, Myanmar, Nepal, Sikkim, Thailand, introduced to Australia, New Zealand, some Pacific islands and North America

Note: It as an ornamental and groundcover. In many parts of its range it is grown as a salad crop or as a medicinal herb. The tender shoots and leaves are eaten raw or cooked. In Nepal, juice from the roots is used for treating indigestion and applied to the skin to treat wounds and skin diseases (Website: <http://www.kew.org/science-conservation/plants-fungi/houttuynia-cordata-heart-leaved-houttuynia>).

Threat status: Not Evaluated

3. PIPERACEAE Giseke.

Piper L.

1a. Climbers; leaf blade ovate-lanceolate or elliptic, 6 – 16 × 3 – 8 cm, acuminate at apex; bracts orbicular; stamens 2 – 4.....*P. thomsonii*

1b. Woody climbers; leaf blade ovate-oblong, 10 – 15 × 5 – 9 cm, acute at apex; bracts spatulate-oblong; stamens 2.....*P. nigrum*

P. nigrum L., Sp. Pl. 1: 28. 1753; Kanjilal *et al.*, Fl. Assam 4: 37. 1940; Tseng *et al.* in Fl. China 4: 115. 1999.

Vernacular Name: Black pepper (E), Kali mirch (H), Jaluk (A)

Woody climbers. *Petiole* 1 – 2 cm, glabrous; *leaf blade* ovate-oblong, 10 – 15 × 5 – 9 cm, thick, glabrous, rounded or usually slightly oblique at base, acute at apex. *Flowers* polygamous, usually monoecious. *Inflorescence* in spikes, leaf-opposed; *peduncle* almost equal to petioles, glabrous; *bracts* spatulate-oblong, *c.* 3 – 3.5 × 0.8 mm. *Stamens* 2; *filaments* short; *anthers* reniform. *Ovary* globose; *stigmas* 3 or 4. *Fruit* a drupe, red when matured, globose.

Flowering & Fruiting: June – October

Habitat: Widely cultivated, often in forest clearings

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11713 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, native to SE Asia

Note: *Piper nigrum* is popularly used as a hot and pungent spice for flavouring food. Black pepper is also used in traditional medicine, particularly for digestive ailments (Website: <http://www.kew.org/science-conservation/plants-fungi/piper-nigrum-black-pepper>).

Threat status: Not Evaluated

P. thomsonii (C. DC.) Hook.f., Fl. Brit. India 5 (13): 87. 1886; Kanjilal *et al.*, Fl. Assam 4: 36. 1940; Tseng *et al.* in Fl. China 4: 120. 1999. *Chavica thomsonii* C.DC. in Prodr. 16 (1): 389. 1869.

Vernacular Name: Not known

Climbers, 1 – 2 m long, dioecious. *Petiole* 1 – 2.5 cm; *leaf blade* ovate, ovate-lanceolate or elliptic, 6 – 16 × 3 – 8 cm, rounded or shallowly cordate at base, acuminate at apex. *Inflorescence* in spikes, leaf-opposed. *Male spikes* 3 – 5.5 cm × 1.7 – 2 mm, white; *peduncle* to 8 mm; *bracts* orbicular, 0.8 – 1 mm wide. *Stamens* 2 – 4; *filaments* short; *anthers* reniform. *Female spikes* cylindrical to globose, *c.* 1.5 cm; *peduncle* 4 – 10 mm; *bracts* same as male spikes. *Ovary* globose; *stigmas* 2. *Fruit* a drupe, globose.

Flowering & Fruiting: April – July

Habitat: Valley forests, on trees; 1300 – 2100 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, Near Bihara, 09.10.20, H. A. Barbhuiya 758 (ASSAM).

Distribution: India, Bhutan, China, N Vietnam

Note: Leaves chewed raw (Singh *et al.*, 2012).

Threat status: Not Evaluated

4. ARISTOLOCHIACEAE Juss.

Aristolochia L.

A. tagala Cham., *Linnaea* 7: 207. 1832; Kanjilal *et al.*, *Fl. Assam* 4: 28. 1940. *Aristolochia roxburghiana* Klotz. in *Monastb. Berl. Akad.* 596. 1859; Hook.f., *Fl. Brit. India* 5: 75. 1886.

Vernacular Name: Panpipuli, Belikol (A)

Twining *herbs*. *Stems* terete. *Petiole* 2.5 – 4 cm, glabrous; *leaf* ovate – cordate, 8 – 24 × 4 – 22 cm, papery, both surfaces glabrous, base extremely cordate, apex acute to acuminate. *Inflorescence* axillary, racemes, 2 – 6 cm. *Bracts* ovate-lanceolate, *c.* 8 mm. *Calyx* pale yellowish or greenish, throat dark purple, 4 – 6 cm; *corolla tube* rectilinear or slightly curved. *Anthers* ovoid, *c.* 1 mm. *Gynostemium* 6-lobed. *Capsule* obovoid-globose to ovoid-cylindric, 3.5 – 5 × 2 – 3.5 cm, dehiscent acrocorollaly.

Flowering & Fruiting: May – December

Habitat: Forests, mountain slopes

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Japan, Nepal, Malaysia, Myanmar, Philippines, Sikkim, Thailand, Vietnam

Note: The powdered roots are used as a tonic. The pounded leaves are applied to the head to treat fever (website: <http://tropical.theferns.info/viewtropical.php?id=Aristolochia%20tagala>).

Threat status: Not Evaluated

5. MYRISTICACEAE R.Br.

Horsfieldia Willd.

H. glabra (Blume) Warb. in *Ber. Deutsch. Bot. Ges.* 13 (Gen.): 83. 1896; Li & Wilson in *Fl. China* 7: 100. 2008. *Myristica amygdalina* Wall., *Pl. Asiat. Rar.* 1: 79, t. 90. 1830; Kanjilal *et al.* *Fl. Assam* 4: 43. 1940.

Vernacular Name: Not known

Trees, dioecious. *Leaves* distichous; *petioles* 1 – 2 cm; *leaf blade* narrowly elliptic or oblong-lanceolate, 9 – 23 × 2.5 – 7.5 cm, papery, attenuate to broadly cuneate at base, acute or acuminate at apex. *Male inflorescences* axillary, paniculate, 8 – 15 cm, nearly glabrous; *bracts* minute, pubescent. *Male flowers* clustered; *perianth* 2 – 3-lobed; *anthers* 8 – 15, free. *Female inflorescences* 3 – 6 cm, glabrous; *peduncles* stout. *Female flowers* ellipsoid, 2 – 3 mm; ovary ovoid, glabrous; *style* absent; *stigma* lobes rounded. *Fruit* orange, ellipsoid, 3 – 3.5 × 1.5 – 2.5 cm; pericarp fleshy. *Seeds* glossy, light reddish brown when dry, ovoid.

Flowering & Fruiting: December – May

Habitat: Dense forests on mountain slopes and in ravines, sparse hilly forests; 100 – 1200 m

*Specimen Examined:*Included after Kanjilal *et al.* 1940.

Distribution: India, Bangladesh, China, Laos, Myanmar, Thailand, Vietnam

Threat status: Not Evaluated

6. MAGNOLIACEAE Juss.

Magnolia L.

- 1a. Twigs glabrous; tepals 9 segments, fleshy; outer 3 tepals ovate, *c.* 9 cm; tepals of middle and inner whorls milky white; inner tepals smallest.....*M. hodgsonii*
1b. Twigs pubescent or glabrous.....2
2a. Twigs pubescent; petiole 1 – 2 cm long; tepals white.....*M. doltsopa*
2b. Twigs pubescent to glabrous; perianth 15 – 20.....3
3a. Flowers white or cream coloured; perianth *c.* 20, obovate-oblong, *c.* 7 × 4 cm across.....*M. baillonii*
3b. Flowers yellow; perianth 15 – 20, oblanceolate, 2 – 4 × 0.4 – 0.5 cm.....*M. champaca*

M. baillonii Pierre, Fl. Forest. Cochinch. 1: t. 2. 1880. *Paramichelia baillonii* (Pierre) Hu, Sunyatsenia 4: 144. 1940.

Vernacular Name: Not known

Trees. Young parts tomentose, glabrous when mature, stipular scars prominent on the branchlets. *Leaves* simple, alternate, lanceolate-elliptic or narrow ovate, 15 – 22 × 5 – 7 cm across, obtuse or rounded at base, margin entire, acute or shallow acuminate at apex, subcoriaceous, glabrous above. *Flowers* bisexual, solitary, white or cream colored, aromatic, *c.* 5 – 7 cm across, *petiole*. 1.5 – 3 cm long, *Perianth*. 20, obovate-oblong, truncate at apex, *c.* 7 × 4 cm across. *Stamens* numerous, about 7 – 8 mm long. *Gynoecium* obovoid or ellipsoid, *c.* 5 mm. *Carpel*. 30, elliptic-ovoid, compressed, densely tomentose. *Fruit* subcylindric *c.* 8 – 10 cm long.

Flowering & Fruiting: June – July

Habitat: Forest hills

*Specimen Examined:*Included after Dutt *et al.* 1974, D. 98

Distribution: India (Assam), native to South East Asia and occurs in China, Cambodia, Myanmar, Thailand, and Vietnam.

Note: It is used for timber. It is used for medicinal purposes in northern Thailand and India. It is possible to use for a variety of forest products, for example amenity plantings in community forestry, decay and insect resistant and fine-grained high-quality timber for construction, furniture, veneer and plywood industries and anti-tumour constituents from the bark for medicinal purposes (Li-Feng *et al.*, 2008).

Threat status: Least concern ver 3.1

M. champaca (L.) Baill. ex Pierre, Fl. Forest. Cochinch. 1: t. 3. 1880. *Michelia champaca* L., Sp. Pl. 1: 536. 1753; Xia *et al.* in Fl. China 7: 66. 2008.

Vernacular Name: Champa, Sundi (A)

Trees. Twigs forms a umbelliform crown. *Petiole* 2 – 4 cm; *leaf blade* elliptic or ovate, 10 – 20 × 4.5 – 10 cm, abaxially puberulous, cuneate or rounded at base, acuminate to subcaudate at apex. *Flowers* fragrant. *Tepals* 15 – 20, yellow, oblanceolate, 2 – 4 × 0.4 – 0.5 cm. *Staminal connective* exerted and forming a long tip. *Gynophorec.* 3 mm; *gynoecium* with trichomes. *Fruit* 7 – 15 cm; mature carpels obovoid-ellipsoid, 1 – 1.5 cm, tuberculate. *Seeds* 2 – 4 per carpel, rugose.

Flowering & Fruiting: June – October

Habitat: Evergreen broad-leaved forests; 200 – 1600 m

Specimens Examined: India, Assam, NC Hills dist., Jatinga, 11.05.1915, U. Kanjilal 328, Fl. (CAL).

Distribution: India, China, Indonesia, Malaysia, Myanmar, Nepal, Thailand, Vietnam.

Note: *Magnolia champaca* is best known for its strongly fragrant yellow or white flowers and is used as an ornamental tree and for urban landscaping. Its flowers are also used for perfume and worn as hair decoration and room decoration. The flowers from this tree are used to make the world's most expensive perfume 'Joy'. The leaves are eaten by silkworms. The wood is used as fuel and for making furniture, cabinet making and carvings. It is also used for making doors and windows, and general carpentry. It is also used for light construction. (Woodcarving.com online 2012).

Threat status: Least concern ver 3.1

M. doltsopa (Buch.-Ham. ex DC.) Figlar in Proc. Internat. Symp. Fam. Magnoliac. 1998. 21. 2000. *Michelia doltsopa* Buch.-Ham. ex DC., Syst. Nat. 1: 448. 1817. *Magnolia excelsa* Wall., Tent. Fl. Nepal. 1: 5, t. 2. 1824; Kanjilal *et al.*, Fl. Assam 1 (1): 26. 1934.

Vernacular Name: Temple Magnolia (E)

Evergreen *trees*, up to 30 m tall. Young twigs, buds, petioles pubescent. *Petiole* is 1 – 2 cm long. *Leaves* elliptic, oblong-elliptic or narrowly elliptic, 10 – 22 × 5 – 7 cm, broadly wedge-shaped or blunt at base, margin slightly incurled, acute at apex. *Tepals* white, narrowly obovate, 5 – 7 × 2.5 cm, clawed at base, rounded at tip. *Stamensc.* 1.2 – 1.7 cm long. *Fruitc.* 4 – 7 cm; mature carpels obovoid, 1.5 cm.

Flowering & Fruiting: January – May

Habitat: montane forests; 1,000 – 1,500 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 89.

Distribution: India (Assam), Eastern Himalayan region, Nepal, Bhutan, North Myanmar and China.

Note: It is used for its wood and timber (Khela, 2014).

Threat status: Data deficient

M. hodgsonii (Hook.f. & Thoms.) H. Keng in Gard. Bull. Singapore 31 (2): 129. 1978; Xia *et al.* in Fl. China 7: 66. 2008. *Talauma hodgsonii* Hook.f. & Thoms., Fl. India 1: 74. 1855; Kanjilal *et al.*, Fl. Assam 1 (1): 17. 1934.

Vernacular Name: Boramthuri (A)

Trees. Twigs glabrous. *Petiole* 5 – 6 cm; *leaf blade* obovate-oblong, 20 – 45 × 10 cm, leathery, cuneate at base, obtuse to acuminate at apex. *Peduncle* thick, 1.5 – 2 × c. 1.5 cm; *spathaceous bracts* present, purple. *Tepals* 9 segments, fleshy; outer 3 tepals ovate, c. 9 cm; tepals of middle and inner whorls milky white; inner tepals smallest. *Fruit* ovoid, 13 – 15 cm; carpels closely ellipsoid to ovoid, 2.5 – 4 cm.

Flowering & Fruiting: April – August

Habitat: forests; 800 – 1500 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 95.

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

Note: The wood of is not ideal for timber. This species is used for reforestation however specific details of this are unknown (Khela, 2014).

Threat status: Least concern ver 3.1

7. ANNONACEAE Juss.

- 1a. Fruit syncarpous, outer petals usually free, abaxially flat.....*Annona*
- 1b. Fruit apocarpous, with carpels forming free, often stipitate, monocarps.....2
- 2a. Sepals or inner petals and sometimes also outer petals clearly imbricate; stellate hairs often present; climbing shrubs.....*Uvaria*
- 2b. Sepals and inner and outer petal whorls all valvate or rarely very narrowly imbricate at tip only; simple hairs usually present.....3
- 3a. Climbing shrubs.....4
- 3b. Trees or erect shrubs.....5
- 4a. Monocarps ellipsoid, moniliform when more than 1-seeded; petals basally constricted to form enclosed floral chamber around stamens and carpels.....*Desmos*
- 4b. Monocarps globose to cylindric, never moniliform; outer petals only slightly larger than inner petals; stamen connectives apically acuminate to obtuse.....*Fissistigma*
- 5a. Petals (2 or) 3, in 1 whorl*Dasymaschalon*
- 5b. Petals 6, in 2 whorls.....6
- 6a. Inner petals basally clawed or stipitate.....8
- 6b. Inner petals not basally clawed, spreading or connivent.....7
- 7a. Stamen connectives apically acuminate; monocarps indehiscent, stipe not clavate; ovules 5 – 22 per carpel*Alphonsea*
- 7b. Stamen connectives apically truncate, rounded, or broadly 3-angular; monocarp bases extended into stipes, not articulate at base.....*Polyalthia*

- 8a. Stamens linear-oblong; inner petals each with a short claw or stipe.....*Goniothalamus*
 8b. Stamens many; connectives apically truncate.....9
 9a. Carpels 1 – 3, on a concave torus, oblong to cylindric.....*Cyathocalyx*
 9b. Carpels few to many, free.....*Mitrephora*

Alphonsea Hook.f. & Thomson

- 1a. Inflorescence short raceme or dense fascicles; carpels few.....*A. lutea*
 1b. Inflorescences solitary flowers or few flowered fascicles; carpels c. 10.....*A. ventricosa*

A. lutea Hook.f. & Thomson, Fl. India 1: 153. 1855; Kanjilal *et al.*, Fl. Assam 1 (1): 39. 1934.

Vernacular Name: Jong-mol-kung (Tipp)

Trees. Leaves simple, alternate, ovate-oblong to oblong-elliptic, 8 – 14 × 3 – 6 cm across, base obtuse or rounded, margin entire, apex acuminate or acute. *Inflorescence* short raceme. *Flowers* bisexual, in dense fascicles, *bracts* very small; *calyx* 3 lobed, connate; *corolla* 6 lobed, subequal, ovate, apex acute, thick, tomentose outside, glabrous inside, about 10 × 5 mm across. *Stamens* many, about 1.5 mm long. *Carpels* few oblong, c. 2.5 mm long, *stigma* sessile, capitate. *Fruit* globose or ovoid, obtuse.

Flowering & Fruiting: March – September

Habitat: along the foot hills

Specimens Examined: Included after Kanjilal *et al.* 1934.

Distribution: India (Arunachal Pradesh, Assam, Karnataka, Maharashtra, Odisha, Tamil Nadu), Myanmar, Sri Lanka

Note: Ripe fruits are edible.

Threat status: Not Evaluated

A. ventricosa Hook.f. & Thomson, Fl. India 1: 152. 1855; Kanjilal *et al.*, Fl. Assam 1 (1): 39. 1934.

Vernacular Name: Noga-kola (A)

Tall *trees.* Leaves alternate, simple, oblong to oblong-elliptic, acuminate, exstipulate, petiolate, margins entire. *Inflorescences* axillary, solitary flowers or few flowered fascicles, pedunculate; *bracteoles* present. *Flowers* greenish-white, bisexual, rarely unisexual; *calyx* persistent, 2 – 4 lobed, ovate or deltoid, basally connate; *corolla* 6 lobed in 2 unequal whorls or 6 – 15 lobed. *Stamens* 10 – 20 or numerous, hypogynous, spirally arranged. *Carpels* about 10; oblong, tapering to the apex, about 3 mm long; *stigma* subsessile, capitate. *Fruits* ovoid, pubescent.

Flowering & Fruiting: March – September

Habitat: along the foot hills

Specimens Examined: Included after Dutt *et al.* 1974, D. 205.

Distribution: India (Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Jharkhand, Meghalaya, Nagaland, Odisha, Tripura, West Bengal), Bangladesh

Note: Ripe fruits are edible.

Threat status: Not Evaluated

Annona L.

A. squamosa L., Sp. Pl. 1: 537. 1753; Hook. f. & Thoms. In Hook. f., Fl. Brit. India 1: 78. 1872; Kanjilal *et al.*, Fl. Assam 1 (1): 43. 1934; Deb, Fl. Tripura 1: 82. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 40. 2003; B. Li *et al.* in Fl. China 19: 711. 2011.

Vernacular Name: Sugar apple (E), Atlash kothal (A)

Small deciduous *trees*. *Branchlets* pubescent. *Leaf blade* elliptic-lanceolate to oblong, *c.* 5 – 17.5 × 2 – 7.5 cm, papery, apex acute to obtuse, base obtuse to rounded, lateral veins 8 – 15 pairs. *Inflorescences* fasciculate. *Flowers* yellow, axillary, *c.* 2 – 3 cm, puberulent. *Calyx* 3 lobed, triangular. *Corolla* 6 lobed, linear-oblong, fleshy. *Stamens* oblong, *c.* 1 mm. *Carpels* oblong; *stigmas* ovate-lanceolate. *Fruit* pulp sweet; Seeds black-brown.

Flowering & Fruiting: June – September

Habitat: along the foot hills

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11556, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Tropical America

Note: The bark and leaves contain annonaine, an alkaloid. A bark decoction is used to stop diarrhea, while the root is used in the treatment of dysentery. A decoction of the leaves is used as a cold remedy and to clarify urine.

Threat status: Not Evaluated

Cyathocalyx Champ. ex Hook.f. & Thomson

C. martabanicus Hook.f. & Thomson, Fl. Brit. India 1 (1): 53. 1872; Kanjilal *et al.*, Fl. Assam 1 (1): 40. 1934.

Vernacular Name: Bolong (Garo)

Tall *evergreen tree* with a narrow crown. *Leaves* simple, alternate, oblong-elliptic, 20 – 30 × 7 – 11 cm across, base acute or cuneate, margin entire, apex acute or acuminate, petiole about 1 – 1.5 cm long. *Flowers* bisexual, usually solitary or fascicled with 2 – 3, densely pubescent, pedicels pubescent; *calyx* 3 lobed, oblong-lanceolate, connate, apex acuminate, fused at the base, pubescent; *corolla* 6 lobed, in 2 series, yellowish pubescent. *Stamens* numerous, about 3 – 4 mm long. *Carpels* 1 – 2, oblong, stigma sessile. *Fruit* broadly ellipsoid or ovoid.

Flowering & Fruiting: April – November

Habitat: Evergreen forest

Specimens Examined: Included after Dutt *et al.* 1974, D. 135.

Distribution: India (Assam, Meghalaya, Nagaland), Myanmar

Note: Used for making weaving machines.

Threat status: Not Evaluated

Dasymaschalon Dalla Torre & Harms

D. longiflorum (Roxb.) Finet & Gagnep., Bull. Soc. Bot. France 53 (Mém. 4(2)): 143. 1906; *Unona longiflora* Roxb., Pl. Coromandel 3: 87. 1820; Kanjilal *et al.*, Fl. Assam 1 (1): 34. 1934. *Desmos longiflorus* (Roxb.) Saff., Bull. Torrey Bot. Club 39: 507 1912.

Vernacular Name: Jor-lewa (A)

Shrub or *small tree*. *Leaves* simple, alternate, lanceolate-oblong, 12 – 30 × 4 – 8 cm across, base acute or cuneate, margin entire, apex acute to acuminate. *Flowers* bisexual, fragrant, solitary, drooping, axillary; *calyx* 3, free, triangular, apex acute, pubescent, about 3 – 4 × 2 – 3 mm; *corolla* 3 – 2, connate, linear-lanceolate, twisted, fleshy, red, about 9 – 19 × 1 – 1.5 cm. *Stamens* numerous, cuneate, about 3 mm long. *Carpels* numerous, ovoid, about 2 – 4 mm long; *ovary* elongate, *stigma* curved.

Flowering & Fruiting: April – December

Habitat: evergreen forest

Specimens Examined: Included after Dutt *et al.* 1974, D. 4, 11.

Distribution: India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Odisha, Sikkim), Bhutan, Bangladesh, Myanmar

Note: Roots are used as medicine to cure chronic ulcer.

Threat status: Not Evaluated

Desmos Lour.

D. chinensis Lour., Fl. Cochinch. 1: 352. 1790; *Unona discolour* Vahl, *Symb. Bot.* 2: 63 1791; Kanjilal *et al.*, Fl. Assam 1 (1): 35. 1934.

Vernacular Name: Not known

Woody climbers. *Leaf blade* oblong to elliptic, rarely broadly ovate, 6 – 14 × 2 – 6.5 cm, base rounded to oblique, apex acute to acuminate. *Inflorescences* solitary. *Flowers* 3 – 6 cm wide, pendulous; *pedicel* 2 – 6.5 cm; *calyx* ovate to lanceolate, 4 – 10 × 2 – 4.5 mm. *Outer corolla* oblong, 3 – 6.5 × 1 – 2 cm; *inner corolla* lanceolate, 4 – 7 × 1 – 2 cm. *Stamen* connectives rounded. *Carpels* 25 – 35; *stigma* apex 2-cleft.

Flowering & Fruiting: April – December

Habitat: semi-evergreen forest

Specimens Examined: Included after Dutt *et al.* 1974, D. 305.

Distribution: India (Kerala, North East India), Bhutan, Cambodia, Indonesia, Laos, Malaysia, Nepal, Philippines, Thailand, Vietnam

Note: The roots and leaves are used medicinally. A decoction of the roots is used in the treatment of dysentery.

Threat status: Not Evaluated

Fissistigma Griff.

- 1a. Woody climber; carpels many.....*F. rufinerve*
1b. Climbers or straggling shrubs; carpels 2 – 6.....*F. wallichii*

F. rufinerve Merr., Philipp. J. Sci. 15: 136. 1919; *Melodorum rufinerve* Hook.f. & Thomson, Fl. India 121. 1855; in Fl. Brit. India 1: 81. 1872; Kanjilal *et al.*, Fl. Assam 1 (1): 49. 1934.

Vernacular Name: Not known

Woody climber, buds pubescent. *Leaves* simple, alternate, oblong-elliptic to obovate, 14 – 28 × 5 – 7 cm across, base obtuse, margin entire, apex acute to obtuse; *petiole* glabrous, about 1 – 1.4 cm long. *Flowers* bisexual, few flowered, axillary, pubescent cymes, *pedicelsc.* 0.5 – 0.6 cm long; *bracts* scalelike; *calyx* 3 lobed, broadly ovate, base connate, apex acute; *corolla* 6 lobed, apex acute, fleshy. *Stamens* numerous. *Carpels* many.

Flowering & Fruiting: not known

Habitat: evergreen forest

Specimens Examined: Included after Kanjilal *et al.* 1934.

Distribution: India (Assam), Bangladesh

Note: An imperfectly known species, very rare and not collected recently.

Threat status: Not Evaluated

F. wallichii Merr., Philipp. J. Sci. 15: 137. 1919. *Melodorum wallichii* Hook.f. & Thomson, Fl. India 1. 118. 1855; Kanjilal *et al.*, Fl. Assam 1 (1): 48. 1934.

Vernacular Name: Not known

Climbers or straggling shrubs. *Petiole* 1 – 2.5 cm; *leaf blade* oblong-lanceolate, oblong-elliptic, 7 – 24 × 2.4 – 6 cm, base rounded or obtuse, apex obtuse to shortly acuminate. *Inflorescences* leaf-opposed or alternate, cymose, umbellike, 3 – 7-flowered, ferruginous pubescent; peduncle short; *bracts* ovate, pubescent; 1 or 2 bracteolate; *calyx* ovate-triangular, *c.* 3 × 2.3 mm; *corolla* leathery, outer corolla ovate-oblong, 1.5 – 1.7 × *c.* 0.7 cm, inner corolla lanceolate, *c.* 1.3 × 0.4 cm. *Stamens* oblong. *Carpels* 2 – 6, densely pubescent; *stigmas* slightly 2-cleft.

Flowering & Fruiting: March – December

Habitat: Densely forested slopes, open forests

Specimens Examined: Included after Kanjilal *et al.* 1934.

Distribution: India (Arunachal Pradesh, Assam, Meghalaya, Mizoram), Bangladesh, China

Threat status: Not Evaluated

Goniothalamus (Blume) Hook.f. & Thomson

G. sesquipedalis Hook.f. & Thomson, Fl. India 1. 108. 1855; Fl. Brit. India 1(1): 53. 1872; Kanjilal *et al.*, Fl. Assam 1 (1): 37. 1934.

Vernacular Name: Leikham (Manipuri)

Shrub or undershrub. Leaves simple, alternate, oblanceolate-elliptic to oblong-elliptic, 20 – 40 × 4 – 10 cm across, base cuneate or acute, margin entire, apex deeply acute or shallow acuminate. Flowers bisexual, solitary or in pairs, greenish yellow; bracts basal; calyx 3 lobed, ovate, base free, apex acute, c. 6 – 8 × 4 – 6 mm across; corolla 6 lobed, subequal, ovate lanceolate, apex subacute or acuminate, c. 12 – 20 × 3 – 5 mm across. Stamens many, linear oblong, closely packed, about 1.5 mm long; corolla 5 or more, linear oblong, stigma funnel shaped. Fruit solitary, ovoid.

Flowering & Fruiting: May – December

Habitat: Forest hills

Specimens Examined: Included after Dutt *et al.* 1974, D. 208.

Distribution: India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim, Tripura, West Bengal), Bangladesh, Bhutan, Myanmar

Note: The wood is used to make traditional rosaries.

Threat status: Not Evaluated

Mitrephora Hook.f. & Thomson

M. tomentosa Hook.f. & Thomson, Fl. India i. 113. 1855 & in Hook. f., Fl. Brit. India 1: 76. 1872; Kanjilal *et al.*, Fl. Assam 1 (1): 38. 1934; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 41. 2003.

Vernacular Name: Kolti, Koliori (A)

Small tree. Branches densely pubescent. Leaves c. 5 – 15 × 3 – 7 cm, abaxially tomentose, oblong, ovate or lanceolate, acuminate at the base, base rounded. Bract present. Sepal 3 lobed, c. 0.5 cm long, ovate. Corolla 6 lobed in 2 series, c. 3 cm long, pubescent, lanceolate. Stamen few c. 1.6 cm long. Stigma capitate.

Flowering & Fruiting: May – October

Habitat: occasionally, in forest hills

Specimens Examined: Included after Dutt *et al.* 1974, D. 65.

Distribution: India (Assam, Arunachal Pradesh, Meghalaya), Bangladesh, Cambodia, China, Laos, Thailand, Vietnam

Note: Bark is used in manufacturing soap. Wood is even grained, compact, dun white, used for making agricultural implements and house construction.

Threat status: Not Evaluated

Polyalthia Blume

P. jenkinsii (Hook.f. & Thomson) Hook.f. & Thomson, Fl. Brit. India 1(1): 64. 1872; Kanjilal *et al.*, Fl. Assam 1 (1): 32. 1934.

Vernacular Name: kola-khomtou (A)

Medium sized *trees*. *Leaves* simple, alternate, lanceolate-oblong or elliptic, *c.* 10 – 22 × 4 – 6.5 cm across, margin entire, apex deeply acute to shallow acuminate. *Flowers* bisexual, axillary, usually solitary, rarely in pairs, cream white to pale yellow, rusty tomentose; *calyx* 3, broadly ovate to suborbicular, apex acute, about 3.5 – 5 × 2 – 4 mm long; *corolla* 6, valvate, subequal, greenish yellow. *Stamens* numerous, about 1 mm long. *Carpels* many, ellipsoid or linear-oblong, about 1.5 mm long, *style* short, stigma sessile, globose, slightly curved.

Flowering & Fruiting: August – June

Habitat: Evergreen to semi-evergreen forest

Specimens Examined: Included after Kanjilal *et al.* 1934; Included after Dutt *et al.* 1974, D. 39.

Distribution: India (Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Manipur, Meghalaya), China, India, Philippines, Malaysia

Note: Wood is used supporting poles and house posts. Kacharis tribes consider poles of this tree indispensable for carrying the dead.

Threat status: Not Evaluated

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

U. concava Teijsm. & Binn., Natuurk. Tijdschr. Ned.-Indie 3: 331. 1852. *Uvaria lurida* Hook.f. & Thomson, Fl. India i. 101. 1855; Kanjilal *et al.*, Fl. Assam 1 (1): 45. 1934.

Vernacular Name: Gaichiria (Oriya)

Large woody scandent *shrubs*. *Leaves* simple, alternate, oblong-lanceolate, 16 – 30 × 4 – 6 cm, base subcuneate or acute, margin entire, apex deeply acute. *Flowers* solitary or paired, axillary, pedicels *c.* 1 – 1.5 cm long; *bracts* absent; *calyx* 3, oblong, base connate, apex acute; *corolla* 6, in 2 series, imbricate until fully open, apex obtuse, maroon or blood red. *Stamens* many, about 2 – 3 mm long. *Carpels* many, about 4 mm long; *stigma* sessile, ovules many.

Flowering & Fruiting: March – November

Habitat: Forest slopes

Specimens Examined: Included after Dutt *et al.* 1974, D. 88.

Distribution: India (Andaman & Nicobar Islands, Assam, Bihar, Meghalaya, Odisha), Southeast Asian Countries

Threat status: Not Evaluated

8. HERNANDIACEAE Blume

Illigera Blume

- 1a. Ovary tetragonous, densely pubescent.....*I. grandiflora*
1b. Ovary glabrous.....*I. khasiana*

I. grandiflora W.W.Sm. & Jeffrey, Notes Roy. Bot. Gard. Edinburgh 8: 189. 1914.
Illigera villosa C. B. Clarke in J. Linn. Soc., Bot. xxv. 22, t. 9. 1889.

Vernacular Name: Not known

Lianas. Leaves 3-foliolate; *petiole* 4 – 12 cm, tomentose; *leaf blade* obovate to lanceolate-elliptic, 4 – 14 × 3 – 9 cm, papery, subrounded at the base, shortly acuminate at the apex, rarely subobtusely. *Inflorescence* axillary cymes compact. *Flowers* red, purple-red spotted. *Outer tepals* oblong, 1.2 – 1.4 cm, adaxially pubescent. *Inner tepals* smaller to outer ones. *Stamens* c. 8 mm. *Ovary* tetragonous, densely pubescent; *style* 0.8 – 1.3 cm, tomentose. *Fruit* 2-winged.

Flowering & Fruiting: June – October

Habitat: sparse forest

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 558.

Distribution: India, China, N Myanmar

Note: Roots and stem are used for treating traumatic injuries (Li *et al.*, 2008).

Threat status: Not Evaluated

I. khasiana C.B.Clarke, Fl. Brit. India 2 (5): 461. 1878; Kanjial *et al.*, Fl. Assam 4: 103. 1940; Li *et al.* In Fl. China 7: 259. 2008.

Name: Kerkerilata (A)

Lianas. Leaves 3-foliolate; *petiole* 4 – 12 cm; *leaflets* petiolules 0.5 – 1.5 cm, adaxially slightly channeled and villous; blade olive-brown or brown on both surfaces when dry, lanceolate, rarely lanceolate-elliptic, 7 – 17 × 3 – 8 cm, subleathery, abaxially glabrous, adaxially glabrous except pilose on midvein, *lateral veins* 3 – 6-paired, obtuse to rounded at base, acuminate at apex, acumen 0.7 – 1 cm. *Flower buds* ovoid, 5 – 8 mm. *Outer tepals* 0.9 – 1.2 cm, 3-veined. *Inner tepals* 0.9 – 1.1 cm, adaxially densely white lanose, 1-veined. *Stamens* with filaments pubescent adaxially; *filaments* straight in bud; appendages stipitate, narrowly ovate, c. 3.5 mm. *Ovary* glabrous. *Interstaminal* glands small, 2-lobed. *Fruit* 2-winged; large wings 2.5 – 3 cm wide.

Flowering & Fruiting: August – April (next year)

Habitat: core forests; 700 – 1600 m.

Specimen Examined: *Specimens Examined:* India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11427, Frt. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Malaysia, Myanmar

Threat status: Not Evaluated

9. Lauraceae A. L. de. Juss.

- 1a. Leaves 3-ribbed at base or little above from the base.....2
- 1b. Leaves penninerved.....3
- 2a. Leaves alternate; flowers in fascicles arranged along a branched inflorescence or sessile in leaf axils.....*Neocinnamomum*
- 2b. Leaves opposite or sub-opposite; flower in cymes or panicles.....*Cinnamomum*
- 3a. Leaves in whorls or pseudo-whorls.....*Actinodaphne*
- 3b. Leaves alternate sometime crowded at apex.....4
- 4a. Flowers in axillary or extra-axillary simple or compound racemose umbels.....*Litsea*
- 4b. Flowers in racemes or panicles few flowered; Leaves alternate fascicled at apex of branchlets.....5
- 5a. Staminal glands stipitate.....*Octea*
- 5b. Staminal glands sessile.....*Alseodaphne*

Actinodaphne Nees

A. obovata (Nees) Blume, Mus. Bot. 1 (22): 342. 1851; in Fl. China 7: 162. 2008.
Tetradenia obovata Nees in Wallich, Pl. Asiat. Rar. 2: 64. 1831

Vernacular Name: Not known

Trees, 10 – 18 m tall. *Branchlets* stout, densely pubescent. *Leaves* 3 – 5-clustered at apex of branchlet, subverticillate; *petiole* 3 – 7 cm, pubescent; *leaf blade* shiny adaxially, obovate-oblong or elliptic-oblong, 15 – 50 × 5.5 – 22 cm, pubescent or glabrate abaxially when old, glabrous adaxially, cuneate or rotund at base, acuminate or acute at apex, tip obtuse. *Racemes* composed of umbels, 5-flowered; *peduncle* 1.2 – 2.5 cm. *Pedicel* c. 3 mm. *Perianth* segments 6, yellow, ovate. *Male flowers:* fertile stamens 9; filaments short, villous at base, of 3rd whorls each with 2 oblate glands at base; rudimentary ovary pilose. *Female flowers:* ovary subglobose, villous. *Fruit* oblong or ellipsoid.

Flowering & Fruiting: April – March

Habitat: very rare, streamsides, moist mixed forests; 1000 – 2000 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, Malidahar, 24.04.2011, H. A. Barbhuiya 84828, 84829, Fl. (ASSAM).

Distribution: India, China, Nepal

Note: This species is characterized by its large fruit. The seeds may be used for their oil. The bark is used medicinally to treat fractures (Huang & Werff, 2008).

Threat status: Not evaluated

Alseodaphne Nees

- 1a. Panicle much longer than leaf blade; leaf blade hairy abaxially; leaf blade elliptic, 12 – 24 × 6 – 12 cm; inflorescence 20 – 35 cm; fruit oblong.....*A. keenanii*
1b. Panicle shorter than or as long as leaf blade; leaf blade glabrous abaxially.....2
2a. Leaf blade obovate-oblong or oblong, 14 – 26 × 6 – 15 cm, green-white abaxially when young; young part of branchlet as well as panicles densely brown tomentulose.....*A. petiolaris*
2b. Leaves membranous, oblanceolate, 7 – 12 × 2 – 3.5 cm, glabrous.....*A. owdeni*

A. keenanii Gamble, Bull. Misc. Inform. Kew 5: 188. 1914; Kanjilal *et al.*, Fl. Assam 4: 62. 1940. *Cryptocarya andersonii* King ex Hook. f., Fl. Brit. India 5: 120. 1886.

Vernacular Name: Not known

Trees up to 25 m tall. *Petiole* 4 – 5.5 cm, puberulent; *leaf blade* elliptic, 12 – 24 × 6 – 12 cm, subleathery, abaxially pubescent when young, glabrous when mature, adaxially glabrous, acute to cuneate at base shortly acuminate at apex. *Inflorescence* axillary panicle, 20 – 35 cm; *peduncle* 10 – 15 cm. *Pedicels* slender, c. 2 mm. *Perianth* lobes ovate, 2 – 2.5 mm, densely tomentose, outer ones smaller, inner ones large. *Fertile stamens* small; filaments pubescent. *Staminodes* minute, reniform. *Ovary* ovoid; *style* oblique; *stigma* capitate. *Fruit* oblong, green in young stage, purple-black when matured.

Flowering & Fruiting: July – March

Habitat: Evergreen broad-leaved forests; 1200 – 1500 m

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: NE India, Laos, Myanmar, Thailand, Vietnam

Threat status: Not evaluated

A. owdeni R. Parker in Indian Forester 50: 365. 1924; Kanjilal *et al.*, Fl. Assam 4: 62. 1940.

Vernacular Name: Tilsundi (Cach.)

Tree. Leaves membranous, oblanceolate, 7 – 12 × 2 – 3.5 cm, acute or shortly acuminate at apex, cuneate at base, glabrous; *petioles* 8 – 12 mm. *Inflorescence* panicles, 6 – 10 cm. *Perianth* 6-lobed, ovate, 1.5 – 2 mm. *Fertile stamens* 9, *anthers* 4-celled, outer 6 introse, inner 3 extrose. *Female flowers* with *staminodes*. *Ovary* superior, *style* short. *Fruit* solitary, ellipsoid, 3 – 3.3 × 1.5 – 1.7 cm.

Flowering & Fruiting: May

Habitat: subtropical forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11775, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bhutan, Sikkim

Threat status: Not evaluated

A. petiolaris (Meisn.) Hook.f., Fl. Brit. India 5 (13): 145. 1886; Kanjilal *et al.*, Fl. Assam 4: 61. 1940; Li *et al.* in Fl. China 7: 230. 2008. *Nothaphoebe petiolaris* Meisner in A. Candolle, Prodr. 15 (1): 59. 1864.

Vernacular Name: Ban-hanwalu (A)

Trees. Petiole 1.5 – 2.5cm, glabrous; leaf blade large, obovate-oblong or oblong, 14 – 26 × 6 – 15 cm, cuneate or subrounded at base, rounded, acuminate or emarginated at apex. *Inflorescence* a panicle, subterminal, clustered at apex of branchlet. *Pedicelsc.* 2 mm, pubescent. *Flowers* small, c. 2.5 mm. *Perianth tubec.* 1 mm; *perianth* 6-lobed, orbicular-ovate, obtuse, c. 2 – 2.5 × 1.8 – 2 mm, pubescent on both surfaces. *Fertile stamens* 9, in 3 whorls; *anthersc.* 0.8 mm. *Staminodes* small. *Ovary* ovoid, c. 0.8 mm, glabrous; *stigma* peltate, trifid. *Fruit* oblong-ovoid, c. 2.8 × 1.3 cm, fleshy.

Flowering & Fruiting: October – May

Habitat: sparse forests; 600 – 900 m.

*Specimen Examined:*Included afterKanjilal *et al.* 1940.

Distribution: India, China, Myanmar

Threat status: Not evaluated

Cinnamomum Schaeffer

- 1a. Ovary oblong.....*C. bejolghota*
- 1b. Ovary ovoid.....2
- 2a. Flower yellowish to yellow white.....3
- 2b. Flower white-green.....*C. tamala*
- 3a. *Fruit* ellipsoid, purple-black.....*C. curvifolium*
- 3b. *Fruit* globose, black.....*C. glanduliferum*

C. bejolghota (Buch.-Ham.) Sweet, Hort. Brit. 344. 1826; Li *et al.* in Fl. China 7: 180. 2008. *Cinnamomum obtusifolium* (Roxb.) Nees, Pl. Asiat. Rar. 2: 73. 1831. *Laurus bejolghota* Buch.-Ham., Trans. Linn. Soc. London 13: 559. 1822.

Vernacular Name: Naga-dal-chini (A)

Small to large *trees.* Leaves subopposite; *petiole* 1 – 1.5 cm; *leaf blade* elliptic-oblong, 12 – 30 × 4 – 9 cm, subrounded or attenuate at base, margin entire, obtuse, acute, or acuminate at apex. *Inflorescence* axillary panicle, 13 – 16 cm, many flowered; *peduncle* 7 – 11 cm. *Pedicels* 4 – 6 mm, pubescent. *Flowers* yellow, c. 6 mm. *Perianth* 6-lobed, ovate-oblong, c. 5 × 2.5 mm, acute, pubescent. *Fertile stamens* 9, c. 3.5 – 3.7; *filaments* complanate; *anthers* ovate-oblong or oblong, c.1.7 mm. *Staminodes* 3, conspicuous, c.3 mm, long stalked. *Ovary* oblong, c.1.5 mm; *style* c. 3 mm; *stigma* discoid. *Fruit* ellipsoid, c. 1.3 × 0.8 cm, green when young.

Flowering & Fruiting: March – July

Habitat: forests mountain slopes; 600 – 1800 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, near Malidahar area, 24.04.2011, H. A. Barbhuiya 85192 (ASSAM).

Distribution: India, Bangladesh, Bhutan, China, Laos, Myanmar, Nepal, Thailand, Vietnam

Note: Used as spice. Bark is used in the treatment of fever (Zeme tribe) and roots in body ache.

Threat status: Vulnerable (VU) in the district (Sajem *et al.*, 2008).

C. curvifolium Nees, Syst. Laur. 80. 1836; Li *et al.* in Fl. China 7: 177. 2008. *Cinnamomum pauciflorum* Nees., *Pl. Asiat. Rar.* 2: 75 1831; Kanjilal *et al.*, Fl. Assam 4: 57. 1940.

Vernacular Name: Not known

Trees, 3 – 14 m tall. *Leaves* alternate; *petiole* up to 12 mm; *leaf blade* ovate or ovate-lanceolate, 6.5 – 10.5 × 2.5 – 5 cm, thickly leathery, broadly cuneate to subrounded at base, margin involute, slightly acuminate at apex. *Inflorescence* axillary panicle, corymbose, 2.5 – 5 cm; *peduncle* 1.5 – 4 cm, elongate. *Pedicels* 5 – 7 mm. *Flowers* yellow-white, 4 – 5 mm. *Perianth* 6-lobed, oblong, subequal, 3 – 4 mm, acute. *Fertile stamens* 9, c. 2.5 mm; *filaments* sparsely pubescent; *anthers* ovate-oblong. *Staminodes* 3, c. 1.7 mm. *Ovary* ovoid, c. 1 mm; *style* curved, c. 2 mm; *stigma* discoid. *Fruit* ellipsoid, c. 11 × 5 – 5.5 mm, purple-black when mature.

Flowering & Fruiting: March – October

Habitat: Sparse or dense forests; 400 – 1800 m.

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, China, Nepal

Note: The bark and roots are used in the treatment of abdominal pain (Website: <http://tropical.theferns.info/viewtropical.php?id=Cinnamomum+curvifolium>).

Threat status: Not evaluated

C. glanduliferum (Wall.) Meisn., Prodr. 15 (1): 25. 1864; Kanjilal *et al.*, Fl. Assam 4: 59. 1940; Li *et al.* in Fl. China 7: 176. 2008. *Laurus glandulifera* Wallich, Trans. Med. Soc. Calcutta 1: 45. 1825.

Vernacular Name: Gonhorai (A)

Evergreen *trees*. *Leaves* alternate; *petiole* 1.5 – 3 cm, subglabrous; *leaf blade* elliptic to ovate-elliptic, 6 – 15 × 4 – 6.5 cm, cuneate to subrounded at base, acute to shortly acuminate at apex. *Inflorescence* axillary panicle; *peduncle* 2 – 4 cm. *Pedicels* 1 – 2 mm, glabrous. *Flowers* up to 3 mm, yellowish. *Perianth* pubescent; 6-lobed, broadly ovate, c. 2 × 1.7 mm, acute. *Fertile stamens* 9, c. 1.4 mm; *filaments* pubescent; *anthers* ovate. *Staminodes* 3, triangular; stalk pubescent. *Ovary* ovoid, c. 1.2 mm, glabrous; *style* c. 1.2 mm; *stigma* discoid, 3-lobed. *Fruit* black, globose.

Flowering & Fruiting: March – September

Habitat: Evergreen forests on hilly land; 1500 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 18.05.2013, A. Bora & D. Bhattacharyya 11762, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Malaysia, Myanmar, Nepal

Note: The bark and roots are used medicinally. The leafy branchlets contain essential oil and camphor (Website: <http://tropical.theferns.info/viewtropical.php?id=Cinnamomum%20glanduliferum>).

Threat status: Not evaluated

C. tamala (Buch.-Ham.) T.Nees & C.H.Eberm., *Handb. Med. Pharm. Bot.* 2: 426 1831; Kanjilal *et al.*, Fl. Assam 4: 56. 1940; Li *et al.* in Fl. China 7: 182. 2008. *Laurus tamala* Buch.-Ham., Trans. Linn. Soc. London 13: 555. 1822.

Vernacular Name: Tej-pat (A)

Trees. Leaves alternate or subopposite; *petiole* 0.5 – 1.3 cm; *leaf blade* ovate or lanceolate, 7.5 – 15 × 3 – 5.5 cm, lightly leathery, glabrous on both surfaces, acute or broadly cuneate at base, margin entire, acuminate at apex. *Inflorescence* axillary or terminal panicle, 5 – 10 cm, many flowered; *peduncle* 1 – 4 cm. *Pedicels* 4 – 6 mm, puberulent. *Flowers* white-green, c. 6 mm. *Perianth* puberulent; lobes obovate-oblong, c. 4 × 1.5 mm, obtuse. *Fertile stamens* 9, c. 4 mm; *filaments* villous, c. 2.5 mm; *anthersc.* 1.5 mm. *Staminodes* 3, c. 1.7 mm, pubescent, long stalked. *Ovary* ovoid, c. 1.2 mm, villous; *stylec.* 3.6 mm; *stigma* inconspicuous. *Fruit* ellipsoid, 10 – 14 mm.

Flowering & Fruiting: April – October

Habitat: Mountain slopes, streamsides; 1100 – 1800 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11730, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Nepal

Note: The dried bark is used to treat stomach-ache. The leaves are used in the treatment of colic and diarrhoea (Website: <http://tropical.theferns.info/viewtropical.php?id=Cinnamomum+tamala>)

Threat status: Not evaluated

Litsea Lam.

- 1a. Leaf blade papery or membranous and deciduous.....*L. cubeba*
- 1b. Leaf blade leathery or thinly leathery and evergreen.....2
- 2a. Perianth segments imperfect, lacking, or 3 or 4.....*L. glutinosa*
- 2b. Perianth segments 6 – 8.....3
- 3a. Leaves opposite or subopposite.....*L. lancifolia*
- 3b. Leaves alternate.....4

- 4a. Branchlets and petioles glabrous.....*L. salicifolia*
 4b. Branchlets and petioles ferruginous pubescent.....*L. monopetala*

L. cubeba Pers., Syn. Pl. 2 (1): 4. 1806; Huang *et al.* in Fl. China 7: 122. 2008. *Actinodaphne citrata* Hayata in Icon. Pl. Formosan. 3: 164. 1913. *Aperula citriodora* Blume, Mus. Bot. 1 (23): 366. 1851.

Vernacular Name: May Chang, Mountain Pepper (E)

Deciduous *shrubs* or small *trees*, 8 – 10 m tall. *Leaves* alternate; *petiole* 6 – 20 mm, glabrous; *leaf blade* lanceolate, oblong or elliptic, 4 – 11 × 1.1 – 2.4 cm, glabrous on both surfaces, cuneate at base, acuminate or acute at apex. *Umbels* solitary or clustered, 4 – 6 flowered; *peduncle* 2 – 10 mm, glabrous or sericeous-pubescent. *Male flowers:* perianth segments 6, broadly ovate; *fertile stamens* 9; *filaments* hairy below middle; *rudimentary pistil* glabrous. *Fruit* subglobose, black at maturity.

Flowering & Fruiting: February – August

Habitat: Thickets, sparse forests, roadsides, streamsides; 300 m to high altitude

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11502, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, S and SE Asia

Threat status: Not evaluated

L. glutinosa (Lour.) C.B.Rob. in Philipp. J. Sci., C 6: 321. 1911; Huang *et al.* in Fl. China 7: 126. 2008. *Camellia integrifolia* Choisy in Mém. Soc. Phys. Genève xiv. 150. 1855. *Litsea apetala* Pers., Syn. Pl. 2 (1): 4. 1806.

Vernacular Name: Indian laurel (E)

Evergreen or deciduous *trees*, 3 – 15 m tall. *Leaves* alternate; *petiole* 1 – 2.6 cm, tomentose; *leaf blade* obovate, obovate-oblong or elliptic-lanceolate, 3.5 – 25 × 1.5 – 11 cm, tomentose on both surfaces when young, cuneate or obtuse at base, obtuse or rounded at apex. *Umbels* solitary or several on short branchlets, few flowered; *peduncle* 1 – 1.5 cm. *Male flowers:* *pedicel* tomentose; *perianth* segments imperfect; *fertile stamens* often 15 or more; *filaments* pubescent, of 3rd each with 2 long stipitate glands at base; rudimentary pistil glabrous. *Fruit* globose; *fruiting pedicel* 3 – 6 mm.

Flowering & Fruiting: May – October

Habitat: Forest margins, streamsides, sparse forests or thickets; 500 – 1900 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11625, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Myanmar, Nepal, Philippines, Thailand, Vietnam

Note: The root bark and leaves are used medicinally to reduce fever, reduce swelling, and treat diarrhoea. They also may be used for treating furunculosis. The leaves, and the mucilage in the gum from the bark, have been used for making poultices. The bark also acts as a demulcent and mild astringent in the treatment of diarrhoea and dysentery (Website: <http://tropical.theferns.info/viewtropical.php?id=Litsea+glutinosa>).

Threat status: Not evaluated

L. lancifolia Fern. Vill. in Nov. App. 181. 1880; Li *et al.* in Fl. China 7: 128. 2008.

Vernacular Name: Not known

Evergreen *shrubs*, c. 3 m tall. *Leaves* opposite or alternate; *petiole* 3 – 10 mm; *leaf blade* elliptic, oblong-lanceolate or elliptic-lanceolate, 5 – 10 × 2.4 – 4.5 cm, pubescent abaxially, cuneate or rotund at base, acute or acuminate at apex. *Inflorescence* axillary, umbel, solitary or clustered. *Male flowers:* pedicel c. 1 mm; *perianth* 6-lobed, lanceolate or oblong; *fertile stamens* 9, sometimes 6; *filaments* pubescent; *rudimentary pistil* small. *Fruit* globose or ellipsoid.

Flowering & Fruiting: March – August

Habitat: streamsides, forests; 100 – 2000 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11483, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Philippines, Thailand, Vietnam.

Note: Warm root extract is taken frequently by Chakmas for the cure of diarrhoea in Rangamati (Yusuf *et al.*, 2009).

Threat status: Not evaluated

L. monopetala (Roxb.) Pers., Syn. Pl. 2: 4. 1806; P. J. Bora & Y. Kumar, Florist. Diversity Assam 291. 2003. *Litsea polyantha* Juss. in Ann. Hist. Nat. 6: 211. 1805; Hook.f. Fl. Brit. India 5: 162. 1886; Kanjilal *et al.*, Fl. Assam 4: 83. 1940.

Vernacular Name: Sowalu (A)

Middle sized *tree*. *Leaves* c. 9 – 20 × 5 – 10 cm, broadly elliptic, ovate or obovate, acute or rounded at apex, entire at margin, abaxially tomentose. *Inflorescence* in umbellate silky heads, axillary. *Flowers* greenish yellow. *Perianth* 5-lobed, oblong. *Stamen* 9 – 12. *Fruit* ovoid, c. 0.5 cm long.

Flowering & Fruiting: May – November

Habitat: Common, streamsides

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11447, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bangladesh, Bhutan, China, Malaya, Myanmar, Nepal.

Note: The bark is mildly astringent, stomachic and stimulant; after being bruised, applied to contusions. Water extract of the bark is given with sugar to treat diarrhoea and dysentery. Powder of the bark is applied to body for pains arising from blows or bruises or from hard work; it is also applied to fracture in animals. (Yusuf *et al.*, 2009).

Threat status: Not evaluated

L. salicifolia (Roxb. ex. Wall.) Hook.f., Fl. Brit. India 5: 167. 1886; Kanjilal *et al.*, Fl. Assam 4: 87. 1940; P. J. Bora & Y. Kumar, Florist. Diversity Assam 291. 2003.

Vernacular Name: Dighloti (A)

Shrub. Leaves alternate, c. 8 – 20 × 2 – 5.5 cm, elliptic or narrow lanceolate, acuminate, cuneate at base, margin entire, abaxially pubescent. *Inflorescence* in umbels, axillary. *Flowers* greenish yellow. *Stamens* 6 – 9, filaments villous. *Fruit* ellipsoid, black.

Flowering & Fruiting: February – June

Habitat: Common, Shady places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalain Range, near Khasiapunji, 16.02.2012, H. A. Barbhuiya 85150 (ASSAM).

Distribution: NE India, Bangladesh, China, Myanmar, Nepal.

Threat status: Not evaluated

Neocinnamomum H. Liou.

N. caudatum (Nees) Merr., Contr. Arnold Arbor. 8: 64. 1934; Li *et al.* in Fl. China 7: 230. 2008. *Cinnamomum caudatum* Nees, Pl. Asiat. Rar. 2: 76 1831; Kanjilal *et al.*, Fl. Assam 4: 57. 1940.

Vernacular Name: Not known

Trees. Leaves alternate; *petiole* 8 – 10 mm, subglabrous; *leaf blade* ovate or ovate-oblong, 5 – 12 × 3 – 4.5 cm, papery, glabrous on both surfaces, cuneate or subrounded at base, acuminate or obtuse at apex. *Inflorescence* a cyme, sessile, 5 or 6-flowered, occasionally a panicle, axillary or terminal. *Pedicels* 2 – 6 mm. *Flowers* small, yellow-green, 4 – 8 mm. *Perianth* 6-lobed, triangular-ovate, c. 1.2 mm, puberulent on both side. *Fertile stamens* 9, c. 1 mm; *filaments* tomentose. *Staminodes* small. *Ovary* ellipsoid-ovoid, less than 1 mm; *style* longer; *stigma* discoid. *Fruit* ellipsoid, 1.5 – 2 × 1 cm, red when mature.

Flowering & Fruiting: June – February of next year

Habitat: Sparse or dense forests, streamsides and roadsides; 500 – 1800 m

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, Bhutan, China, Myanmar, Nepal, N Thailand, Vietnam

Threat status: Not evaluated

Ocotea Aubl.

O. lancifolia Mez, Jahrb. Königl. Bot. Gart. Berlin 5: 289. 1889. *Phoebe lanceolata* (Nees) Nees, Syst. Laur. 109. 1836; Li *et al.* in Fl. China 7: 192. 2008.

Vernacular Name: Not known

Trees. Bark gray-white. *Petiole* 1 – 2.5 cm, glabrous; *leaf blade* lanceolate or elliptic-lanceolate, 13 – 22 × 3 – 5.5 cm, thickly papery, abaxially pubescent when young, glabrous on both surfaces when old, attenuate and decurrent at base, acuminate or falcate at apex. *Inflorescence* in panicles, variable in length, c. 12 – 15 cm. *Flowers* pale green or yellowish green, 3 – 4 mm. *Perianth* lobes subequal, ovate, 2.5 – 3 mm, glabrous outside, pubescent inside. *Ovary* glabrous. *Fruit* ovoid, 9 – 12 × 6 – 7 mm.

Flowering & Fruiting: April – September

Habitat: common, forest; usually below 1500 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, 27.08.2012, H. A. Barbhuiya 85949, 85950 (ASSAM).

Distribution: India, Bhutan, China, Indonesia, Malaysia, Nepal, Thailand

Note: The stems make a good fuel (Website: <http://tropical.theferns.info/viewtropical.php?id=Phoebe+lanceolata>).

Threat status: Not evaluated

10. ACORACEAE Martinov

Acorus L.

A. calamus L., Sp. Pl. 1: 324. 1753; Hook.f., Fl. Brit. India 6: 555. 1893; Deb, Fl. Tripura 2: 394. 1983.

Vernacular Name: Bach (A), Ghorabach (B)

Aromatic herb with aromatic rhizome. *Leaves* distichous, leaf margin wavy; nerves parallel. *Peduncle* leaf-like. *Flower* bisexual, yellowish green. *Perianth* 6 lobed, concave, tip incurved. *Stamens* 6; filaments linear. *Ovary* conical, 2 – 3 celled; *style* and *stigma* small. *Berry* oblong.

Flowering: April – September

Habitat: rare, cultivated

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11550, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Sri Lanka, north temperate and warm regions

Note: The dried rhizome yields an aromatic essential oil called ‘Ascerone’ having a pleasant odour.

Threat status: Least Concern ver 3.1

11. ARACEAE Juss.

1a. Fruit a reddish, ellipsoid or obconic-ellipsoid or subglobose odorless berry, 1 – 5-seeded.....*Alocasia*

1b. Fruit a greenish to whitish or dull orange, obconic or oblong, strongly fruit-smelling berry, many seeded.....*Colocasia*

Alocasia (Schott) G.Don

1a. Petiole weakly 25 – 50 cm.....*A. cucullata*

1b. Petiole to 1.3 m.....*A. macrorrhizos*

A. cucullata (Lour.) G.Don, Hort. Brit., ed. 3. 3, 631. 1839; Li & Boyce in Fl. China 23: 75. 2010. *Arum cucullatum* Loureiro, Fl. Cochinch. 2: 536. 1790.

Vernacular Name: Yellow-edge Hooded Elephant Ear (E)

Herbs, clumping, small to medium sized, to 1 m, evergreen. *Stems* erect, basally much branched. *Leaves* many together; *petiole* weakly, 25 – 50 cm, *sheath* reaching to c. 1/2 way, margins membranous; *leaf blade* broadly ovate – cordate, 10 – 40 × 7 – 28 cm, shallowly cordate at base, acute at apex. *Inflorescences* rarely produced, usually solitary, sometimes paired; *peduncle* 20 – 30 cm. *Spathe* green, 9 – 15 cm; proximal spathe 4 – 8 × c. 2.5 cm; limb narrowly cymbiform, 5 – 10 × 3 – 5 cm. *Spadix* 8 – 14 cm; female zone cylindrical, 1.5 – 2.5 cm × 7 mm; male zone yellow, c. 3.4 cm × 8 mm; appendix yellowish, narrowly conic. *Fruit* rarely produced.

Flowering & Fruiting: May – August

Habitat: Watersides, by fields; below 2000 m

Specimen Examined: India, Assam, NC Hills dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11736, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bangladesh, China, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Note: The corms are eaten in parts of India. The plants are used externally for treatment of detoxification of viper bites, abscesses, rheumatism and arthritis.

Threat status: Not Evaluated

A. macrorrhizos (L.) G.Don, Hort. Brit., ed. 3. 631. 1839; Li & Boyce in Fl. China 23: 75. 2010. *Alocasia indica* (Roxb.) Schott. in Oestr. Bot. Wochenbl. 1: 410. 1854; Hook.f., Fl. Brit. India 6: 525. 1893; Deb, Fl. Tripura 2: 369. 1983. *Arum indicum* Roxb., Fl. Ind. 3: 498. 1832. *Colocasia indica* Kunth, Enum. 3: 39. 1841.

Vernacular Name: Giant taro (E)

Herbs, to 4 m, latex slightly milky. *Stem* erect, to c. 1.5 m, decumbent. *Leaves* several together, clustered at tips of stems in larger plants; *petiole* to 1.3 m; *leaf blade* light green on both surfaces, ovate-sagittate, bluntly triangular, up to 120 × 50 cm, erect, margin entire to very slightly sinuous; posterior lobes 1/3 – 1/2 length of anterior, often overlapping, naked in sinus in mature plants. *Inflorescences* paired among leaf bases; *peduncle* barely

exceeding cataphylls at anthesis. *Spathe* 13 – 35 cm, constricted *c.* 1/6 from base; proximal spathe green, ovoid; limb pale yellow, broadly oblong-lanceolate, 10.5 – 29 cm. *Spadix* slightly shorter than spathe; female zone conic-cylindric, 1 – 2 × *c.* 1.5 cm; *pistil* pale green; *stigma* yellow, sessile, 3 – 5-lobed; *synandria* 5 – 9-merous, rhombic-hexagonal, convex-topped. Fruiting spathe green, oblong-ellipsoid. *Fruit* ellipsoid, *c.* 12 × 8 mm.

Flowering & Fruiting: January – July

Habitat: Common, in shady places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11737, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Tropical and subtropical India, Tropical Asia

Note: The rhizomes (swollen underground stems) are traditionally eaten as a starchy food. The rhizomes are used for animal feed and famine food for people.

Threat status: Not Evaluated

Colocasia Schott

- 1a. Spathe yellow, lanceolate.....*C. esculanta*
1b. Spathes pale green or somewhat purplish or purplish brown*C. fallax*

C. esculanta (L.) Schott., *Melet. Bot.* 18 1832. *Alocasia dussii* hort. ex Hook.f. in Bot. Mag. 120: t. 7364 in syn. 1894. *Alocasia illustris* W.Bull, Cat. 4. 1873; Flor. Mag. 107. 1874.

Vernacular Name: Kochu (A, B)

Herbs, rhizome stoloniferous. *Leaves* 20 – 28 × 10 – 18 cm, ovate, base cordate to sagittate, glabrous; *petiole* 30 – 45 cm long, cylindrical, smooth. *Peduncle* solitary or together; *spathe* 20 cm long, yellow, lanceolate. *Spadix* 10 cm long, cylindrical, appendages terete, obtuse. *Male flowers* above, *stamens* 6; *female flowers* on lower part; *ovary* 1-celled. *Fruit* berries, globose.

Flowering & Fruiting: May – October

Habitat: Moist places, streamside, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11560 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Pantropical

Note: Corm is edible.

Threat status: Not Evaluated

C. fallax Schott, *Bonplandia* 7: 28. 1859. *Colocasia heterochroma* H. Li & Wei, *Acta Bot. Yunnan.* 15 (1): 16. 1993.

Vernacular Name: Not known

Small stoloniferous, glabrous *herb*. *Rhizome* erect; stolons pale green. *Leaves* petiolate, green, blade paler or slightly glaucous abaxially, green or with dark patches between primary veins adaxially, cordate-peltate, ovate-cordate. *Inflorescence* 1 – 5 together; *peduncle* green, cylindrical. *Spathes* pale green or somewhat purplish or purplish brown. *Spadix* shorter than spathe; female and male zones separated by a zone of synandrodes.

Flowering & Fruiting: March – October

Habitat: Forest margins, moist shaded places along streams; 700 – 1400 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, West Block, Near Sindhuri, 10.09.2010, H. A. Barbhuiya 32, 56, 128 (ASSAM).

Distribution: India (Assam, Manipur, Meghalaya, Mizoram, Tripura, Sikkim, Bihar), Bangladesh, Bhutan, Nepal, China, Myanmar, Thailand, Vietnam

Note: Widely found in trade for use in aquaria.

Threat status: Least Concern ver 3.1

12. DIOSCOREACEAE R.Br.

Dioscorea L.

1a. Leaf blade cordate.....*D. bulbifera*

1b. Leaf blade triangular-ovate, usually 3-lobed.....*D. deltoidea*

D. bulbifera L., Sp. Pl. 2: 1033. 1753; Deb, Fl Tripura 2: 419. 1983; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 348. 2003.

Vernacular Name: Ban alu (B)

Large *climber*. *Stem* twining anticlockwise, glabrous. *Leaves* alternate or simple; *leaf blade* cordate, 8 – 20 × 2 – 20 cm, glabrous, margin entire, caudate to acuminate at the apex. *Male flowers*: solitary; *bract* and *bracteole* present; *perianth lobes* lanceolate, purple; *stamens* 6. *Female flowers*: *spikes*, *staminodes* 6, c. 1/4 of the perianth lobes. *Fruit* a capsule, densely dotted, oblong-globose; wings present.

Flowering & Fruiting: July – November

Habitat: forest margins, river banks

Specimen Examined: India, Assam, NC Hills dist., Haflong, 08.08.1908, W. G. Craib 476790, 476792, Fl. (CAL).

Distribution: India, Bhutan, Cambodia, China, Japan, Korea, Myanmar, Thailand, Vietnam; Africa, Oceania

Note: Although some wild varieties of *D. bulbifera* can be poisonous, many varieties of this species are cultivated for human consumption in tropical and subtropical countries in Asia, Africa and America where their edible tubers are an important human food source. *Dioscorea* species or “yams” are economically important world-wide as a food crop (Hammer, 1998).

Threat status: Not Evaluated

D. deltoidea Wall. ex Griseb. in Martius, Fl. Bras. 3 (1): 43. 1842.
Dioscorea nepalensis Sweet, Hort. Brit., ed. 2. 522, nomen. 1830.

Vernacular Name: Nepal Yam (E), Shingli-mingli, Baniatakari, Harvish (H)

Rhizome, ginger-shaped. *Stem* twining to left. *Leaves* alternate, simple; *petiole* 4 – 10cm; *leaf blade* drying gray-green, triangular-ovate, usually 3-lobed, 5 – 9 × 4 – 5.5 cm, adaxially glabrous, abaxially papillose along veins, shallowly cordate to subtruncate, apex of middle lobe acuminate, apex of lateral lobes rounded. *Male spike* solitary, sometimes branched, 9 – 16 cm. *Male flowers:* solitary or paired, sessile; *bracts* broadly ovate, membranous, apex acute; *perianth* saucer-shaped, 3 – 3.5 mm in diam., lobes ovate, c. 0.8 mm wide; *stamens* 6, inserted at base of perianth, *anthers* 3 introrse and 3 extrorse. *Female spike* to 5 cm, 4 – 6 flowered. *Female flowers:* staminodes present. *Capsule* brown at maturity, purplish brown spotted, globose or oblong-obovoid, 1.5 – 2.2 cm. *Seeds* ovate, winged all round.

Flowering & Fruiting: May – September

Habitat: Broad-leaved forests, scrub forests; 2000 m

*Specimen Examined:*Included after Sajem *et al.* 2008.

Distribution: India, Bhutan, China, Myanmar, Nepal, Sikkim, Thailand, Vietnam

Note: Tubers are edible, also used as medicine (Hmar tribe).

Threat status: Vulnerable (VU) in the state (Nayar & Shastri, 2000).

13. STEMONACEAE Caruel

Stemona Lour.

S. tuberosa Lour., Fl. Cochinch. 404. 1790; Hook. f., Fl. Brit. India 6: 298. 1892; Deb, Fl. Tripura 2: 416. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 352. 2003.

Vernacular Name: Not known

Twining *herb* with fleshy tuberous roots. *Leaves* opposite, c. 10 – 25 × 3 – 11 cm, ovate, cordate, acuminate, long petioled. *Flower* solitary, axillary, erect, campanulate. *Perianth* 4 segmented, lanceolate, acuminate and greenish. *Stamen* 4, large with stout red filaments. *Pistil* bicarpellary; *ovary* unilocular; *stigma* sessile, pointed. *Capsule* ovoid-oblong.

Flowering & Fruiting: June – December

Habitat: Spares hilly forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11592, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Northeast India, Central India, Bangladesh, china, Malaysia, Vietnam

Note: The tuberous roots are antibacterial, antiparasitic and expectorant. They are used in the treatment of coughs, ascariasis and oxyuriasis. A decoction of the roots is applied externally as a treatment for impetigo and scabies (Dan and Nhu, 1989).

Threat status: Not Evaluated

14. PANDANACEAE.Br.

Benstonea Callm. & Buerki

B. humilis (Lour.) Callm. & Buerki, *Candollea* 67 (2): 335. 2012. *Pandanus humilis* Lour., Fl. Cochinch. 603. 1790.

Vernacular Name: Not known

Small *shrub*. *Leaves* narrowly linear, to 60 – 75 × 0.8 – 1.1 cm, margin sparsely spinose, midrib abaxially spinose at the base only. *Inflorescence* terminal. *Staminate flower* reduced to one stamen, free or very slightly joined at the base. *Carpels* free, forming oneseeded drupes; *stigmas* positioned on abaxial side of the style, sharp, linear.

Flowering & Fruiting: April – August

Habitat: Sparse forests; c. 300 m.

Specimen Examined: India, Assam, Cachar dist., Borail Wildlife Sanctuary, West Block, Kalain Range, Kalaincherra, 27.08.2012, H. A. Barbhuiya 956 (ASSAM).

Distribution: India (Assam, Meghalaya), Bangladesh, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia.

Threat status: Not evaluated

15. COLCHICACEAE DC.

Gloriosa L.

G. superba L., Sp. Pl. 1: 305. 1753; Xinqi & Tamura in Fl. China. 24: 158. 2000. *Clinostylis speciosa* Hochst., Flora 27 (1): 26. 1844. *Gloriosa abyssinica* A.Rich., Tent. Fl. Abyss. 2: 322. 1850.

Vernacular Name: Khindaula (Dimasa)

Rhizome usually forked, fleshy. *Stem* scandent, 2 – 3 m or more. *Leaves* alternate or occasionally also opposite, sessile or shortly petiolate, lanceolate to ovate-lanceolate, 7 – 13 cm, apex long caudate with a tendril. *Flowers* nodding; pedicel 10 – 15 cm. *Tepals* reflexed, bright red, proximally tinged with yellow, linear-oblongate, 4.5 – 5 cm × 7 – 9 mm, base slightly clawed, margin much crisped. *Filaments* 3 – 4 cm; *anthers* 1 cm. *Style* 2.5 – 3.5 cm; *stigma* lobes 6 – 7 mm.

Flowering & Fruiting: July – August

Habitat: Forests, thickets; 900 – 1300 m

Distribution: India, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam; S and tropical Africa

Specimen Examined: Included after Sajem *et al.* 2008.

Note: The rhizomes are rich in the alkaloid colchicine. Leaves are used to remove intestinal worms (Dimasa). Ornamental.

Threat status: Least Concern ver 3.1

16. SMILACACEAE Ventenat

Smilax L.

S. zeylanica L., Sp. Pl. 1029. 1753; Hook. f., Fl. Brit. India 6: 309. 1892; Deb, Fl. Tripura 2: 392. 1983. *Smilax ovalifolia* Roxb. , Fl. India ed. 2. 294. 1832; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 357. 2003.

Vernacular Name: Kumarika (B)

Large *climbers*, prickly. *Leaves* ovate-oblong, cuneate or cordate at base; *petiole* stout, short, alternate, 3 – 7 ribbed, reticulate. *Flowers* c. 1 cm long, in globose 1 – 3 umbels, axillary peduncle. *Berries* globes, 1 – 3 seeded.

Flowering & Fruiting: June – December

Habitat: Common, in the hilly forest

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 12.12.2015, A. Bora & D. Bhattacharyya 11535, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11692, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: North-east India, Tropical Himalaya, Bangladesh, Myanmar

Note: Plant is used ayurvedically for certain diseases (Hooda *et al.* 2011).

Threat status: Not Evaluated

17. ORCHIDACEAE Juss.

- 1a. Plant terrestrial.....2
- 1b. Plant epiphytic, lithophytic or terrestrial, autotrophic or rarely mycotrophic3
- 2a. Rhizome ovoid, stout; roots many, filiform, slender, fibrous*Arundina*
- 2b. Rhizome elongate, creeping, with fibrous roots at nodes.....*Goodyera*
- 3a. Inflorescence erect or pendulous.....4
- 3b. Inflorescence not as above.....5
- 4a. Inflorescence arising from base of pseudobulb; rachis several to many flowered, rarely reduced to a solitary flower.....*Cymbidium*
- 4b. Inflorescence usually racemose.....6
- 5a. Inflorescence densely many flowered.....*Ornithochilus*
- 5b. Inflorescence laxly many flowered.....*Renanthera*
- 6a. Pollinia 4.....7
- 6b. Pollinia 2.....8
- 7a. Pollinia stipe sublinear.....*Chiloschista*
- 7b. Pollinia without caudicles or stipes.....*Dendrobium*

- 8a. Pollinia globose, stipe long and narrow, viscidium usually small.....*Rhynchostylis*
 8b. Pollinia subglobose, attached by a common short stipe to a large viscidium.....*Vanda*

Arundina Blume

A. graminifolia (D. Don) Hochr. in Bull. N. Y. Bot. Gard. 6: 270. 1910; Barua, Orchid Flora of Kamrup District, Assam 42. 2001. *Arundina chinensis* Blume, Bijdr. 8: 502. 1825; Hook. f., Fl. Brit. India 5: 857. 1890.

Vernacular Name: Bamboo orchid (E)

Subshrub, terrestrial, upto 1 – 2 m tall. Stems tufted, internodes 2 – 5 cm long. Totally ensheathed with leaf-sheaths, green, nodes slightly swollen. Leaves narrowly lanceolate, acuminate, sub-coriaceous, 14 – 27 × 1.8 – 3.2 cm, sessile, sheathed; racemes 22 – 35 cm long, simple or branched, axis longitudinally furrowed. *Floral bracts* triangular-ovate, copular, acute or acuminate, greenish-white. *Flowers* few, 3 – 4.5 cm across; *calyx* lanceolate, erect or semierect, pale pinkish white; *corolla* broadly obovate, gradually acute, pink; *lip*. 4.3 × 3.4 cm, 3-lobed, sessile, reddish pink with dark spots below. *Ovary* resupinate, shortly pedicelled. *Capsule* oblong, drooping.

Flowering & Fruiting: May – August (sometimes all the year)

Habitat: hilly forests, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11335, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India: Tamilnadu, Sikkim, Arunachal Pradesh, Meghalaya, Nagaland and Assam; Sri Lanka, Nepal, Bhutan, Myanmar, Thailand, Cambodia, Philippines, China, Java, Sumatra, Borneo, Celebes, Pacific island

Note: Used as ornamental plant. In India, scrapped bulbous stem applied on heels to treat cracks. Leaves, root and juice used for ear pain and rheumatism (Website: <http://www.stuartxchange.com/BambooOrchid.html>).

Threat status: Not Evaluated

Chiloschista Lindl.

C. lunifera Schltr. in Repert. Spec. Nov. Regni Veg. Beih. 4: 275, in obs. 1919; Barua, Orchid Flora of Kamrup District, Assam 88. 2001.

Vernacular Name: Not known

Stem reduced, 4 – 8 mm long, covered with scales and roots. *Roots* tufted. *Leaves* 1 to 4, linear-lanceolate, c. 2 × 05 cm. *Inflorescence* in racemes, many flowered, pubescent and short peduncled. *Floral bracts* ovate, acute, glabrous. *Flowers* creamy with purplish brown dots on the lip; *calyx* spreading; *corolla* oblong or subquadrate, rounded at apex, c. 4 × 3

mm; *lip* 3-lobed, sessile at the apex of column foot forming a triangular sac; *hypochile* erect; *column* short; *rostellum* indistinct; *antherc.* 1.2 mm across, *pollinia* 2, unequally bifid, yellow; *ovary* pubescent. *Capsule* oblong, straight or curved.

Flowering & Fruiting: April – July

Habitat: Epiphyte, hilly forest area

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11718, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Nepal, Bhutan, Myanmar, Thailand, Malaya

Threat status: Not Evaluated

Cymbidium Sw.

C. aloifolium (L.) Sw., Nova Acta Regiae Soc. Sci. Upsal. 6: 73. 1799; Barua, Orchid Flora of Kamrup District, Assam 129. 2001; Liu *et al.* Fl. China 25: 263. 2005. *Epidendrum aloifolium* L., Sp. Pl. 2: 953. 1753.

Vernacular Name: Aloe Leaf Cymbidium (E)

Herbs, epiphytic, autotrophic. *Pseudobulbs* ovoid, 3 – 6 × 2.5 – 4 cm, enclosed in leaf bases. *Leaves* 4 or 5, *c.* 40 – 90 × 1.5 – 4 cm, thickly leathery, obtuse at apex and unequally 2-lobed. *Inflorescence* arising from within sheaths at base of pseudobulb, pendulous, 20 – 60 cm; *rachis* 20 – 35 flowered; *floral bracts* 2 – 5 mm. *Flowers* slightly fragrant, medium-sized; calyx and corolla pale yellow to cream-yellow, with maroon-brown stripe at the centre; *lip* white or cream. *Calyx* spreading, narrowly oblong to narrowly elliptic, 15 – 20 × 4 – 6 mm, apex obtuse. *Corolla* narrowly elliptic, 14 – 18 × 4 – 6 mm, apex obtuse to acute; *lip* subovate, 13 – 20 mm, not fused to basal margins of column, base slightly saccate, 3-lobed; *lateral lobes* acute, loosely clasping column and exceeding column and anther; *mid-lobe* recurved; *disk* minutely papillate or puberulent, with 2 sigmoid lamellae. *Column* slightly arcuate, 10 – 12 mm; *pollinia* 2. *Capsule* oblong-ellipsoid, 35 – 65 × 20 – 30 mm.

Flowering & Fruiting: April – August

Habitat: Large branches or tree trunks in open forests; 100 – 1100 m.

Specimens Examined: India, Assam, Cachar dist., Churaibari, 20.04.2014, A. Bora & D. Bhattacharyya 11717, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Note: It furnishes salep. Seeds are used for the treatment of cut injury and lesion (Website: www.mpbd.info/plants/cymbidium-aloifolium.php).

Threat status: Not Evaluated.

Dendrobium Sw.

D. aphyllum C.E.C.Fisch. in Gamble, Fl. Madras 1416. 1928. *Callista aphylla* (Roxb.) Kuntze, Revis. Gen. Pl. 2: 653. 1891. *Cymbidium aphyllum* (Roxb.) Sw. in Nova Acta Regiae Soc. Sci. Upsal. 6: 73. 1799.

Vernacular Name: Not known

Herbs, epiphytic, autotrophic, sometimes lithophytic, pendulous stems. *Leaves* 3 – 10 × 1 – 3 cm, deciduous. *Stems* cane-like with numerous aerial growths (keikis). *Inflorescences* short, 1 – 3 flowered. *Flowers* 4 – 5 cm across, scented. *Calyx* and *corolla* translucent, yellowish cream to whitish, marked with pinkish violet. *Lip* trumpet-shaped, pale yellow or white, densely hairy on the outer surface.

Flowering & Fruiting: March – June

Habitat: epiphyte or lithophyte, in evergreen and deciduous forests; 200 to 1800 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11716, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: North-east India, Sikkim, South India, Garhwal Himalaya, Madhya Pradesh, Orissa, Andaman Island, Bangladesh, Nepal, Bhunat, Myanmar, Thailand, W. China, Malaya, Laos, Vietnam, Java

Note: This species is a popular ornamental, which is commercialized worldwide (Romand-Monnier, 2013).

Threat status: Least concern ver 3.1

Goodyera R.Br.

G. procera (Wall. ex Ker-Gawl) Hook., Exot. Fl. 1: t. 39. 1823; Hook. f., Fl. Brit. India 6: 111. 1890; Deb, Fl Tripura 2: 456. 1983; Barua, Orchid Flora of Kamrup District, Assam 47. 2001.

Vernacular Name: Not known

Herbs terrestrial, 30 – 50 cm tall. *Roots* thick, fibrous. *Stem* glabrous, cylindrical, pale green, internodes 3.5 – 7.5 cm long, partially covered with leaf sheaths. *Leaves* petiolate, lanceolate, acute at the tip, narrow at the base; *petiole* stout. *Flowers* glabrous, c. 3 mm across, c. 6 mm long; *calyx* obtuse, pale green; *corolla* obliquely dimidiate-spathulate with a linear claw, obtuse, whitish with darker streaks; *lip* cymbiform. *Stigma* large; *anther* 2-chambered, beaked; *ovary* glabrous, resupinate, pale green, subsessile.

Flowering & Fruiting: April – May (occasionally in Sept. – Oct also)

Habitat: rare, on moist floor, on rock

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11326, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India: Tropical Himalaya from Garhwal to NE India, W. Bengal, Bihar, Orissa, Madhya Pradesh, Tamilnadu, Kerela; Sri Lanka, Nepal, Bangladesh, Myanmar, Thailand, Malaysia, Java, Borneo, China, Hongkong

Threat status: Not Evaluated

Ornithochilus (Wall. ex Lindl.) Benth. & Hook.f.

O. cacharensis Barbhuiya, B. K. Dutta & Schuit. in Kew Bull. 67 (3): 511. 2012.

Vernacular Name: Not known

Monopodial *epiphyte*. *Leavesc.* 8 cm, twisted at the base, elliptic-oblong, 19 – 21 × 3 – 4.3 cm, attenuate toward the base, acute at the apex. *Inflorescences* paniculate or sometimes racemose, 35 – 38 cm long, *c.* 30 – 70 flowered; *peduncle* 4 – 10 cm long. *Floral bracts* pale brown, triangular, *c.* 1.8 mm long, acute. *Pedicel* and *ovary* 17 – 18 × 1 mm. *Flowers* red-purple, the *lip* darker than the calyx and corolla, *c.* 1.7 cm diam. *Dorsal sepal* oblongelliptic, concave, 3-nerved, 7.7 × 2.5 – 3.8 mm, obtuse at apex. *Lateral calyx* obliquely ovate, 3-nerved, 8.2 × 4.5 – 4.7 mm, sub-acute at apex. *Corolla* narrowly oblong, 1-nerved, 7 × *c.* 1.8 mm, apex obtuse. Lip 4-lobed, spurred; *hypochile* at right-angles to the column, 2-lobed; *epichile* 7 × 9 mm when spread, at right angles to hypochile, bilobed; *spur* near apex of hypochile cylindrical, incurved, *c.* 4.2 mm long, apex obtuse. *Column* red-purple, ventral side whitish, glabrous, 6.2 – 6.5 mm long; *column-foot* short, *c.* 0.8 mm long. *Anther-cap* truncate, minutely papillose, 2.1 – 2.3 × 1.4 – 1.5 mm; *pollinia* yellow.

Flowering: June – October

Habitat: Epiphytic on trunk of *Duabanga grandiflora* in wet lowland forest; *c.* 130 m

Distribution: Cachar district, Assam, India

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, eastern sector, 16.07.2011, H. A. Barbhuiya 665, Fl. (ASSAM).

Note: Endemic

Threat status: Not Evaluated

Renanthera Lour.

R. inschootiana Rolfe in Bull. Misc. Inform. Kew 56: 200. 1891. *Renanthera papilio* King & Prain in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 64: 328. 1896.

Vernacular Name: Red vanda (E), Senri (Biate), Nauban (Vaiphei)

Stems woody, up to 90 cm high. *Leaves* oblong, 10 × 1.5 cm, bilobed at apex, deep green. *Inflorescence* up to 30 cm long, horizontally spreading, 15 – 30-flowered. *Flowers* bright red, *c.* 5 cm in diam.; *dorsal sepal* linear-lanceolate, 20 × 4 mm, *lateral sepal* 25 – 30 × 15 – 20 mm, elliptic-ovate, clawed, divergent; *petals* spatulate, 14 × 2 mm; *lip* sessile, *c.* 5 mm long, 3 lobed with short spur, bright red.

Flowering & Fruiting: March – September

Habitat: Grows as an epiphyte on tree trunks; 1000 – 2000 m

Specimen Examined: Included after Sajem *et al.* 2008.

Distribution: India (Arunachal Pradesh, Assam, Nagaland, Manipur and Mizoram), S. China, Myanmar, Laos and Vietnam

Note: Ornamental, high value in the market.

Threat status: Critically Endangered (CR) in the district (Sajem *et al.*, 2008).

Rhynchostylis Blume

R. retusa (L.) Blume, Bijdr. 286. t. 49. 1825; Hook. f., Fl. Brit. India 6: 32. 1890; Barua, Orchid Flora of Kamrup District, Assam 111. 2001; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 340. 2003. *Epidendrum retusum* L., Sp. Pl. 953. 1753.

Vernacular Name: Kapauphul (A)

Epiphytic *herb*. *Stem* stout, sheathed at base, pseudobulb absent, unbranched or rarely branched. *Roots* long, thick, whitish-grey. *Leaves* oblong, curved, sessile, channelled near the base, thickly coriaceous, *c.* 15 – 30 × 2.5 – 3.5 cm. *Flowers* red to whitish pink or purplish spots, in many flowered drooping racemes; *bracts* ovate, persistent. *Calyx* ovate, obtuse; *corolla* oblong, obtuse. *Fruit* 3-angled capsule. *Pedicelled ovary*. 1 cm long, pale purplish white.

Flowering & Fruiting: April – February

Habitat: Occasionally, in hilly forest

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11507, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Sri Lanka, Nepal, Bangladesh, Myanmar, Thailand, Malaysia, Java, Phillipines

Note: *Rhynchostylis retusa* is a medicinal orchid, used to cure blood dysentery, Tuberculosis, epilepsy, menstrual disorders, fever, gout, Asthma, rheumatism, Malarial fever etc. (Radhia and Murthy, 2013). Used as ornamental plant.

Threat status: Not Evaluated

Vanda Jones ex R.Br.

V. coerulea Griff. ex Lindl., Edwards's Bot. Reg. 33: sub t. 30. 1847. *Vanda coerulea* Griff. ex Lindl. f. *rogersii* (Hort.) Christenson in Orchid Rev. 117. 1288: 222. 2009.

Vernacular Name: Autumn lady's tresses orchid (E)

Epiphytic. *Leaves* leathery, strap-like, attached to prominent leaf sheaths (part of leaf stalk that covers and rises up from the stem). *Flowers* blue, pink or white, *c.* 13 cm across, *lip* (labellum) small, *c.* 2 cm in length. *Flower* spikes occasionally branched, bear 20 – 30 flowers per plant on multiple flower spikes.

Flowering & Fruiting: July – November

Habitat: Epiphytic (grows above the ground, using other plants or objects for support) on exposed deciduous trees; 900 – 1500 m.

Specimen Examined: Included after Sajem *et al.* 2008.

Distribution: India (Assam, Arunachal Pradesh, Meghalaya, Nagaland), Nepal, Burma, northern Thailand, and southern China (Yunnan), and is also likely to occur in Bhutan, Laos and Vietnam

Note: Ornamental, high value in the market.

Threat status: Vulnerable (VU) in the district (Sajem *et al.*, 2008).

18. AMARYLLIDACEAE J. St. Hilaire

1a. Perianth funnellform; tube short or long; lobes 6, subequal; ovary with many ovules; stigma 3-lobed.....*Allium*

1b. Perianth segments free or united into a tube at base; ovary with 1 to several ovules per locule; stigma entire or 3-cleft.....*Zephyranthes*

Allium L.

1a. Leaves shorter than scape, 0.5 – 2 cm wide, terete.....*A. cepa*

1b. Leaves linear, flat, c. 1.5 – 8 mm wide, shorter than scape.....*A. tuberosum*

A. cepa L., Sp. Pl. 1: 300. 1753. *Allium angolense* Baker, Trans. Linn. Soc. London, Bot. 1(5): 262. 1878.

Vernacular Name: Piyaj-r-nala (A)

Bulb solitary or clustered; tunic purple-red, papery to thinly leathery, entire. *Leaves* shorter than scape, 0.5 – 2 cm wide, terete. *Scape* developed or not. *Spathe* 2- or 3-valved, persistent. Umbel globose, densely many flowered. *Pedicels* equal, c. 5 times as long as perianth, bracteolate. *Perianth* white; segments with green or pale red midvein, oblong-ovate, 4 – 5 × c. 2 mm. *Filaments* equal, slightly longer than perianth segments, connate at base, adnate to perianth segments; outer ones subulate; inner ones broadened at base. *Ovary* subglobose. *Style* slightly exserted.

Flowering & Fruiting: May – August

Habitat: Cultivated as a vegetable.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, open field near Ditekcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11552, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India and widely cultivated elsewhere

Note: The plant is used as spice.

Threat status: Not Evaluated

A. tuberosum Rottler ex Spreng., Syst. Veg. (ed. 16) 2: 38. 1825; Deb, Fl. Tripura 2: 412. 1983. *Allium tuberosum* Roxb., Hort. Bengal. 24. 1814; Hook.f., Fl. Brit. India 6: 34. 1892.

Vernacular Name: Gandhana (A), Banga gandina (B)

Small *herb*, bulbs clustered, 1 – 3 bulbs attached together, yellow to brownish. *Leaves* linear, flat, c. 1.5 – 8 mm wide, shorter than scape. *Scape* 30 – 50 cm long, terete, base leafy. *Inflorescence* umbel, many flowered, *bracteolate*; *pedicel* much longer than perianth. *Perianth* segments white, ovate. *Stamens* included, filaments narrow, triangular. *Ovary* slightly tuberculate, perigynous.

Flowering & Fruiting: July – September

Habitat: widely cultivated as a vegetable

Specimens Examined: *Specimens Examined:* India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11551, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Tropical Asia

Note: Used as a spice and as substitute for onion and garlic.

Threat status: Not Evaluated

Zephyranthes Herb.

Z. carinata Herb., Bot. Mag. 52: t. 2594. 1825; Ji & Meerow in Fl. China 24: 264. 2000.

Vernacular Name: Caltrop, Jamaica feverplant (E)

Bulbs globose, 2 – 3 cm in diam. *Leaves* several, fascicled, linear, flattened, 15 – 30 cm × 6 – 8 mm. *Involucres* purplish, 4 – 5 cm. *Flower* solitary, terminal; *pedicel* 2 – 3 cm. *Perianth* rose red to pink; tube 1 – 2.5 cm; lobes obovate, 3 – 6 cm, apex subacute. *Stamens* 2/3 – 4/5 as long as perianth; *anther* versatile. *Style* slender; stigma strongly 3-lobed. *Capsule* subglobose.

Flowering & Fruiting: Summer – Autumn

Habitat: Cultivated as an ornamental plant

Specimens examined: India: Assam: Cachar Dist., Barail Wildlife Sanctuary, roadside, Balacherra, 24.04.2014, A. Bora & D. Bhattacharyya 11587, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, naturalized in S. China, native to Mexico

Note: Used as ornamental plant.

Threat status: Not Evaluated

19. ASPARAGACEAE Juss.

Peliosanthes Andrews

1a. Scape very short; inflorescence a raceme short.....*P. griffithii*

1b. Scape 3 – 20 cm; inflorescence a reduced panicle.....*P. teta*

P. griffithii Baker in J. Linn. Soc., Bot. 17: 506. 1879.

Vernacular Name: Not known

Perennial, rhizomatous herb. *Leaves* elliptic-lanceolate, thin subcaudately acuminate, 5 – 7 nerved; *petiole* slender. *Scape* very short, raceme short; *bracts* subulate-lanceolate all or the lower much longer than the small pedicelled flowers. *Pedicels* sometimes c. 6 mm long and *lower bracts* nearly 1.3 cm long. *Perianth* c. 3 mm in diameter, green or lurid purple. *Seeds* small, oblong.

Flowering & Fruiting: June – October

Habitat: Moist places, 200 – 700 m

Specimen Examined: India, Assam, Cachar, Barail Wildlife Sanctuary, West Block, Kalain Range, Near Kalaincherra, 08.10.2011, H. A. Barbhuiya 727 (ASSAM).

Distribution: India (Assam, Arunachal Pradesh, Meghalaya, Sikkim, West Bengal), Nepal

Threat status: Not evaluated

P. teta Andrews in Bot. Repos. 10: t. 605. 1810; Chen *et al.* in Fl. China 24: 382. 2000.

Peliosanthes altissima Donn, Hort. Cantabrig., ed. 6. 89. 1811.

Peliosanthes graminea Ridl. in J. Straits Branch Roy. Asiat. Soc. 59: 207. 1911.

Vernacular Name: Not known

Stem short. *Leaves* 4 – 8; *petiole* 5 – 25 cm, slightly compressed; *leaf blade* lanceolate to elliptic, 12 – 16 × 2 – 4 cm, acute to acuminate at apex. *Scape* 3 – 20 cm. *Inflorescence* a reduced panicle, 5 – 15 cm; *bracts* lanceolate, 3 – 7 mm, membranous. *Flowers* in clusters of 2 – 5; *pedicel* 3 – 8 mm; *bracteole* 1, c. 2 mm. *Perianth* purple; tube 2 – 3 mm, mostly adnate to ovary; lobes oblong to ovate, 2.5 – 4 × 1.5 – 2 mm. *Corona* purple, c. 0.5 mm wide; *anthers* c. 0.5 mm. *Style* short; *stigma* capitate. *Seeds* subglobose.

Flowering: January

Habitat: Forests; c. 600 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11633, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Bangladesh, NE and SE India, Laos, Malaysia, Myanmar, Sikkim, Thailand, Vietnam.

Threat status: Not evaluated

20. ARECACEAE C.H. Schultz

- 1a. Stems clustered, sometimes spreading by stolons.....*Arenga*
- 1b. Stems solitary or clustered.....2
- 2a. Leaves 5 – 28, palmate.....*Licuala*
- 2b. Leaves not as above.....3

- 3a. Inflorescences branched to 3 orders, borne below crownshaft.....*Areca*
 3b. Inflorescences usually branched to 1 order, rarely spicate, borne either among or below
 leaves.....*Caryota*

Areca L.

A. catechu L., Sp. Pl. 2: 1189. 1753; Becc. & Hook.f. in Hook.f., Fl. Brit. India 6: 405. 1892.

Vernacular Name: Betel nut (E), Supari (B), Tamul (A)

Tree. Stems solitary, erect, to 20 m tall with conspicuous nodes. *Leaf sheaths* closed and forming green, slightly swollen crownshafts to 1 m; petioles no more than 5 cm; *rachis* recurved, to 2 m; *pinnae* 20 – 30 per side of rachis, regularly and closely arranged, stiffly erect; middle pinnae 30 – 60 cm, 3 – 7 cm wide at mid-point. *Inflorescences* infrafoliar, branched to 3 orders, erect; *rachillae* many, flexuose, yellowish green, to 25 cm; *male flowers* solitary, alternate and distichous on rachillae; *stamens* 6; *female flowers* at bases of rachillae only, larger than male flowers. *Fruits* yellow, orange, or red, ovoid, to 8 × 6 cm.

Flowering & Fruiting: April – September

Habitat: Common, roadside, jhum cultivation

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Maruwacherra, 24.04.2014, A. Bora & D. Bhattacharyya 11561 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Origin probably Central Malaysia, cultivated throughout tropical Asia.

Note: The flowers are very sweet-scented and in Borneo are used in medicines as charms for the healing of the sick. In India the nut has long been used as a taenifuge for tapeworm.

The natives chew these nuts as raw (website: <http://www.botanical.com/botanical/mgmh/a/areca056.html>).

Threat status: Not Evaluated

Arenga Labill.

A. westerhoutii Griff., Calcutta J. Nat. Hist. 5: 474. 1845.
Saguerus westerhoutii H.Wendl. & Drude, Palmiers 256. 1878.

Vernacular Name: Not known

Tree, up to 12 m tall. *Stems* solitary c. 60 cm in diam. *Leaf petioles* 1 – 1.5 m; *rachis* 3 – 4 m long; *pinnae* 80 – 150 per side of rachis, linear, with ears at bases, regularly arranged and spreading in same plane except for basal few pinnae; *middle pinnae* to 130 cm. *Inflorescences* solitary at each node, upto 3 m long; *male rachillae* to 60 cm long; *male flowers* 2 – 2.5 cm; *calyx* 4 – 6 mm; *corolla* c. 2 cm; *stamens* numerous. *Fruits* greenish black, globose, to 7 cm in diam.

Flowering & Fruiting: June – September

Habitat: Road side, forest margin

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, East Block, Nimatripahar, 17.07.2011, H. A. *Barbhuiya* 684 (ASSAM).

Distribution: India (Assam, Manipur), Myanmar, China, Thailand, Laos, Cambodia, Vietnam, Malaysia.

Note: The leaves are used for thatching and wickerwork. The wood is used to make small utensils, or is even used in construction, but it is said not to be durable (website: <http://tropical.theferns.info/viewtropical.php?id=Arenga+westerhoutii>).

Threat status: Not Evaluated

Caryota L.

C. urens L., Sp. Pl. 2: 1189. 1753; Becc. & Hook.f. in Hook.f., Fl. Brit. India 6: 422. 1892.

Vernacular Name: Fishtail Palm (E), Chewa gach (A)

Medium sized *palm* up to 20 m tall, unarmed, solitary or clustered. *Leaves* bipinnate; sheath triangular, densely hairy; petiole channelled above; *leaflets* numerous, obliquely shaped, upper margin irregularly toothed. *Inflorescence* axillary, solitary, pendulous, branched or rarely unbranched, bisexual; peduncular bracts up to 8, large. *Flowers* with 3 calyx and 3 corolla. *Male flower* with free corolla; *stamens* 6, filaments short, sometimes connate at base. *Female flower* globose; *corolla* connate up to half way; *ovary* superior, *stigma* 3-lobed. *Mesocarp* is fleshy, needlelike crystals.

Flowering & Fruiting: June-September

Habitat: Road side, forest margin, moist to wet forests; upto 1200 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11738, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Malaysia, Myanmar, Nepal, Papua New Guinea, Sri Lanka, Thailand, Vietnam

Note: Juice is nutritious, tonic, aphrodisiac and laxative. Confection is used in seminal weakness and urinary disorders. Juice and charred fruit is applied to the forehead in hemicrania. Nut is cooling, allays thirst and fatigue (website: <http://www.mpbid.info/plants/caryota-urens.php>).

Threat status: Least Concern ver 3.1

Licuala Wurmb

L. peltata Roxb. ex Buch.-Ham., Mem. Werner. Nat. Hist. Soc. v. 313. 1826.

Vernacular Name: Chatta-pat (A)

Tree, upto 10 m of height, 10 – 12 cm of diameter. *Leaf* crown circular fan-shaped, 1 – 2 m wide, divided almost to the base into numerous large segments or costapalmate, rarely entire, dark green and shiny. *Petioles* long, of 1 – 2 m, spines up to 1 cm in length.

Inflorescences in spikes, very long, 4 m, *flower* greenish white, nectar present and very fragrant. *Fruits* globose, 1.5 cm in diameter, orange.

Flowering & Fruiting: June – September

Habitat: Road side, forest margin, moist to wet forests; upto 600 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11498 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (Assam, Andaman and Nicobar island), Bangladesh, Bhutan, East Himalaya, Malaya, Myanmar and Thailand.

Note: The leaves are also used to make hats and roots are harvested in traditional medicine as a diuretic.

Threat status: Not Evaluated

21. COMMELINACEAE Mirb.

- 1a. Capsule ovoid-globose.....2
1b. Capsule oblong..... *Commelina*
2a. Fertile stamens 6..... *Floscopa*
2b. Fertile stamens 2..... *Murdannia*

Commelina L.

C. diffusa Burm.f., Fl. India 18, t. 7, f. 2. 1768. *Aneilema cymosum* Kunth, Enum. Pl. 4: 69. 1843. *Commelina aquatica* J.K.Morton in J. Linn. Soc., Bot. lv. 515. 1956.

Vernacular Name: Spreading dayflower (E)

Herbs, annual. *Stems* creeping. *Leaves* sessile; *leaf sheath* hispid; *leaf blade* lanceolate, 3 – 12 × 0.8 – 3 cm, glabrous or hispid. *Involucral bracts* folded, ovate-lanceolate. *Flowers* bisexual. *Calyx* 3 – 4 mm, membranous. *Corolla* blue, 4.2 – 6 mm. *Fruit* a capsule, oblong.

Flowering & Fruiting: May – December

Habitat: Streamsides, humid places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11581, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Korea, Republic of Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, New Caledonia, South Africa, Sri Lanka, Taiwan, Province of China, Thailand, Viet Nam, Yemen (North Yemen)

Note: Bruised plant is locally used against burns, itches and boils (Cook 1996).

Threat status: Least concern ver 3.1

Floscopa Lour.

F. scandens Lour., Fl. Cochinch. 1: 193. 1790; Hong & DeFilipps in Fl. China 24: 25. 2000. *Aneilema cymosum* Kunth, Enum. Pl. 4: 69. 1843.

Vernacular Name: Climbing flower cup (E)

Stems 20 – 70 cm, simple, prostrate. *Plants* pubescent throughout or hairy only on leaf sheaths and inflorescences. *Leaves* usually sessile or with short, winged petiole; *leaf blade* elliptic to lanceolate, 4 – 12 × 1 – 3 cm. *Inflorescences* several, terminal and axillary, broomlike panicle, 8 × 4 cm, densely hairy; *peduncle* nearly absent; *pedicels* very short. *Calyx* shallowly boat-shaped. *Corolla* blue or purple. Fertile *stamens* 6; *filaments* glabrous. *Capsule* ovoid, compressed. *Seeds* gray-blue, semiellipsoid.

Flowering & Fruiting: July – November

Habitat: forests, nearby waterbodies; near sea level to 1700 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, foot hills of Durbintila, 12.12.2013, A. Bora & D. Bhattacharyya 11374, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Laos, Myanmar, Sikkim, Thailand, Vietnam; Oceania

Note: The juice of the plant is squeezed into the eyes for sore eyes and ophthalmia. It is used in the treatment for broken bones (Rehel, 2011).

Threat status: Least concern ver 3.1

Murdannia Royle

M. nudiflora (L.) Brenan in Kew Bull. 7 (2): 189. 1952; Hong & Robert A. DeFilipps in Fl. China 24: 30. 2000. *Aneilema nudiflorum* (L.) R.Br. ex Sweet, Hort. Brit. 430. 1826. *Tradescantia malabarica* L., Sp. Pl., ed. 2. 1: 412. 1762.

Vernacular Name: Naked-stem dewflower (E)

Herbs annual. *Roots* fibrous, slender, glabrous or tomentose. *Rhizomes* absent. *Stems* numerous, diffuse, creeping proximally, simple or branched, 10 – 50 cm, glabrous. *Leaves* nearly all cauline; *leaf sheath* mostly less than 10 mm, hirsute, sometimes glabrous except along mouth slit; *leaf blade* linear or lanceolate, 2.5 – 10 × 0.5 – 1 cm, glabrous or sparsely hispid on both surfaces, apex obtuse or acuminate. Terminal panicles or solitary, with several densely arranged flowers; *peduncle* slender, to 4 cm; proximal *involucral bracts* leaflike but smaller than leaves, distal ones less than 10 mm; *bracts* caducous; *pedicels* slender, straight, 3 – 5 mm. *Calyx* ovate-elliptic, c. 3 mm. *Corolla* purple, obovate-orbicular. Fertile *stamens* 2; filaments bearded; *staminodes* 2 – 4. *Capsule* ovoid-globose.

Flowering & Fruiting: June – October

Habitat: Wet places by water; low elevations

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11303, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Philippines, Sikkim, Sri Lanka; Indian Ocean and Pacific Islands.

Note: It is used as fodder for animals in several countries. It is eaten as a vegetable during famine in India, considered as a palatable vegetable elsewhere and leaves are used as poultice in Indonesia (Website: <http://www.cabi.org/isc/datasheet/35180>).

Threat status: Not Evaluated

22. PONTEDERIACEAE Kunth

1a. Flowers distinctly pedicellate; perianth actinomorphic, segments free nearly to base.....*Monochoria*

1b. Flowers sessile; perianth zygomorphic, segments basally united into a tube.....*Eichhornia*

Eichhornia Kunth

E. crassipes (Mart.) Solms, Monogr. Phan. 4: 527. 1883. *Pontederia crassipes* Martius, Nov. Gen. Sp. Pl. 1: 9. 182. 1816.

Vernacular Name: Water hyacinth (E), Meteka, Kashuripena (A)

Herbs floating. *Roots* fibrous. *Stems* very short; *stolons* greenish or purplish. *Leaves* radical, rosulate; *petiole* yellowish green to greenish, 10 – 40 cm, spongy; *leaf blade* orbicular, broadly ovate, 4.5 – 14.5 × 5 – 14 cm, leathery, glabrous, shallowly cordate, rounded or cuneate at base. *Inflorescences* bracteate, spirally 7 – 15-flowered. *Perianth* 6-lobed, purplish blue, petaloid, ovate to elliptic. *Stamens* 6, 3 long and 3 short; *filaments* curved, hairy. *Pistil* heterostylis; stigma hairy. *Fruit* a capsule, ovoid.

Flowering & Fruiting: July – November

Habitat: Naturalized, growing gregariously in pools, ditches, and rice fields; 200 – 500 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalain Range, 26.11.2014, A. Bora & D. Bhattacharyya 11707, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, native to Brazil; widely introduced and naturalized in tropics and subtropics

Note: Whole plant is potentially an excellent source of biomass. Through an anaerobic fermentation process, polluted hyacinths can be converted to the natural gas methane – a costly process that may become more economical as supplies of underground natural gas are depleted (Website: http://practicalplants.org/wiki/Eichhornia_crassipes).

Threat status: Not evaluated

Monochoria C.Presl.

M. hastata Solms, Monogr. Phan. 4: 523, sphalm. 1883; Deb, Fl. Tripura 2: 391. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary

358. 2003. *Pontederia hastate* L., Sp. Pl. 288. 1753. *Monochoria hastaefolia* Presl, Hook. f., Fl. Brit. India 6: 362. 1882.

Vernacular Name: Kachuri (A)

Aquatic *herb* with erect or oblique stem, long and strong rhizomes. *Leaves* 10 – 20 × 4 – 15 cm, sagittate, hastate or cordate, acute or obtuse; *petioles* sheathing. *Flower* bluish, long pedicelled, many flowered racemes. *Perianth* actinomorphic, 6-lobed. *Stamens* 1 large, blue and 5 smaller, yellow. *Ovary* 3 celled; *style* pubescent at the top. *Capsule* subglobose or oblong, within persistent perianth.

Flowering & Fruiting: June – December

Habitat: common, in marshy places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11317, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar); India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11342, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar);

Distribution: India, China, Malaysia, Sri Lanka, South-east Asia

Note: The leaves are laxative and its paste is served to cattle with diarrhoea. It is also used for human consumption. It has also been used for the treatment of wounds, as an alternative, refrigerant, and tonic (Gupta, 2011).

Threat status: Least Concern ver 3.1

23. MUSACEAE Juss.

Musa L.

M. paradisiaca L., Sp. Pl. 2: 1043. 1753; Wu & Kress in Fl. China 24: 317. 2001.

Vernacular Name: Kola (B)

Pseudostems clumped, c. 6 m. *Petiole* 60 – 75 cm, margin open, c. 2 cm wide, closed when young; *leaf blade* ovate-oblong, c. 2.9 m × 90 cm, auriculate, asymmetric at base. *Inflorescence* pendulous, c. 2.5 m; *peduncle* and *rachis* glabrous. *Bracts* of bisexual and male flowers purple-red, ovate to lanceolate, persistent, obtuse at apex; *bracts* of female flowers deciduous. *Compound tepal* adaxially pale purple, abaxially pale purple-white, 4 – 5 cm, striate; *free tepal* milky white, translucent, obovate, emarginated at apex. *Infructescence* pendulous, with c. 8 clusters each of 15 or 16 berries in 2 rows. *Berries* gray-green, obovoid, c. 13 × 4 cm, base narrowed into a stalk, apex contracted. *Seeds* numerous.

Flowering & Fruiting: Almost throughout the year

Habitat: Common, evergreen forests; c. 1100 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, on the way to Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11724, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia (Java), Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sikkim, Sri Lanka, Thailand

Note: Ripe fruit is eaten raw (local use).

Threat status: Not Evaluated

24. COSTACEAE Nakai

Cheilocostus C.D.Specht

C. speciosus (J. Koenig) C. D. Specht, *Taxon* 55: 159. 2006. *Costus speciosus* (J. König) Smith, Trans. Linn. Soc. London, Bot. 1: 249. 1791; Baker in Hook. f., Fl. Brit. India 6: 248. 1892; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 342. 2003.

Vernacular Name: Jamlakhuti (A)

Herb, tall. *Leaves* spirally arranged, elliptic, obovate or lanceolate, 12 – 20 × 4 – 7 cm, subrounded at the base, acuminate or caudate-acuminate at the apex. *Inflorescences* terminal, white, large, ellipsoid or ovoid spikes, 5 – 12 cm; *bracts* bright c. 2 cm, reddish, ovate, pubescent; *bracteoles* present. *Calyx* red, c. 2 cm, leathery, 3-lobed. *Corolla* lobes oblong-elliptic, c. 5 cm. *Labellum* white, 6.5 – 9 cm. *Stamen* 1 perfect, corollaoid, pubescent. *Capsule* red, globose, c. 1.5 cm.

Flowering & Fruiting: July – November

Habitat: Forest margins, moist places, roadsides

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11743, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; Australia

Note: The plant has many historical uses in Ayurveda, where the rhizome has been used to treat fever, rash, asthma, bronchitis, and intestinal worms. It is mentioned in the Kama Sutra as an ingredient in a cosmetic to be used on the eyelashes to increase sexual attractiveness

(Website: <http://www.toxicologycentre.com/English/plants/Botanical/channakkizhangu.html>).

Threat status: Not Evaluated

25. ZINGIBERACEAE Martinov

1a. Inflorescence terminal, a thyse or raceme, often lax; capsule globose or ellipsoid.....*Globba*

1b. Inflorescence terminal on leafy shoot or basal on leafless shoot; capsule oblong.....*Larsenianthus*

Globba L.

G. orixensis Roxb. in *Asiat. Res.* 11: 358. 1810 & Pl. Cor. t. 229. 1815; Baker in Hook. f., *Fl. Brit. India* 6: 201. 1890.

Vernacular Name: Not known

Erect, faintly aromatic, perennial *herbs*; *rhizome* creeping with fleshy roots. *Leafy shoot* 30 – 35 cm high, green, swollen at base; *sheaths* 10 – 15 cm broad at base, puberulous outside and glabrous inside. *Leaves* simple, alternate, broadly lanceolate, 5 – 7 × 1.5 – 2 cm, subsessile, cuneate at base, caudate at apex, entire at margin, glabrous on both surfaces; *ligules* 1 – 3 mm long, green with ciliate margin. *Panicles* terminal, c. 6.5 cm long; *bracts* lanceolate, 5 – 7 × 2 – 3 mm, acute at apex, deciduous. *Flowers* 4 – 5 cm long, orange-yellow. *Calyx* infundibuliform, 0.5 – 1 × 0.2 – 0.3 cm, glabrous, yellow; teeth minute, tridentate. *Corolla* tube c. 1.5 cm long, slender, 3-lobed; lobes subequal, 6 – 8 × c. 3 mm, orange-yellow. *Staminodes* 2, subequal, c. 5 × 2 mm, petaloid, orange-yellow with deflexed lip; *labellum* narrow, shallowly bifid, glabrous, orange-yellow with reddish brown spots at throat. *Filament* of the fertile stamen c. 2.4 cm long, yellow, glabrous, arched; *anther* 2-celled, oblong, c. 2 mm long, nearly acute at apex, pale-yellow, dorsifixed. *Ovary* unilocular; *ovules* many on parietal placenta; *style* linear, 2 – 2.5 cm long, glabrous, white; *stigma* cupular with ciliate mouth. *Infructescence* 6 – 6.5 cm long, persistent calyx. *Capsule* globose; seeds numerous, brownish red.

Flowering & Fruiting: July – August

Habitat: Not common, damp, shady and moist places of the forest areas of hillocks

Specimens Examined: Assam, Cachar dist., Kumbhirgram, 21.07.2009, D. Bhattacharyya 2501, Fl. & Fr.; Dargakona, Assam University Silchar Campus, behind Life Science and Bioinformatics Department, along the trek path to eco-forest, 13.07.2010, L. Darlong & D. Bhattacharyya 10063, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: INDIA: Andhra Pradesh, Madhya Pradesh, Orissa, Jharkhand, West Bengal, Sikkim, Assam, Meghalaya, Mizoram, Tripura; Myanmar; Malaysia; Thailand.

Threat status: Not Evaluated

Larsenianthus W. J. Kress & Mood

L. assamensis S.Dey, Mood & S.Choudhury in *PhytoKeys* 1: 26. 2010.

Vernacular Name: Not known

Evergreen *herb*, medium-sized. *Leafy shoots* 7 – 17 per plant, erect. *Basal leaf sheaths* 3 – 5, light pink, drying brown, deciduous; *petiole* 0 – 7 mm in length; *ligule* 7 × 5 mm, bilobed, apices rounded; *lamina* 24 – 34 × 5.4 – 8.5 cm, elliptic, aequilateral at base, acuminate at apex. *Inflorescence* terminal on leafy shoot, erect; spike ovoid to ellipsoid, 5.5 – 8.5 × 3.8 – 4 cm. *Inflorescence bracts* ovate-oblong; *bracteole* lanceolate. *Flowers* conspicuous; *calyx* tubular, 8 – 14 mm × 5 mm, white, apex pink; *corolla lobes* linear-

lanceolate, dorsal lobe 13 mm × 2 mm, orange-red; *lateral staminodes* ovate; *labellum* elongate, oblong; *fertile stamen* with *filamentc.* 18 mm in length, oblong; *stigma* purplish; *ovary* trilocular, unequally 3-lobed, pubescent. *Fruits* white.

Flowering & Fruiting: October – December

Habitat: Grows in moist clay and sandy soil under forest shades along streams in tropical moist semievergreen forest; 26 m

Specimens examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, Bhaluknala, narrow sub-stream of Lakhicherra, 30.08.2007, S. Dey 1012 (ASSAM).

Distribution: Known only from two locations in the Barail Wildlife Sanctuary, Assam, India.

Note: Endemic to Assam, India (Kress *et al.* 2010).

26. JUNCACEAE Juss.

Juncus L.

J. prismatocarpus R.Br., Prodr. Fl. Nov. Holland. 259. 1810; Wu & Clemants in Fl. China 24: 54. 2000.

Vernacular Name: Not known

Plants perennial, tufted, 8 – 60 cm tall. *Stems* erect, terete or compressed. *Basal leaves* few, cauline leaves 2 – 4; *leaf sheath* auricles obtuse, short; *leaf blade* linear, terete to compressed, 10 – 25 cm × 1 – 4 mm, obtuse, acute, or acuminate at apex. *Inflorescences* terminal, sparingly or much branched; *involucral bract* leaflike, shorter than inflorescence; *heads* 5 – 30, globose to hemispheric, 3 – 20-flowered; *bracts* 2 – 2.5 mm, broadly ovate to ovate-lanceolate, thinly membranous. *Perianth* segments narrowly lanceolate to linear-lanceolate, 3.5 – 4 mm, subequal, acute at apex. *Stamens* 3, inserted; *filaments* 1.2 – 1.4 mm; *anthers* 0.9 – 1 mm. *Stigmas* very long. *Capsule* narrowly prismatic. *Seeds* oblong.

Flowering & Fruiting: January – November

Habitat: Forests, mountain slopes, marshy places, swampy river banks; near sea level.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Tiprapunji, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11310, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Japan, Korea, Laos, Malaysia, Nepal, Pakistan, Papua New Guinea, Sikkim, Sri Lanka, Thailand, Vietnam; Australia, Pacific Islands (New Zealand).

Threat status: Least concern ver 3.1

27. CYPERACEAE Juss.

1a. Inflorescence comprising small units (pseudospikelets) with 2 opposite, keeled, scalelike bracts at base often enclosing a further 2 – 10 scalelike bracts, each unit subtended and usually hidden by a glumelike bract.....*Hypolytrum*

1b. Inflorescence not as above.....	2
2a. Florets unisexual; Nut not enclosed in utricule.....	<i>Scleria</i>
2b. Florets bisexual.....	3
3a. Style base dilated and constricted above the nut; glumes spiral rarely distichous; style fimbriate hairy.....	<i>Fimbristylis</i>
3b. Style base continuous with the nut; glumes distichous.....	4
4a. Rachilla persistent.....	5
4b. Rachilla deciduous; stigmas 2.....	<i>Kyllinga</i>
5a. Nut trigonous; stigmas 3.....	<i>Cyperus</i>
5b. Nut biconvex; stigmas 2	<i>Pycreus</i>

Cyperus L.

1a. Spikelets digitate or fasciculate on a very short rachis.....	2
1b. Spikelets in spikes terminating rays.....	3
2a. Inflorescences capitate or anthelate, with very short rays.....	<i>C. dubius</i>
2b. Inflorescences anthelate, with elongate rays	<i>C. tenuispica</i>
3a. Rachilla not winged or only with very narrow white hyaline margins; style short.....	<i>C. iria</i>
3b. Rachilla winged; style usually long or medium, rarely short.....	4
4a. Mature spikelets not deciduous with glumes and nutlets falling from rachilla.....	<i>C. digitatus</i>
4b. Mature spikelets deciduous and falling from rachis with glumes and nutlets attached.....	5
5a. Spikes cylindric, with numerous spikelets.....	<i>C. cyperoides</i>
5b. Spikes broadly ovoid, ellipsoid, oblong, orbicular or rarely cylindric, with up to 10 spikelets.....	<i>C. rotundus</i>

C. cyperoides (L.) Kuntze, Revis. Gen. Pl. 3 [3]: 333. 1898; Dai *et al.* in Fl. China 23. 238. 2010. *Cyperus biglumis* C.B. Clarke in J. Linn. Soc., Bot. 21: 199. 1884. *Cyperus cyperoides* Britton in Bull. Dept. Agric. Jamaica v. Suppl. i. 8. 1907. *Scirpus cyperoides* L., Mant. Pl. Alt. 181. 1771.

Vernacular Name: Not known

Perennials. *Rhizomes* short, hardened. *Culms* laxly tufted, 10 – 60 cm tall. *Leaves* shorter than to equaling culm; *leaf blade* 3 – 8 mm wide. *Involucral bracts* 5 – 8, obliquely spreading, leaflike, longer than inflorescence. *Inflorescence* a simple or subcompound; *rays* several, 6 – 14 cm, unequal in length. *Spikes* cylindric, 1 – 5 cm × 5 – 10 mm or sometimes narrower, with many dense spikelets. *Spikelets* narrowly linear-ovoid, 3 – 7 × c. 0.7 mm, spreading to reflexed; *rachilla* wings white, lanceolate, broad. *Glumes* yellow, yellowish green or greenish, oblong, c. 3 mm, margin involute, apex obtuse. *Stamens* 3; *anthers* broadly linear, 0.8 – 1 mm. *Style* short; *stigmas* 3, slender. *Nutlet* narrowly oblong, minutely punctate.

Flowering & Fruiting: April – December

Habitat: Mountain slopes, river margins, wet places, forests; 100 – 1000 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11639, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Japan, Kashmir, Korea, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa, Atlantic Ocean islands, N Australia, Indian Ocean islands, Madagascar, Pacific islands

Note: The juice of the root is used to treat cough and fever. Ash of the plant is applied to cuts and wounds (Manandhar and Manandhar 2002).

Threat status: Least Concern ver 3.1

C. digitatus Roxb., Fl. India 1: 209. 1820; Clarke in Hook.f., Fl. Brit. India 6: 618. 1893; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 378. 2003.

Vernacular Name: Finger Flatsegde (E)

Tall *herb*. Culms solid, triquetrous. Leaves from the base, as long as culms, flat, 5 – 15 mm wide. Involucral bracts present, 5 – 7. Inflorescence terminal, simple or compound umbels. Spikelets subterete, linear, mature one not deciduous with glumes and nutlets falling from rachilla. Flowers bisexual. Glumes linear. Stamen 3, linear, c. 0.5 mm long. Stigma 3. Fruit a nutlet, oblong-ellipsoid.

Flowering & Fruiting: August – December

Habitat: Common, moist areas.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11323; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11678, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: North-east and eastern India, Tropical countries

Note: It is used for making mats and for thatching (Kumar, 2011).

Threat status: Least Concern ver 3.1

C. dubius Rottb., Descr. Icon. Rar. Pl. 20. 1773. *Cyperus capitatus* Burm.f., Fl. Ind. 21. 1768. *Cyperus coloratus* Vahl, Enum. Pl. ii. 312. 1805. *Cyperus triceps* Endl., Cat. Horti Vindob. 1: 94. 1842.

Vernacular Name: Not known

Perennial *herbs*. Culms tufted, 15 – 30 cm tall. Leaves shorter than the culms; leaf blade flat, 2 – 4 mm wide. Involucral bract 3 – 5, leafy. Inflorescence capitate or anthelate, with

very short rays. *Spikelets* ovoid, few flowered, rachilla winged. *Glumes* ovate, c. 2.5 mm. *Stamen* 2 or 3, anthers linear. *Fruit* a nutlet, obovoid to ellipsoid.

Flowering & Fruiting: September – November

Habitat: sandy moist places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11671 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam, Tropical Africa, SW Asia, Madagascar, Pacific islands

Note: It is used as cattle fodder (Kitto & Alexander, 2003).

Threat status: Least Concern ver 3.1

C. iria L., Sp. Pl. 45. 1753; Clarke in Hook.f., Fl. Brit. India 6: 606. 1893; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 381. 2003.

Vernacular Name: rice flatsedge (E), Muria (B)

Erect *herb*, c. 20 – 60 cm long. *Leaves* linear, acuminate at the apex. *Inflorescence* spikes, cylindrical, in compound umbels. *Spikelets* compressed, linear to oblong. *Rachilla* not winged or only with very narrow white hyaline margins; *style* short. *Glumes* obovate, keeled. *Fruit* a nut, triquetrous, obovate-elliptic.

Flowering & Fruiting: August – November

Habitat: Common, marshy places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11674 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Through out India, Southern hemisphere

Note: The leaves are used as an antibiotic and its decoctions are used in colds. In Malaysia it is used for matting and cattle feed (Gupta & Lansdown, 2014).

Threat status: Least Concern ver 3.1

C. rotundus L., Sp. Pl. 45. 1753; Clarke in Hook.f., Fl. Brit. India 6: 614. 1893; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 382. 2003.

Vernacular Name: Nut grass (E), Mutha (B)

Perennial *herb*, c. 15 – 65 cm long. *Leaves* linear, acuminate at the apex, shorter than the culm. *Bract* 3, leaflike. *Inflorescence* simple or compound, umbelliferous spikes, spikes broadly ovoid, ellipsoid, oblong, orbicular or rarely cylindric, with up to 10 spikelets. *Spikelets* linear to lanceolate. *Glumes* keeled. *Fruit* a nut, oblong.

Flowering & Fruiting: July – December

Habitat: Common, moist places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11392; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11676, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, through out warm regions

Threat status: Least Concern ver 3.1

C. tenuispica Steud., Syn. Pl. Glumac. 2 (7): 11. 1854. *Cyperus delicatulus* Steud., Syn. Pl. Glumac. 2 (7): 21. 1854. *Cyperus fieldingii* Steud., Syn. Pl. Glumac. 2 (7): 11. 1854.

Vernacular Name: Not known

Annual herbs. Culms tufted, compressed triquetrous. *Leaves* 2 – 3 mm wide, flat; sheath 2 – 6 cm. *Involucral bracts* leafy. *Inflorescence* a compound or simple anthela, with elongate rays. *Spikelets* 3 – 10; rachilla without wing. *Glumes* lax, elliptic, 0.8 – 1 mm, membranous, obtuse to truncate at the apex. *Stamens* 1 or 2. *Style* long; *stigmas* 3. *Fruit* a nutlet, obovoid.

Flowering & Fruiting: September – November

Habitat: Wet habitats, swamps, marshy places, moist areas; 1400 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11585, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, S. Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Pakistan, Phillipines, Sri Lanka, Tajikistan, Thailand, Uzbekistan, Vietnam, Tropical Africa, Australia, Indian ocean islands

Threat status: Least Concern ver 3.1

Fimbristylis Vahl

1a. Leaves shorter to occasionally slightly longer than culm; leaf blade linear, 1 – 2.5 mm wide.....*F. dichotoma*

1b. Leaves shorter or subequalling to culm; leaf blade 2 – 3 mm wide, flat.....*F. quinquangularis*

F. dichotoma (L.) Vahl., *Enum. Pl. Obs.* 2: 287 1805; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 385. 2003. *Fimbristylis diphylla* Vahl., *Enum. Pl.* 2. 289. 1805; Clarke in Hook.f., *Fl. Brit. India* 6: 614. 1893.

Vernacular Name: Tall fringe rush (E)

Culms 15 – 50 cm. *Leaves* shorter to occasionally slightly longer than culm; *leaf blade* linear, 1 – 2.5 mm wide. *Inflorescence* a compound anthela. *Spikelets* 4.5 – 8.5 mm. *Glumes* 2 – 3 mm. *Fruit* a nutlet obovoid, apex rounded to obtuse.

Flowering & Fruiting: July – October

Habitat: marsh places, paddy fields

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11673 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Afghanistan, China, Japan, Korea, Kyrgyzstan, Nepal, Pakistan, Papua New Guinea, Sri Lanka, Thailand, Uzbekistan, Vietnam; Africa, SW Asia, Australia, Central, North, and South America, Indian Ocean islands, Madagascar, Pacific islands

Note: The rhizomes are a diuretic and its pastes are taken to treat kidney problems. It is also collected in India for its aromatic properties. It is grown for slope stabilization and is harvested as animal (cattle) fodder (Gupta & Thacker, 2013).

Threat status: Least Concern ver 3.1

F. quinquangularis (M.Vahl) Kunth, Enum. Pl. 2: 229. 1837; Clarke in Hook.f., Fl. Brit. India 6: 644. 1893; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 388. 2003. *Fimbristylis miliacea* (L.) Vahl., Enum. Pl. 2: 287. 1805.

Vernacular Name: Not known

Annual or perennial *herbs*. *Culms* tufted, 5-angled. *Leaves* shorter or subequaling to culm; leaf blade 2 – 3 mm wide, flat. *Involucral bracts* 4, setaceous. *Inflorescence* a anthela, 5 – 9 × 3 – 6 cm. *Spikelets* solitary, ovoid, 2 – 5 × 1 – 1.5 mm, acute at the apex. *Glumes* ovate, c. 2 mm, margin paler, obtuse at the apex. *Stamens* 1 or 2; *anthers* oblong, c. 0.5 mm. *Stigmas* 3, longer than style. *Fruit* a nutlet, obovoid.

Flowering & Fruiting: August – October

Habitat: Swamps

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11675 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Afghanistan, China, Indonesia, Kazakhstan, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Thailand, Uzbekistan, Vietnam; Africa, SW Asia, Australia, Indian Ocean islands, Madagascar

Note: This is a weedy plant and could cause damages to rice fields (Akhani & Zehzad, 2014).

Threat status: Least concern ver 3.1

Hypolytrum Pers.

H. nemorum P. Beauv., Fl. Oware 2: 12. 1808; 13, t. 67. 1810. *Albikia schoenoides* J.Presl & C.Presl, Reliq. Haenk. i. 184 et 185. 1828.

Vernacular Name: Not known

Herbs. Roots fibrous. *Rhizomes* short. *Culms* 30 – 90 cm tall, 3-angled, rigid leaves basal, longer than culm; *leaf blade* 35 – 120 × 1 – 2.5 cm or longer, flat, folded at the base,

margin scabrous. *Involucral bracts* 3 – 5, leafy. *Inflorescences* paniculate, ovoid-globose, 3 – 7 × 4.5 – 6 cm. *Spikes* obovoid, 3 – 7 × 3 – 6 mm, *bracts* glumelike. Glumelike bracts obovate, c. 2 mm, each subtending a pseudospikelet. *Pseudospikelets* c. 1.5 mm, bearing 2 *glumes*, 2 *male flowers*, and 1 *female flower*; glumes cymbiform, c. 1.2 mm, keeled, one with each male flower. *Stigmas* 2. *Fruit* a nutlet subglobose, compressed.

Flowering & Fruiting: April – August

Habitat: Wet places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11459, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa and America, NE Australia, Indian Ocean islands, Pacific islands

Threat status: Not Evaluated

Kyllinga Rottb.

K. brevifolia Rottb., Descr. Icon. Rar. Pl. 13. t. 4. f. 3. 1773; Dai *et al.* in Fl. China 23: 248. 2010. *Cyperus brevifolius* (Rottb.) Hassk., Cat. Hort. Bot. Bogor. 24. 1844. *Cyperus cruciformis* Endl., Cat. Horti Vindob. 1: 94. 1842.

Vernacular Name: Mullumbimby couch (E)

Perennials. *Rhizomes* slender, long creeping, *internodes* 1 – 2.5 cm, with 1 culm at each node. *Culms* serially arranged, 2 – 30 cm tall. *Leaves* shorter to slightly longer than culm; *sheaths* brown, mouth obliquely truncate, acuminate at apex; *leaf blade* 5 – 15 cm × 2 – 4 mm, flat. *Involucral bracts* 3, leaflike. *Spike* 1 – 3, globose to ovoid-globose, 5 – 11 × 4 – 10 mm. *Spikelets* narrowly oblong-ovoid to narrowly ovoid, c. 3 × 1 mm, compressed, 1 – 2 – flowered. *Glumes* white and rusty brown maculate, ovate, 2.8 – 3 mm, *keel* spinulose or not. *Stamens* 1 – 3; *anthers* linear, c. 0.7 mm. *Style* long; *stigmas* 2. *Nutlet* obovoid-oblong.

Flowering & Fruiting: May – October

Habitat: Wet places, river margins; upto 1800 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11617, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Afghanistan, Bangladesh, Bhutan, China, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Russia (Far East), Sri Lanka, Thailand, Vietnam; tropical Africa, Atlantic Ocean islands, Australia, Central, North, and South America, Indian Ocean islands, Madagascar, Pacific islands

Note: In India, this plant is used locally in medicine (Cook 1996), to treat diarrhoea and stomach pains.

Threat status: Least concern ver 3.1

Pycreus P.Beauv.

P. sanguinolentus (Vahl) Nees, *Linnaea* 9: 283. 1834; Dai *et al.* in *Fl. China* 23: 245. 2010. *Cyperus albidus* Lam., *Tabl. Encycl.* i. 146. 1791. *Cyperus areolatus* R.Br., *Prodr. Fl. Nov. Holland.* 216. 1810. *Cyperus sanguinolentus* Vahl, *Enum. Pl.* 2: 351. 1805.

Vernacular Name: Purple-glume flat sedge (E)

Annuals. *Roots* fibrous. *Culms* densely tufted, 5 – 50 cm tall, compressed 3-angled, smooth. *Leaves* several; sheath usually reddish brown, short; *leaf blade* 2 – 4 mm wide or less, flat, denticulate at the apical margin. *Involucral bracts* 2 – 5, leaflike, longer than inflorescence. *Inflorescence* a simple anthela; *rays* 3 – 5, mostly to 4.5 cm. *Spikelets* narrowly oblong-ovoid, 0.5 – 1.8 cm × 2.5 – 3 mm; *rachilla* straight, wingless. *Glumes* straw-colored, slightly laxly imbricate, ovate, *c.* 2 mm. *Stamens* 2 or 3; anthers linear, 0.7 – 1 mm. *Style* long; *stigmas* 2, exserted, slender. *Nutlet* black at maturity, globose-obovoid to broadly ellipsoid.

Flowering & Fruiting: July – December

Habitat: Sparse forest margins, Wet places, river margins; upto 1800 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11677 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Japan, Kashmir, Kazakhstan, Korea, Kyrgyzstan, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Russia, Sri Lanka, Tajikistan, Thailand, Turkmenistan, Uzbekistan, Vietnam; Africa, SW Asia, Australia, Pacific islands

Threat status: Least concern ver 3.1

Scleria P. J. Bergius

S. terrestris (L.) Fassett, *Rhodora* 26: 159. 1924; Clarke in Hook.f., *Fl. Brit. India* 6: 690. 1893; P. J. Bora & Y. Kumar, *Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary* 395. 2003.

Vernacular Name: Not known

Perennial herbs, stoloniferous. *Culms* 4 – 7 mm wide, 3-angled, glabrous. *Leaf sheaths* 1 – 8 cm, papery; *leaf blade* linear, 30 – 40 cm × 6 – 10 mm, papery, slightly scabrous, glabrous. *Involucral bracts* leafy. *Inflorescences* paniculate. *Spikelet* in a cluster, unisexual, oblong-ovoid, truncate to acuminate at the apex. *Glumes* of male spikelets 2 – 3 mm. *Female spikelets* grows at base of branch; *glumes* ovate to ovate-lanceolate, 2 – 4 mm wide. *Male flowers:* anthers linear. *Female flowers:* stigmas 3. *Disk* yellow, 3-lobed. *Fruit* a nutlet, spherical to ovoid.

Flowering & Fruiting: May – October

Habitat: Slopes, dry or moist places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11330; Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11401; Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11450; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11672, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, S Japan, Kashmir, Laos, Malaysia, Myanmar, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Australia

Threat status: Least concern ver 3.1

28. POACEAE Barnhart

- 1a. Plant perennials or annuals; arborescent, climbing, shrubby or scrambling bamboos; culms woody; with culm sheaths.....2
- 1b. Plant perennials or annuals; culms herbaceous; without culm sheaths.....6
- 2a. Arborescent bamboos, sometimes shrubby or scrambling bamboos.....3
- 2b. Climbing bamboos forming clump.....*Melocalamus*
- 3a. Lodicules present.....4
- 3b. Lodicules usually absent; palea not keeled.....*Schizostachyum*
- 4a. Lodicules 1, 2 or 3.....5
- 4b. Lodicules 2; stigmas 2 – 4.....*Melocanna*
- 5a. Lodicules 3 or 2; palea 2-keeled.....*Bambusa*
- 5b. Lodicules absent or variably 1 – 3; palea of lower florets 2-keeled.....*Dendrocalamus*
- 6a. Spikelets 2-flowered.....7
- 6b. Spikelets 1 – many flowered.....22
- 7a. Spikelets often paired or in groups of three.....8
- 7b. Spikelets solitary or paired.....9
- 8a. Panicles cylindrical; all spikelets pedicelled.....*Imperata*
- 8b. Panicles wide; spikelets on pedicelled, the other sessile.....*Saccharum*
- 9a. Spikelets subtended by solitary persistent bristles on the pedicels.....*Setaria*
- 9b. Spikelets not subtended as above.....10
- 10a. Spikelets in panicles.....11
- 10b. Spikelets arranged in one side spikes or spike like racemes.....17
- 11a. Spikelets in contracted panicles.....*Sacciolepis*
- 11b. Spikelets in open or contracted panicles.....12
- 12a. Leaf blades aromatic.....*Cymbopogon*
- 12b. Leaf blades not as above.....13
- 13a. Leaf blades usually linear.....14
- 13b. Leaf blades filiform or linear to lanceolate or ovate.....15
- 14a. Leaf blade usually flat; ligule very short.....*Arundinella*
- 14b. Leaf blade folded or flat; ligule membranous, ciliate.....*Themeda*
- 15a. Culms decumbent or erect.....16

15b. Culms creeping or erect.....	<i>Isachne</i>
16a. Spikelets asymmetrical, obovate, laterally compressed.....	<i>Cyrtococcum</i>
16b. Spikelets usually symmetrical and dorsally compressed.....	<i>Panicum</i>
17a. Upper lemma cartilaginous, usually with hyaline.....	18
17b. Upper lemma crustaceous or coriaceous.....	20
18a. Inflorescence of digitately arranged racemes, sometimes on a short axis or with secondary branchlets, very rarely paniculate.....	<i>Digitaria</i>
18b. Inflorescence a solitary slender fragile raceme.....	19
19a. Inflorescence a solitary slender fragile raceme, racemes axillary, supported by a spatheole.....	<i>Schizachyrium</i>
19b. Inflorescence a solitary raceme at the summit of the stem and its branches.....	<i>Pogonatherum</i>
20a. Glumes awned or acuminate.....	21
20b. Glumes awnless.....	<i>Paspalum</i>
21a. Blades lanceolate to ovate; spikelets solitary, paired or clustered.....	<i>Oplismenus</i>
21b. Blades linear, narrow; spikelets crowded.....	<i>Echinochloa</i>
22a. Spikelets with one fertile floret.....	23
22b. Spikelets with 1 – many fertile florets.....	25
23a. Inflorescence a digitate spike.....	<i>Cynodon</i>
23b. Inflorescence ususally a panicle.....	24
24a. Glumes well developed; pelea usually 2-nerved; stamens 1 – 3.....	<i>Thysanolaena</i>
24b. Glumes minute or absent; pelea 3 – 9 nerved; stamen usually 6.....	<i>Oryza</i>
25a. Fertile florets 1 – 4, rachilla extension bearing a rudimentary floret.....	<i>Centotheca</i>
25b. Fertile florets several.....	26
26a. Lemma glabrous or rachilla joints long silky hairy.....	<i>Phragmites</i>
26b. Lemma or rachilla joints usually glabrous or shortly hairy.....	27
27a. Spikelets in large panicles; lemma deeply lobed.....	<i>Neyraudia</i>
27b. Spikelets in spikes, digitate racemes, spikelike racemes or panicles; lemma entire or minutely lobed.....	28
28a. Glumes lower one absent; upper one as long as spikelets.....	<i>Axonopus</i>
28b. Glumes both present; usually shorter than spikelets.....	29
29a. Spikes arranged in open, contracted or spike like panicles.....	<i>Eragrostis</i>
29b. Spikes digitately arranged.....	<i>Eleusine</i>

Arundinella Raddi

A. bengalensis Druce, Rep. Bot. Exch. Cl. Brit. Isles 1916, 605. 1917. *Panicum bengalense* Sprengel, Syst. Veg. 1: 311. 1825.

Vernacular Name: Not known

Perennial *herbs*. *Culms* solitary, erect, 50 – 120 cm tall, nodes bearded or glabrous. *Leaf sheaths* densely hispid; *leaf blades* broadly linear, flat, 6 – 30 cm × 5 – 15 mm, pubescent on both surfaces, midrib broad, white, finely acuminate at apex; *ligule* 0.3 – 0.5 mm.

Inflorescence in panicle, narrowly cylindrical, dense, 6 – 30 cm; *branches* spikelike, 2 – 7 cm, erect, arranged in whorls. *Spikelets* 2.5 – 3.5 mm; *lower glume* 2 – 2.5 mm, acute at apex; *upper glume* 5-veined; *lower floret* staminate; *upper floret* 2 mm, *lemma* apex developed into a awn, deciduous; *callus* pubescent.

Flowering & Fruiting: August – October

Habitat: Plains, river banks; 100 – 1800 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, s.d., H. A. Barbhuiya 35, 41, 423 (ASSAM).

Distribution: NE India, Bhutan, China, Myanmar, Nepal, Thailand, Vietnam

Threat status: Not Evaluated

Axonopus P. Beauv.

A. compressus P. Beauv., Ess. Agrostogr. 12. 1812; Chen & Phillips in Fl. China 22: 531. 2006. *Milium compressum* Swartz, Prodr. 24. 1788.

Vernacular Name: blanket grass, broadleaf carpet grass (E)

Perennial *herbs* with stolons. *Culms* 15 – 60 cm tall, nodes bearded. *Leaf sheaths* loose, strongly compressed, keeled, basal sheaths imbricate; *leaf blade* linear to lanceolate, flat or folded, 5 – 20 × 0.6 – 1.2 cm, obtuse at apex; *ligule* 0.3 – 0.5 mm. *Inflorescence* racemes, 2 – 5, digitate, 4 – 10 cm; *rachis* glabrous. *Spikelets* oblong-lanceolate, 2 – 2.7 mm, acute at apex; *upper glume* and *lower lemma* midvein absent; *upper lemma* pale, oblong-elliptic, shorter than spikelet, obtuse with an apical tuft of hairs; *stigmas* pale.

Flowering & Fruiting: Summer – Autumn

Habitat: Roadsides, moist ground, naturalized.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11362, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, tropical America, widely introduced elsewhere

Note: The whole plant is used as an ingredient in a curative herbal bath. The plant is used to treat heart problems (Website: <http://tropical.theferns.info/viewtropical.php?id=Axonopus+compressus>)

Threat status: Not Evaluated

Bambusa Schreb.

- 1a. Culms 1 to 14 m long.....2
- 1b. Culms 8 – 22 m long.....3
- 2a. Glumes several; 2 – 4 empty glumes.....*B. tulda*
- 2b. Glumes absent.....*B. multiplex*
- 3a. Culm-sheaths glabrous.....*B. jaintiana*
- 3b. Culm sheaths hispid, sparsely or densely hairy.....4
- 4a. Glumes 1 or 2.....5
- 4b. Glumes several; 0 – 2 empty glumes.....*B. balcooa*

- 5a. Glumes 1 or 2, apex apiculate.....*B. vulgaris*
 5b. Glumes 2; lower glume ovate; upper glume ovate.....*B. cacharensis*

B. balcooa Roxb., Hort. Bengal. 25. 1814; Fl. India ed. 2: 196. 1832. Gamble in Hook.f., Fl. Brit. India 7: 391. 1896; Bor, Fl. Assam 5: 33. 1940; U. Shukla, The Grasses of North-Eastern India: 179. 1996.

Vernacular Name: Guadua Bamboo (E), Bhuluka banh (A)

Culms 12 – 22 m long, 6 – 15 cm in diameter, grayish green, thick walled. *Leaves* narrow and c. 15 – 30 × 25 – 50 mm. *Nodes* thick, with a whitish ring above, pubescent below. *Culm internodes* c. 20 – 40 cm long. *Shoots* blackish-green. *Culm sheaths* brown or orange tinged, covered sparsely with hairs. *Branches* several to many clustered. Branches usually occur from middle of the culm to the top. Branches from the lower nodes are leafless and hard.

Flowering & Fruiting: January – August

Habitat: Common, roadside

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11773 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: North-eastern India, Nepal and Bangladesh

Note: Young shoots are used as a vegetable. The culms are used as building material for houses, bridges, temporary fishing floats, frames of rickshaw hoods, to prepare agricultural and fishing implements and to weave mats and baskets (Website: <http://tropical.theferns.info/viewtropical.php?id=Bambusa+balcooa>).

Threat status: Not Evaluated

B. cacharensis R. B. Majumdar in Bull. Bot. Surv. India 25: 237. 1983; D. N. Tewari, A Monograph on Bamboo: 36. 1992; U. Shukla, The Grasses of North-Eastern India: 181. 1996; K. K. Seethal. & M.S.M. Kumar, Bamboos of India: a compendium: 49. 1998; Barooah & Borthakur, Diversity and Distribution of Bamboos in Assam: 54. 2003.

Vernacular Name: Betua (B)

Perennial *herbs*. *Culms* erect; 2000 – 2100 cm long, woody, culm-internodes terete; hollow. *Culm-sheaths* 12 – 15 cm long, yellow, hispid, auriculate. Culm-sheath blade ovate; erect. *Leaves* cauline. *Ligule* an eciliate membrane. *Collar* with external ligule. *Leaf-blade* lanceolate; 16 – 20 × 15 – 25 mm, margins scabrous, acuminate at apex. *Synflorescence* bractiferous, clustered at the nodes, with axillary buds at base of spikelet. *Fertile spikelets* comprising of 3 – 6 fertile florets. *Spikelets* linear, subterete, 30 – 35 mm long, breaking up at maturity. *Rhachilla* internodes definite. *Glumes* 2; lower glume ovate, 5 mm long; *upper glume* ovate; 8 mm long. *Fertile lemma* ovate; 10 – 14 mm long; *keel*

absent. *Palea* keels scabrous. *Lodicules* 3; membranous; ciliate. *Anthers* 6. *Caryopsis* with adherent pericarp.

Flowering & Fruiting: April – November

Habitat: roadside, hill slopes

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11355, 11356; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11664, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: North-Eastern India, Bangladesh, Eastern Himalayas, Nepal, South-East and East Asia and tropical Africa and Australia

Note: Endemic to Southern Assam, India (Website: http://www.bsienvi.nic.in/Database/E_3942.aspx).

Threat status: Not Evaluated

B. jaintiana R.B. Majumdar in S. Karthikeyan *et al.*, Fl. India Enumerat.-Monocot. 274. 1989. *Bambusa alamii* Stapleton in Edinburgh J. Bot. 51 (1): 10. 1994.

Vernacular Name: Bijuli banh (A)

Perennial *herb*. *Rhizomes* short; pachymorph. *Culms* erect, 800 – 1200 cm long, 20 – 35 mm diam., woody, nodal roots absent; *internodes* terete, hollow, 40 cm long. Buds or branches present on lower quarter of culm. *Culm-sheaths* persistent, 14 cm long, glabrous, auriculate, with 10 – 20 mm wide auricles; *shoulders* with 3 – 10 mm long hairs; *ligule* 0.5 – 2 mm high, entire; *blade* ovate, persistent, erect, 12 cm long. *Leaves* cauline. *Leaf-sheath* hairs erect and deciduous, 3 – 10 mm long, *auricles* falcate and 1 – 3 mm long; *ligule* membranous, 1 mm long, truncate; *collar* with external ligule. *Leaf-blades* lanceolate, 15 – 25 cm × 15 – 23 mm, margins scabrous, acuminate at apex.

Flowering & Fruiting: It has been observed in flower and reported by Kanjilal in 1915 from North Cachar Hills of Assam

Habitat: Roadside, hill locks

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, s.d., H. A. Barbhuiya 1040 (ASSAM).

Distribution: India (Meghalaya and N. C. Hills), Bhutan, Myanmar

Threat status: Not Evaluated

B. multiplex (Lour.) Raeusch. ex Schult. & Schult.f., Syst. Veg., ed. 15 bis 7 (2): 1350. 1830; Xia *et al.* in Fl. China 22: 30. 2006.

Vernacular Name: Clumping Bamboo, Hedge Bamboo (E)

Culms suberect or slightly drooping at apex, 1 – 7 m, 1.5 – 2.5 cm in diam.; *internodes* 30 – 50 cm; *nodes* slightly prominent, glabrous. *Branches* several to many, clustered. *Culm* sheaths deciduous, trapezoid; *auricles* very small to inconspicuous; *ligule* 1 – 1.5 mm, irregularly dentate; *blade* deciduous, erect, narrowly triangular, acuminate at apex. *Leaf*

blade linear, 1.6 – 16 × 0.3 – 1.6 cm, abaxially densely pubescent, adaxially glabrous. *Pseudospikelets* solitary or several clustered at nodes of flowering branches, linear to linear-lanceolate, 3 – 6 cm; *prophyllsc.* 3.5 mm, 2-keeled, keels ciliolate; *bracts* usually 1 or 2, 4 – 7.5 mm, glabrous; *florets* 5 – 13, middle ones fertile; *rachilla* segments 4 – 4.5 mm, glabrous. *Glumes* absent; *lemma* oblong-lanceolate, *c.* 1.8 cm, glabrous; *palea* linear, 1.4 – 1.6 cm, keels ciliolate, subtruncate at apex; *lodicules* 3, anterior 2 subovate, 2.5 – 3 mm, posterior narrowly lanceolate, 3 – 5 mm, margins glabrous. *Filaments* 0.8 – 1 cm; *anthers* purple, *c.* 6 mm, apex penicillate. *Ovary* ovoid, *c.* 1 mm, base with stalk *c.* 1 mm; *stigmas* 3 or variable in number, *c.* 5 mm, directly exerted from ovary apex.

Flowering & Fruiting: Not seen

Habitat: Wild and cultivated, fields, mountains, low hills; elevations of 200 – 1500 metres

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, s.d., H. A. Barbhuiya 69 (ASSAM).

Distribution: India, E. Asia, Eastern Himalayas to southern China

Note: Young shoots are eaten cooked. Paper is made from the culms. The culms are often used as umbrella handles and for fishing poles. In Indonesia and Thailand they are also used to make handicrafts such as bookcases (Website: <http://tropical.theferns.info/viewtropical.php?id=Bambusa+multiplex>).

Threat status: Not Evaluated

B. tulda Roxb., Hort. Bengal. 25. 1814; *Fl. India ed. 2: 193. 1832*; Hook.f., Fl. Brit. India 7: 387. 1896; Bor, Fl. Assam 5: 27. 1940; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 400. 2003; Xia *et al.* in Fl. China 22: 21. 2006.

Vernacular Name: Bijuli banh (A)

Culms to 14 m, 7 – 8 cm in diam., apically slightly drooping; *internodes* 30 – 35 cm, lower internodes slightly flexuose, basal internodes often with 2 or 3 faint yellow stripes; *nodes* with rings of gray-white silky hairs below and above sheath scar, basal nodes with short aerial roots. *Branches* many, clustered. *Culm sheaths* deciduous, leathery, densely strigose, subtruncate at apex; *auricles* unequal, 1.5 – 2.5 × 1.3 – 1.5 cm, undulate, wrinkled; *ligulec.* 5 mm, dentate, shortly fimbriate; *blade* erect, broadly triangular, slightly narrowed and joined to auricles at base, both surfaces stiffly hairy, acutely acuminate at apex. *Leaf blade* broadly linear or linear-lanceolate, 15 – 19 × 1.4 – 1.7 cm, abaxially pale gray, densely villous, adaxially deep green, glabrous. *Glumes* several; 2 – 4 empty glumes.

Flowering & Fruiting: January – June

Habitat: Common, hill slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 18.05.2013, A. Bora & D. Bhattacharyya 11774, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

ribution: India, Bangladesh, Bhutan, China, Nepal, Thailand, Vietnam

Note: The young shoots are edible but taste slightly bitter, therefore they are often pickled. The culms are generally used for construction, scaffolding, furniture, boxes, basketry, mats, household utensils, handicrafts and as raw material for paper pulp (Website: <http://tropical.theferns.info/viewtropical.php?id=Bambusa+tulda>).

Threat status: Not Evaluated

B. vulgaris Schrad. ex J.C.Wendl., Coll. Pl. 2: 26, t. 47. 1808; Bor, Fl. Assam 5: 34. 1940; Xia *et al.* in Fl. China 22: 25. 2006.

Vernacular Name: Tansti banh (A)

Clumps open. *Culms* 8 – 15 m, 5 – 9 cm in diam., basally straight, apically drooping; *internodes* deep green, 20 – 30 cm; *nodes* slightly prominent; usually branching from lower nodes. *Branches* several to many, clustered. *Culm sheaths* deciduous, densely hairy, apex arched below blade; *auricles* conspicuous, oblong or reniform, 8 – 10 mm; *ligule* 3 – 4 mm, serrate; *blade* deciduous, erect or deflexed, base slightly rounded. *Leaf blade* narrowly lanceolate, 10 – 30 × 1.3 – 2.5 cm, both surfaces glabrous. *Pseudospikelets* several, clustered at nodes, linear-lanceolate, slightly flattened, 2 – 3.5 × 0.4 – 0.5 cm, apparently bifid; gemmiferous bracts many; *florets* 5 – 10; *rachilla* segments 1.5 – 3 mm. *Glumes* 1 or 2, apex apiculate; *lemma* 8 – 10 mm, abaxially hairy near apex, apex apiculate; *palea* slightly shorter than lemma, *keels* ciliate; *lodicules* 3, 2 – 2.5 mm, margins ciliate. *Anthersc.* 6 mm, apex penicillate. *Style* 3 – 7 mm, slender; *stigmas* 3, short.

Flowering & Fruiting: Not seen

Habitat: Riversides, open forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11772, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, SE Asia, pantropical

Note: *B. vulgaris* is often planted as an ornamental, windbreak, support and hedge plant. The culms are also the main material for the bamboo furniture industry and they also produce good quality pulp to make paper (Francis, 1993).

Threat status: Not Evaluated

Centotheca Desv.

C. lappacea Desv. in Nouv. Bull. Soc. Philom. ii. 189. 1810; Bor, Fl. Assam 5: 59. 1940; Xia *et al.* in Fl. China 22: 445. 2006. *Cenchrus lappaceus* L., Sp. Pl., ed. 2, 2: 1488. 1763.

Vernacular Name: Not known

Perennial *herbs*. *Culms* solitary or loosely tufted, erect, 40 – 100 cm tall, 4 – 7-noded. *Leaf sheaths* smooth or ciliate along one margin; *leaf blades* broadly lanceolate, 5 – 15 × 1 – 2.5 cm, long-attenuate at apex; *ligule* 1 – 1.5 mm. *Panicle* open, 12 – 25 cm, the spikelets clustered around them; *pedicels* 2.5 – 3 mm, slender, pubescent. *Spikeletsc.* 5 mm, *florets* 2

– 3; lower glume 2 – 2.5 mm, acute; upper glume 3 – 3.5 mm, mucronate; lowest lemma c. 4 mm, glabrous, apex apiculate; second and third lemmas 3 – 3.5 mm, bristles near upper margins; paleas firm, ciliolate along keels. *Caryopsis* ellipsoid, 1 – 1.2 mm.

Flowering & Fruiting: October – February

Habitat: Forest margins, shady roadsides; upto 1200 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11379, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; W tropical Africa, Australia (Queensland), Pacific Islands (Polynesia)

Note: The grass is considered to be good fodder.

Threat status: Not Evaluated

Cymbopogon Spreng.

C. citratus Stapf in Bull. Misc. Inform. Kew. 1906: 357. 1906; Bor, Fl. Assam 5: 387. 1940; Chen & Phillips in Fl. China 22: 627. 2006. *Andropogon citratus* hort. ex DC., Cat. Pl. Horti Monsp. 78. 1813.

Vernacular Name: Lemon grass (E)

Perennial, shortly rhizomatous. *Culms* tufted, robust, up to 2 m tall. *Leaf sheaths* glabrous, greenish inside; *leaf blades* glaucous, 30 – 90 × 0.5 – 2 cm, base gradually narrowed, apex long acuminate; *ligule* c. 1 mm. *Spathate* compound panicle large, lax, up to 50 cm, drooping, branches slender; spatheoles reddish or yellowish brown, 1.5 – 2 cm; *racemes* 1.5 – 2 cm; *rachis* internodes and pedicels 2.5 – 4 mm, loosely villous on margins. *Sessile spikelet* linear-lanceolate, 5 – 6 × c. 0.7 mm; *lower glume* flat or slightly concave toward base, sharply 2-keeled, keels wingless, scabrid, veinless between keels; *upper lemma* narrow, entire and awnless, or slightly 2-lobed with c. 0.2 mm mucro. *Pedicelled spikelet* 4 – 5 mm.

Flowering & Fruiting: Summer season

Habitat: Commonly cultivated

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11712, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Origin unknown; cultivated in tropical Asia and elsewhere

Note: The culms (stems) of lemon grass are widely used in teas and other beverages, herbal medicines, and to flavour southeast Asian cuisine, particularly fish stews and sauces. It is also grown in pots indoors, to provide rooms with its 'fresh' fragrance. The oil extracted from lemon grass has also been used as an insect-repellent, as well as to perfume beauty products. Lemon grass is planted on bunds (embankments or dikes) in south and southeast Asia for soil conservation, and is excellent as a mulch. (Website: <http://www.kew.org/science-conservation/plants-fungi/cymbopogon-citratus-lemon-grass>)

Threat status: Not Evaluated

Cynodon Rich.

C. dactylon (L.) Pers. in Syn. Pl. 1: 85. 1805; Hook.f., Fl. Brit. India 7: 288. 1896; Bor, Fl. Assam 5: 125. 1940; Sun & Phillips in Fl. China 22: 493. 2006.

Vernacular Name: Dubari bon (A)

Perennial, stoloniferous. *Culms*. 10 – 40 cm tall. *Leaf sheaths* bearded at mouth; *leaf blades* linear, short and narrow, 1 – 12 cm × 1 – 4 mm, usually glabrous, subacute at apex. *Racemes* digitate, 3 – 6, straight or gently curved; *spikelets* overlapping. *Spikelets* 2 – 2.7 mm; *rachilla* extension c. 1 mm; *glumes* linear-lanceolate, 1.5 – 2 mm, keel scabrous, thickened; *lemma* as long as spikelet, villous along keel subacute at apex; *palea* glabrous, keels scaberulous. *Anthers* more than 1 mm. *Caryopsis* subterete, compressed.

Flowering & Fruiting: nearly all the year

Habitat: Roadsides, field margins, cultivated as a lawn grass; sea level to 2500 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11711, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: tropical and warm-temperate regions of the world

Note: A traditional use of *Cynodon* is for eye disorders and weak vision; the afflicted are advised to walk bare foot on dew drops spread over *Cynodon* plant each morning. According to Ayurveda, India's traditional pharmacopoeia, *Cynodon* plant is pungent, bitter, fragrant, heating, appetizer, vulnerary, anthelmintic, antipyretic, alexiteric. It destroys foulness of breath, useful in leucoderma, bronchitis, piles, asthma, tumors, and enlargement of the spleen (Oudhia, 2001).

Threat status: Not Evaluated

Cyrtococcum Stapf

1a. Spikelets purplish at maturity, 1.3 – 1.8 mm.....*C. patens*

1b. Spikelets reddish brown at maturity, c. 2 mm.....*C. oxyphyllum*

C. patens A. Camus in Bull. Mus. Natl. Hist. Nat. xxvii. 118. 1921; Chen & Phillips in Fl. China 22: 513. 2006. *Panicum patens* L., Sp. Pl. 58. 1753.

Vernacular Name: Bowgrass (E)

Culms creeping and glabrous, 15 – 60 cm tall. *Leaf sheaths* loosely hairy; *leaf blades* lanceolate, 3 – 15 × 0.3 – 2 cm, pubescent on both surfaces or subglabrous, basal margins with a few long, stiff, tubercle-based hairs, apex acuminate; *ligule* 0.5 – 2 mm, subrounded. *Panicle* 5 – 30 cm, often diffuse, branches loosely ascending to widely spreading, very slender, glabrous; *pedicels* filiform, longer than spikelets. *Spikelets* purplish at maturity, 1.3 – 1.8 mm, varying from glabrous to appressed-pubescent or shortly hispid with stiff, conspicuously tubercle-based hairs; *glumes* 3-veined, the lower c.

1/2 spikelet length, the upper 2/3 spikelet length; *lower lemma* subequaling spikelet, margins ciliate, apex obtuse; *upper lemma* minutely pitted. *Anthersc.* 0.8 mm.

Flowering & Fruiting: September – February

Habitat: Moist places in grasslands and forests.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11663, 11670; Maruwacherra, 24.04.2014, A. Bora & D. Bhattacharyya 11665 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Indonesia, Japan (Ryukyu Islands), Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; Pacific Islands (Polynesia).

Threat status: Not Evaluated

C. oxyphyllum Stapf, Hooker's Icon. Pl. 31: sub t. 3096. 1922; Chen & Phillips in Fl. China 22: 513. 2006. *Panicum oxyphyllum* Hochst. ex Steud., Syn. Pl. Glumac. 1: 65. 1853.

Vernacular Name: Shining panicgrass (E)

Culms smooth and glabrous, 15 – 50 cm tall. *Leaf sheaths* glabrous to pubescent; *leaf blades* narrowly lanceolate, 5 – 18 × 0.5 – 1.5 cm, acuminate at apex; *ligule* 1 – 1.5 mm. *Panicle* 3 – 12 × 1 – 2 cm, contracted, up to 3 cm; *pedicels* stout, short. *Spikelets* reddish brown at maturity, c. 2 mm; *glumes* 3-veined, acute, the lower 1.2 – 1.5 mm, the upper slightly shorter than spikelet; *lower lemma* obtuse or subtruncate; *upper lemma* yellowish or yellowish brown, smooth and shining. *Anthersc.* 1 mm.

Flowering & Fruiting: October – March

Habitat: Damp places in shade.

Specimens examined: India, Assam, Cachar Dist., Katakhal RF, Sonai RF, Bhuban Hill, September 1978, R. B. Majumdar73137 (ASSAM).

Distribution: Bhutan, India, Malaysia, Myanmar, Philippines, Sri Lanka, Vietnam; Australia

Note: The grass is considered to be good fodder for cattle.

Threat status: Not Evaluated

Dendrocalamus Nees

D. hamiltonii Nees & Arn. ex Munro, Trans. Linn. Soc. Lond. 26 (1): 151. 1868; Gamble in Ann. Roy. Bot. Gard. Calcutta 7: 84, t. 74. 1896; Hook. f., Fl. Brit. India 7: 405. 1896; Bor, Fl. Assam 5: 9, 1940; U. Shukla, Grasses of N. E. India: 198. 1996; Moulik, Grasses Bamboos India 1: 29. 1997; Barooah & Borthhakur, Diversity Distrib. Bamboos Assam. 114. 2003; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 405. 2003; Li & Stapleton in Fl. China 42: 513. 2006; Naithani *et al.*, Distrib. Bamboo Sp. Manipur 109. 2010; K. C. Koshy, Bamboos TBGRI 53. 2010.

Sinocalamus hamiltonii (Nees & Arn. ex Munro) T. Q. Nguyen, Bot. Zhurn. (Moscow & Leningrad) 74 (11): 1662. 1989.

Vernacular Name: Kako banh (A)

Culms 12 – 18 m, 9 – 13 cm in diam., often pendulous; *internodes* 30 – 50 cm; wall 1.2 – 2 cm thick. *Branches* several. *Culm sheaths* deciduous, initially with patches or stripes of hairs, margins ciliate, slightly arched at apex; *auricles* absent but with a faint, naked, triangular swelling to 1 cm on each side; *ligule* 1 – 3 mm; *blade* erect, 3 – 7 cm, narrow. *Leaf sheaths* yellow setose; *ligule* 1.5 – 2 mm; *blade* variable, largest *c.* 38 × 7 cm. *Pseudospikelets* 10 – 25 per node, clusters 1 – 4 cm in diam. *Spikelets* dark purple, 8 – 10 × 3 – 5 mm, glabrous; *fertile florets* 2 – 4. *Glumes* 1 or 2; *lemma* 5 – 7 × 6 – 7 mm, apex long mucronate; *palea* about as long as lemma, apex bifid. *Anthers* yellow or red-purple, apex apiculate. *Stylec.* 4.5 mm; *stigmas* 1 – 3, red-purple. *Caryopsis* brown, more or less spherical.

Flowering & Fruiting: October – May

Habitat: In moist evergreen forest, common along the stream side.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11354; Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11680 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India: Eastern and Western Himalayas, North-eastern India; Bangladesh, Bhutan, China, Myanmar, Nepal and Vietnam (Naithani *et al.*, 2010); 1000 – 2000 m.

Note: Young shoots are widely consumed as a vegetable. A sour pickle, known as 'hiyup', is made from the shoots in India. The culms are used for temporary constructions (houses, bridges) and various household utensils such as water containers (Website: <http://tropical.theferns.info/viewtropical.php?id=Dendrocalamus+hamiltonii>)

Threat status: Not Evaluated

Digitaria Haller

1a. *Spikelets* lanceolate, 2.5 – 3.5 mm, acute.....*D. ciliaris*

1b. *Spikelets* elliptic-oblong, 1.4 – 1.9 mm, hairs.....*D. violascens*

D. ciliaris (Retz.) Koeler, Descr. Gram. 27. 1802. *Digitaria abortiva* Reeder in J. Arnold Arbor. xxix. 291. 1948. *Digitaria adscendens* (Kunth) Henrard in Blumea 1: 92. 1934.

Vernacular Name: Southern crabgrass (E)

Annual. *Culms* decumbent at base, branching and rooting at lower nodes, 30 – 100 cm tall. *Leaf sheaths* more or less pilose; *leaf blades* linear to linear-lanceolate, 5 – 20 × 0.3 – 1 cm, adaxial surface usually pilose, margins thickened and scabrous; *ligule* 1 – 2 mm. *Inflorescence* digitate or subdigitate, axis short; *racemes* 3 – 10, 5 – 17 cm; *spikelets* paired; *rachis* winged, *c.* 1 mm broad. *Spikelets* lanceolate, 2.5 – 3.5 mm, acute; *lower glume* very small, triangular; *upper glume* lanceolate, pilose; *lower lemma* as long as

spikelet; *upper lemma* yellowish green, elliptic, as long as lower lemma, acuminate at apex.

Flowering & Fruiting: May – October

Habitat: Roadsides, weedy places.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11348, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Asia-tropical: India, Indo-China, Malesia, and Papuasias, Europe, Africa, Asia-temperate, Australasia, Pacific, North America, and southern South America

Note: The plant assists in protecting soil against erosion and provides material for mulch or compost (Website: <http://tropical.theferns.info/viewtropical.php?id=Digitaria+ciliaris>).

Threat status: Not Evaluated

D. violascens Link, Hort. Berol. 1: 229. 1827; Bor, Fl. Assam 5: 208. 1940; Chen & Phillips in Fl. China 22: 547. 2006.

Vernacular Name: Purple crabgrass (E)

Annual. Culms loosely tufted, shortly stoloniferous, 20 – 60 cm tall. *Leaf sheaths* glabrous or pilose, especially at mouth; *leaf blades* linear-lanceolate, 5 – 15 × 0.2 – 0.6 cm, glabrous or adaxial surface pubescent at base, acute at apex; *ligule* 1 – 2 mm. *Inflorescence* subdigitate; racemes 3 – 7 × 3 – 12 cm; *spikelets* ternate; *rachis* ribbonlike, winged, 0.5 – 0.8 mm broad, margins serrate; *pedicels* angular. *Spikelets* elliptic-oblong, 1.4 – 1.9 mm, hairs; *lower glume* absent; *upper glume* lanceolate, slightly shorter than spikelet; *lower lemma* as long as spikelet and margins pubescent; *upper lemma* dark brown or purplish black at maturity. *Anthers* 0.3 – 0.6 mm.

Flowering & Fruiting: July – November

Habitat: Hillsides, roadsides, weedy places; c. 1000 m.

Specimen Examined: India, Assam, Cachar dist., Borail Wildlife Sanctuary, 27.08.2012, H. A. Barbhuiya 930 (ASSAM).

Distribution: India, Bhutan, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; Australia, South America.

Note: It is cultivated as a fodder crop (Wells *et al.*, 1986).

Threat status: Not Evaluated

Echinochloa P. Beauv.

1a. Spikelets plumply ovate-oblong, 2 – 3 mm long.....*E. colona*

1b. Spikelets elliptic, acuminate, 3.5 – 6 mm long.....*E. stagnina*

E. colona (L.) Link, Hort. Berol. 2: 209. 1833; Bor, Fl. Assam 5: 246. 1940; U. Shukla, The Grasses of North-Eastern India: 323. 1996. *Panicum colonum* L., Syst. Nat., ed. 10, 2: 870. 1759; Hook.f., Fl. Brit. India 7: 32. 1896.

Vernacular Name: Awnless barnyard grass

Annual. Culms erect, up to 60 cm or more tall. *Leaf sheaths* compressed and keeled; *leaf blades* linear, 3 – 20 × 0.3 – 0.7 cm, glabrous, sometimes with transverse purple bands, margins scabrous, apex acute. *Inflorescence* narrow, 5 – 10 cm; *racemes* 1 – 2 cm, erect, simple, rachis usually without long, hairy, spikelets tightly congested in 4 neat rows. *Spikelets* plumply ovate-oblong, 2 – 3 mm, sharply acute; *lower glume* 1/2 as long as spikelet; *lower lemma* staminate or sterile; *upper lemma* whitish at maturity, elliptic.

Flowering & Fruiting: Summer – winter

Habitat: Moist areas

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Maruwacherra, 24.04.2014, A. Bora & D. Bhattacharyya 11657 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, warm regions throughout the world.

Note: The tuber is said to possess anti-emetic values and act as a sedative in dyspeptic disorders particularly in vomiting during pregnancy. This plant is also used as forage for animals and has potential for seed contamination. It is often used in times of food shortage as a famine food, apparently in Chad (central) and Sudan (Kordofan, Darfur) the seeds of this plant are ground into flour from which porridge or bread can be prepared. Whilst in Rajasthan in India the seeds are used in the same way as rice (Lansdown, 2013).

Threat status: Least Concern ver 3.1

E. stagnina (Retz.) P. Beauv. Ess. Agrost. 53. 161. 1812; Bor, Fl. Assam 5. 244. 1940. *Echinochloa colona* (L.) Link, Hort. Berol. 2: 209. 1833. *Panicum stagnium* Rezt. Obs. Bot. 5: 17. 1789; Hook.f., Fl. Brit. India 7: 31. 1896.

Vernacular Name: Burgu grass, Hippo grass (E)

Perennial. Culms prostrate; 30 – 200 cm long. *Leaf sheaths* glabrous or hispid. *Leaf blades* 10 – 45 cm × 3 – 20 mm. *Inflorescence* composed racemes, simply spaced or closely spaced, 2 – 8 cm long, simple. *Rhachis* angular. *Spikelet* packing irregular, in pairs. *Fertile spikelets* sessile. *Spikelets* elliptic, acuminate, 3.5 – 6 mm long, falling entire. *Glumes* dissimilar, thinner than fertile lemma. *Lower glume* ovate, 0.25 – 0.75 length of spikelet, without keels. *Upper glume* ovate, without keels, surface hispidulous, apex acuminate, muticous or awned. Basal sterile florets male or barren, with palea. Lemma of lower sterile floret similar to upper glume, ovate, membranous, hairy, acuminate; awned. Awn of lower sterile floret present. *Fertile lemma* ovate, 3 – 5 mm long, indurate, apex acute. *Palea* reflexed at apex; indurate. *Anthers* 3.

Flowering & Fruiting: March – September

Habitat: Common, in marshes

Specimens examined: India, Assam, Cachar Dist., Bhuban Hill, Son Beel, September 1978, R. B. Majumdar 73178 (ASSAM).

Distribution: India, E. Asia-Pakistan to Indonesia Tropical Africa, south to S. Africa.

Note: It is a good fodder. It is useful for reclamation of saline and alkaline soils. It is a medicine for spleen diseases and checking haemorrhage (Kabeer and Nair, 2009).

Threat status: Least Concern ver 3.1

Eleusine Gaertn.

E. indica (L.) Gaertn., Fruct. Sem. Pl. 1: 8. 1788; Hook.f., Fl. Brit. India 7: 293. 1896; Bor, Fl. Assam 5. 108. 1940; Chen & Phillips in Fl. China 22: 482. 2006. *Cynosurus indicus* L., Sp. Pl. 1: 72. 1753.

Vernacular Name: Bhubusa bon (A)

Annual. Culms tufted, erect, 10 – 90 cm tall. *Leaf sheaths* glabrous or pilose; *leaf blades* flat or folded, 10 – 15 × 0.3 – 0.5 cm, glabrous or adaxial surface tuberculate-pilose; *ligulec.* 1 mm, membranous, ciliate. *Inflorescence* digitate, racemes 2 – 7, linear, ascending, 3 – 10 × 0.3 – 0.5 cm. *Spikelets* elliptic, 4 – 7 mm, florets 3 – 9; *glumes* lanceolate, scabrid along keel; *lower glume* 1.5 – 2 mm; *upper glume* 2 – 3 mm; *lemmas* ovate, 2 – 4 mm, keel with small veins, acute; *palea* keels winged. *Grain* blackish, oblong or ovate.

Flowering & Fruiting: July – October

Habitat: Disturbed places, roadsides

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11347, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: tropics and subtropics

Note: Used as animal fodder, also can be used to control soil erosion (local use).

Threat status: Least Concern ver 3.1

Eragrostis Wolf

- 1a. Annuals or perennial.....2
- 1b. Perennial; culms loosely tufted.....*E. atrovirens*
- 2a. Leaf blades 2 – 20 × 0.3 – 0.6 cm.....*E. unioloides*
- 2b. Leaf blades 2 – 10 × 0.3 – 0.5 cm.....*E. tenella*

E. atrovirens (Desf.) Trin. in Steud. Nom. Bot. ed. 2 1: 562. 1840; Chen & Peterson in Fl. China 22: 474. 2006. *Poa atrovirens* Desfontaines, Fl. Atlant. 1: 73. 1798.

Vernacular Name: Thalia lovegrass (E)

Perennial. Culms loosely tufted, erect, 15 – 100 cm tall, c. 4 mm in diam., 4 – 8-noded. *Leaf sheaths* glabrous but pilose along summit; *ligules* a ciliate membrane, 0.2 – 0.3 mm; *leaf blades* flat or involute, 4 – 17 × 0.2 – 0.4 cm, adaxial surface scabrous, near base pilose, abaxial surface glabrous. *Panicle* open, 5 – 20 × 2 – 15 cm. *Spikelets* plumbeous and purplish, narrowly oblong, 5 – 15 × 1.5 – 2.5 mm; *pedicels* 0.5 – 12 mm; *rachilla* persistent. *Glumes* 1 – 2.3 mm; *lower glume* ovate, 1 – 1.3 mm, apex acute; *upper glume* narrowly ovate, 1.3 – 2.3 mm, apex acuminate. *Lemmas* broad ovate, 1.8 – 2.2 mm, apex

acute, lower lemma 2 – 2.2 mm. *Palea* ciliate along keel, 1.6 – 1.8 mm. *Stamens* 3; anthers 0.7 – 0.9 mm.

Flowering & Fruiting: Summer – Autumn

Habitat: Roadsides, river banks

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11635, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Tropical and subtropical regions of Africa and Asia

Note: The culms are used for thatching (Burkil, 1985 – 2004).

Threat status: Not Evaluated

E. tenella (L.) P.Beauv. ex Roem. & Schult., Syst. Veg., ed. 15 bis 2: 576. 1817; Hook.f., Fl. Brit. India 7: 315. 1896; Bor, Fl. Assam 5. 96. 1940; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 409. 2003. *Poa tenella* L., Sp. Pl. 1: 69. 1753.

Vernacular Name: Not known

Annual. Culms slender, 15 – 60 cm tall, erect or geniculate at base. *Leaf sheaths* shorter than internodes, pilose along margin; *ligules* a line of short hairs; *leaf blades* flat, 2 – 10 × 0.3 – 0.5 cm, adaxial surface scabrous, abaxial surface glabrous and smooth. *Panicle* open; branches solitary or clustered, long pilose in axils, branchlet and pedicels glandular. *Spikelets* ovate or oblong-ovate, c. 2 mm. *Glumes* membranous, 1-veined, lower glume c. 0.8 mm, upper glume c. 1 mm, falling off when mature. *Lemmas* broadly ovate, apex obtuse; *lower lemmac.* 1 mm. *Palea* persistent or deciduous, long ciliate along keels. *Stamens* 3; *anthersc.* 0.3 mm. *Caryopsis* red, ovoid.

Flowering & Fruiting: April – August

Habitat: Moist places.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11346, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Tropical regions

Note: Seedssometimes eaten as a cereal, it is said to be nutritious. It is most commonly seen as a famine food, used when nothing better is available (Burkil, 19885 – 2004).

Threat status: Not Evaluated

E. unioloides Nees ex Steud., Syn. Pl. Glumac. 1 (3): 264. 1854; Bor, Fl. Assam 5. 99. 1940; U. Shukla, The Grasses of North-Eastern India: 258. 1996; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 409. 2003; China 22: 477. 2006. *Poa unioloides* Retzius, Observ. Bot. 5: 19. 1788.

Vernacular Name: Not known

Annual or perennial. Culms erect or geniculate at base, 20 – 60 cm tall. Leaf sheaths glabrous and smooth; ligules membranous, c. 0.8 mm; leaf blades sub lanceolate, flat, 2 – 20 × 0.3 – 0.6 cm, adaxially tomentose, abaxially smooth, acuminate at apex. Panicle oblong, 5 – 20 × 3 – 5 cm. Spikelets purplish red at maturity, oblong, 5 – 10 × 2 – 4 mm, pedicel 0.2 – 1 cm; florets closely imbricate; rachilla persistent, lower glume 1.5 – 2 mm, upper glume 2 – 2.5 mm. Lemmas broadly ovate, acute at apex, the lower lemma c. 2 mm. Palea slightly shorter than the lemma, 2-keeled. Stamens 2; anthers purple, 0.2 – 0.5 mm. Caryopsis compressed.

Flowering & Fruiting: August – October

Habitat: Mountain slopes, grasslands, roadsides

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11328; Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11360; 12.12.2013, A. Bora & D. Bhattacharyya 11395; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11659; Maruwacherra, 24.04.2014, A. Bora & D. Bhattacharyya 11668, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11665 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, W Africa, tropical Asia

Note: This species is included in the forage grasses, but has no major significance (Watve, 2011).

Threat status: Least Concern ver 3.1

Imperata Cirillo

I. cylindrica (L.) P.Beauv., Ess. Agrostogr. 165. 8, 177, t. 5. 1812; Bor, Fl. Assam 5. 310. 1940. *Imperata arundinacea* Cirillo, Pl. Rar. Ic. ii. 26. t. 11. 1792; Hook.f., Fl. Brit. India 7: 106. 1896.

Vernacular Name: Cogon grass (E), Ulu/Sankher (A)

Perennial; rhizomes tough, scaly. Culms solitary or tufted, 25 – 120 cm tall. Leaf sheaths glabrous or pilose at margin and mouth; leaf blades flat or rolled, erect, 20 – 100 × 0.8 – 2 cm, culm blades 1 – 3 cm, margins straight or narrowed at base, long acuminate at apex; ligule 1 – 2 mm. Panicle cylindrical, hairy, 6 – 20 cm. Spikelets 2.5 – 6 mm; callus with silky hairs; glumes 5 – 9 veined, slightly obtuse or acuminate at apex; lower lemma ovate-lanceolate, 2/3 length of glumes, ciliate, acute or denticulate; upper lemma ovate, 1/2 length of glumes, denticulate, ciliate; palea equal to lemma. Anthers 2, 2 – 4 mm. Stigmas purplish black.

Flowering & Fruiting: April – August

Habitat: Common, River banks, disturbed grassy places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11710 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Afghanistan, Bhutan, China, Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Malaysia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Russia, Sri Lanka, Thailand, Turkmenistan, Uzbekistan, Vietnam; Africa, SW Asia, Australia, S Europe

Note: The plant is used in land reclamation and for soil erosion control on account of its vigorous, rhizomatous habit. The stems of *Imperata cylindrica* are used as thatch, the stems and leaves for making ropes, and its fibres are used to make paper. In southeast Asia and Africa, alang-alang is used in traditional medicine for treating a wide range of ailments. Rhizome is used for treating blood system disorders, nausea, indigestion and jaundice. In China, the rhizome is used as a diuretic, a restorative tonic, and to stop bleeding (Website: <http://www.kew.org/science-conservation/plants-fungi/imperata-cylindrica-alang-alang>).

Threat status: Not Evaluated

Isachne R.Br.

I. clarkei Hook.f., Fl. Brit. India 7 (21): 24. 1896; Chen *et al.* in China Flora 22: 558. 2006.

Vernacular Name: Not known

Delicate *annual*. Culms very slender, lax, base often decumbent, rooting at lower nodes, 12 – 30 cm tall, panicles terminal. *Leaf sheaths* pilose, outer margin ciliate; *leaf blades* linear-lanceolate, thin, 2 – 6 × 0.3 – 0.7 cm, glabrous or pilose, margins firm, acute at apex; *ligule* 1 – 1.5 mm. *Panicle* open, ovate to pyramidal in outline, 1.5 – 8 cm; *pedicels* longer than spikelets. *Spikelets* subglobose, 1 – 1.5 mm, green or purplish; *florets* similar; *glumes* subequal to spikelet, ovate, lower 5-veined, upper 7-veined, margins broad, incurving at apex; *lemmas* whitish, strongly convex, densely pubescent.

Flowering & Fruiting: July – November

Habitat: Damp mountain grasslands, streams, valleys; 1300 – 2400 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, Near Gumra, 12.09.2010, H. A. Barbhuiya 218 (ASSAM).

Distribution: India (Assam, Arunachal Pradesh, Meghalaya, Nagaland, Sikkim), China, Myanmar, Vietnam, Malaysia, Indonesia, Philippines

Threat status: Least Concern ver 3.1

Melocalamus Benth.

M. indicus R. B. Majumdar in Bull. Bot. Surv. India 25 (1 – 4): 236. 1985. *Dinochloa indica* (R. B. Majumdar) Bennet in Van Vigyan 27 (2): 121. 1989.

Vernacular Name: Not Known

Perennial. Culms scandent, pendulous at the tip, 600 – 3000 cm long, woody. *Culm internodes* terete, solid, 40 – 50 cm long. *Culm sheaths* deciduous, 20 – 25 cm long. *Culm sheath blade* linear, base with a brief petiole-like connection to sheath, lanceolate. *Synflorescence* bractiferous, clustered at the nodes, *bracts* present. *Fertile spikelets* sessile. Fertile spikelets comprising 1 basal sterile florets, 1 fertile florets, without rhachilla extension. Spikelets orbicular, laterally compressed, 2.5 mm long. *Glumes* persistent, similar, shorter than spikelet. *Lower glume* orbicular, 2 mm long, chartaceous, obtuse at apex. *Upper glume* orbicular, 2 mm long, obtuse at apex. Basal sterile florets barren, with palea. *Lemma* of lower sterile floret orbicular, 2 – 2.5 mm long, chartaceous, obtuse. Fertile lemma orbicular, 2.5 mm long, without keel. Lemma apex obtuse. *Lodicules* 3, ciliate. *Anthers* 6.

Flowering & Fruiting: Not known

Habitat: Hilly forest

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, West Block, Near Malidar, 24.04.2011, H. A. Barbhuiya 525 (ASSAM).

Distribution: India, tropical Asia.

Note: Culms are used for basket-making.

Threat status: Not Evaluated

Melocanna Trin.

M. baccifera Kurz, Prelim. Rep. For. Veg. Pegu, App. B. 94. 1875.
Beesha baccifera Kunth, Syn. Pl. i. 253: 1822. 1805.

Vernacular Name: Muli, Paiyya, Bajali, Nail, Tavai (A)

Clum forming bamboo. *Culms* 10 – 20 m high, 3 – 7 cm diameter, green when young, straw coloured when old; *longest internodes* 20 – 25 cm long. *Young shoots* smooth, light purple or purplish green; *ligule* with long hairs, caduceus; *blades* linear, green. *Leaves* 15 – 30 × 2.5 – 5 cm, oblong lanceolate, acuminate at apex, leaf sheath thick, ligulate; *auricles* very small with silvery bristles. *Inflorescence* compound panicle, drooping towards one side, spicate branches, bearing clusters of 3 to 4 spikelets in the axils. *Fruit* fleshy, pear-shaped, the talk is inserted at the thick end and the apex terminates in a curved beak.

Flowering & Fruiting: September – May

Habitat: plain or lower hills

Specimens examined: India, Assam, Cachar Dist., Duhalia RF, Dholai, Inner Line RF, Katakhal RF, September 1978, R. B. Majumdar73401 (ASSAM).

Distribution: North eastern India, Bangladesh, Myanmar, South-east Asia

Note: Young shoots and fruits are edible. Culms are widely used in house building; to make woven wares such as baskets, mats, handicrafts, wall plates, screens and hats; and for domestic utensils (Website: <http://tropical.theferns.info/viewtropical.php?id=Melocanna+baccifera>).

Threat status: Not Evaluated

Neyraudia Hook.f.

N. reynaudiana (Kunth) Keng ex Hitchc. in Amer. J. Bot. xxi. 131.1934; Bor, Fl. Assam 5. 115. 1940. *Arundo reynaudiana* Kunth, Révis. Gramin. i. 273. 1830.

Vernacular Name: Silk reed, Burma reed, cane grass (E)

Perennial, robust. *Culms* erect, 1 – 3 m tall, usually fasciculately branched, nodes purple. *Leaf sheaths* glabrous but pilose at mouth; *leaf blades* flat or involute, 20 – 70 × 0.4 – 1 cm, glabrous or adaxial surface pilose, apex long acuminate; *ligule* 1 – 2 mm. *Panicle* ample, loose to dense, 30 – 70 cm; pedicels 1 – 4 mm. *Spikelets* 6 – 9 mm, lowest sterile; *glumes* golden-brown or purplish, glabrous, subequal, 2 – 3 mm, acute; *lemmas* purplish, c. 4 mm, soft, c. 2 mm hairs, awn recurved, 1 – 2 mm.

Flowering & Fruiting: August – December

Habitat: Streamsides, hill slopes, rocky places

India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11366; Kayang River bank, 12.12.2013, A. Bora & D. Bhattacharyya 11408, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bhutan, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam.

Note: In Assam, India, the entire plant is consumed by the Indian rhinoceros, *Rhinoceros unicornis* (Bhatta, 2011). Plant is used as a suitable species for stabilizing road embankments, desertified soils and other eroded areas.

Threat status: Not Evaluated

Oplismenus P.Beauv.

O. compositus P. Beauv., Ess. Agrostogr. 54. 1812; Bor, Fl. Assam 5. 262. 1940; Chen & Phillips in Fl. China 22: 502. 2006.

Vernacular Name: Running Mountain Grass (E)

Perennial. *Culms* stoloniferous, straggling, c. 20 – 80 cm. *Leaf sheaths* glabrous or pilose; *leaf blades* lanceolate to ovate-lanceolate, 3 – 20 × 0.5 – 3 cm, subglabrous to tuberculate hairy, oblique at base. *Inflorescence* racemes. *Spikelets* in 7 – 14 widely spaced, lanceolate, glabrous to thinly pilose; *glumes* herbaceous, awned, the awns stout, green or purple; *lower glume* awn 5 – 10 mm; *upper glume* awn to 3 mm or sometimes absent; *lower lemma* subcoriaceous, acute; *upper lemma* subcoriaceous, c. 2.5 mm, smooth.

Flowering & Fruiting: September – November

Habitat: Moist places in forests and along forest margins, hill slopes.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11378, Kayang River bank, 12.12.2013; A. Bora & D. Bhattacharyya 11410, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Japan, Philippines, Thailand, tropical Asia, E Africa, Australia, Pacific Islands (Polynesia)

Threat status: Not evaluated

Oryza L.

O. rufipogon L., Sp. Pl. 1: 333. 1753; Bor, Fl. Assam 5. 170. 1940; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 415. 2003; Chen & Phillips in Fl. China 22: 182. 2006.

Vernacular Name: Rice (E), Dhan (A)

Annual, aquatic, tufted. *Culms* erect, rooting at lower submerged nodes, 0.5 – 1.5 m tall. *Leaf sheaths* glabrous, auricles falcate, tomentose; *leaf blades* 25 – 60 × 0.5 – 2 cm, glabrous, smooth or scabrid on both sides, margins scabrid, acuminate at apex; *ligule* 10 – 40 mm. *Panicle* loosely contracted, upto 30 cm, nodding at maturity. *Spikelets* oblong to oblong – lanceolate, 7 – 10 mm, persistent; *sterile lemmas* lanceolate, 1.5 – 4 mm, acuminate at apex; *fertile lemma* papillose, spinulose, acuminate at apex; *awn* very variable, up to 60 mm or more, scaberulous, sometimes absent. *Anthers* 1 – 3 mm. *Caryopsis* ovate or elliptic to cylindrical, 5 – 7 mm.

Flowering & Fruiting: October – January

Habitat: Cultivated, mainly in flooded fields

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalain Range, 26.11.2014, A. Bora & D. Bhattacharyya 11709, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, SE Asia, throughout the tropical world

Note: It is used as a staple food in many countries world wide. It is also an ingredient in medicines and cosmetics, and has a role in crafts and religious ceremonies.

Threat status: Not evaluated

Panicum L.

- 1a. Plant annuals.....2
- 1b. Plant annuals, perennials or aquatic perennials.....3
- 2a. Leaf blades narrowly ovate to ovate, 5 – 10 × 1 – 3 cm.....*P. brevifolium*
- 2b. Leaf blades linear-lanceolate, flat, 5 – 20 × 0.5 – 1.5 cm.....*P. luzonense*
- 3a. Aquatic perennials, culms 25 – 130 cm high*P. paludosum*
- 3b. Plants annual or perennial.....4
- 4a. Culms 1 – 2 m long.....5
- 4b. Culms 15 – 60 cm long.....*P. laxum*
- 5a. Spikelets elliptic-oblong, glabrous.....*P. khasianum*
- 5b. Spikelets elliptic, puberulous.....*P. notatum*

P. brevifolium L., Sp. Pl. 1: 59. 1753; Bor, Fl. Assam 5. 237. 1940; Chen & Renvoize in Fl. China 22: 509. 2006. *Panicum ovalifolium* Poir., Encyc. Suppl. 4. 279. 1816.

Vernacular Name: Not known

Annual. Culms often rooting at lower nodes, 15 – 100 cm tall, *nodes* glabrous or pubescent. *Leaves* cauline; *leaf sheaths* puberulous or glabrous, ciliate on margins; *ligule* 0.2 mm; *leaf blades* narrowly ovate to ovate, 5 – 10 × 1 – 3 cm, membranous, glabrous or pilose, amplexicaul at base, acute to acuminate at apex. *Panicle* oblong or ovate in outline, 5 – 15 cm, much branched; *branches* delicate, glabrous or pilose. *Spikelets* asymmetrically, ovate or elliptic in outline, 1.5 – 2 mm, sparsely puberulous; *lower glume* ovate, as long as spikelet, hyaline, separated by an internode; *upper glume* as long as spikelet; *lower lemma* similar to upper glume; *palea* well developed; *upper floret* white, scaberulous, shiny.

Flowering & Fruiting: May – December

Habitat: Humid places, forest margins

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuawari, 05.04.2012, A. Bora & D. Bhattacharyya 11319; Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11396, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam, tropical Africa

Threat status: Not evaluated

P. luzonense J. Presl, Reliq. Haenk. 1 (4 – 5): 308. 1830; Chen & Renvoize in Fl. China 22: 507. 2006. *Panicum cruciabile* Chase in J. Arnold Arbor. xx. 309. 1939; Bor, Fl. Assam 5. 231. 1940.

Vernacular Name: Not known

Annual, tufted, hispid. *Culms* erect, 30 – 150 cm tall, *nodes* bearded. *Leaves* cauline; *leaf sheaths* loose; *leaf blades* linear-lanceolate, flat, 5 – 20 × 0.5 – 1.5 cm, cordate at base, margins scabrid, acute at apex; *ligule* ciliate. *Panicles* terminal and axillary, ovate to oblong in outline, 10 – 30 cm, *branches* scabrid. *Spikelets* elliptic to obovate, somewhat plump, 2 – 2.5 mm, glabrous; *lower glume* broadly ovate, acute, separated by an internode; *upper glume* ovate, as long as spikelet, acute; *lower lemma* similar to upper glume; *palea* well developed but floret barren; *upper floret* elliptic, yellow, smooth, shiny.

Flowering & Fruiting: August – October

Habitat: Fields, forest margins

Specimen Examined: Included after Bor 1940.

Distribution: India, China, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Australia

Threat status: Not evaluated

P. khasianum Munro ex Hook.f., Fl. Brit. India 7 (21): 54. 1896; Bor, Fl. Assam 5. 234. 1940; Chen & Renvoize in Fl. China 22: 505. 2006.

Vernacular Name: Not known

Perennial. Culms often rooting at lower nodes, 1 – 2 m long, branched, terete, nodes glabrous. *Leaves* cauline; *leaf sheaths* striate, loose, glabrous, hispid or sparsely ciliate on margins and toward throat; *leaf blades* narrowly lanceolate, 10 – 30 × 1 – 3 cm, subglabrous to pilose, narrowed at base, acuminate at apex; ligule 0.5 – 1 mm. *Panicle* broadly oblong to orbicular in outline, 15 – 35 cm, much branched; branches spreading, scabrid. *Spikelets* elliptic-oblong, glabrous; *lower glume* ovate, acute or obtuse; *upper glume* as long as spikelet; *lower lemma* similar to upper glume; *palea* absent; *upper floret* as long as spikelet, pale yellow, smooth, shiny.

Flowering & Fruiting: July – December

Habitat: Humid grasslands, valley slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, Near Sindhuri, 10.09.2010, H. A. Barbhuiya 10 (ASSAM).

Distribution: NE India, Bhutan, China

Threat status: Not evaluated

P. laxum Sw., Prodr. 23. 1788; Judz., Fl. Guianas, ser. A, Phanerogams 8: 397, t. 71, f. a-c. 1990; Zuloaga *et al.*, Ann. Missouri Bot. Gard. 79: 799. 1992; Duist., Gard. Bull. Singapore 56: 37. 2004. *Steinchisma laxa* (Sw.) Zuloaga, Amer. J. Bot. 90: 817. 2003; B.K. Simon, Austrobaileya 6: 561. 2003. *Cliffordiochloa parvispiculata* B.K. Simon, Austrobaileya 3: 676, t. 3, 4A. 1992.

Vernacular Name: Not known

Plants *annual* or *perennial*, 15 – 60 cm long, caespitose or single, simple or branched, erect when short; *rhizomes* and *cataphylls* absent. *Nodes* 3 – 4, glabrous. *Leaf sheath* loose, striate, glabrous on surface, ciliate at margin. *Ligule* membranous, fimbriate. *Leaf blade* linear-lanceolate, 4 – 11 × 0.2 – 0.5 cm, rounded to truncate at base, acute at apex, glabrous on both surfaces. *Inflorescence* panicle with a small bract at the first node. *Spikelets* arranged on second order racemose branches; *secondary branches* generally compressed to primary branches or occasionally expanded. *Spikelets* paired, narrowly elliptic, acute to obtuse, 1.2 – 1.5 × c. 0.6 mm, green with occasionally purplish tinge, 2-flowered, blunt at apex. *Glumes* 2; *lower glume* broadly ovate, 0.5 – 0.7 mm long; *upper glume* narrowly ovate, c. 1 mm long. *Lower floret* sterile. *Lower lemma* narrowly elliptic, 1–1.1 mm long. *Lower palea* hyaline, narrowly elliptic, c. 1 mm long, membranous, 2-keeled. *Upper floret* hermaphrodite. *Upper lemma* elliptic-oblong, c. 1 mm long, smooth, shiny, glabrous. *Upper palea* with elliptic-oblong, c. 1 mm long, 2-keeled. *Lodicules* 2, c. 0.2 mm long, fleshy, glabrous. *Stamens* 2; anther c. 0.5 mm long; *filament* glabrous. *Ovary* ovate, c. 0.25 mm long, glabrous; *styles* 2, glabrous; *stigma* 2, plumose. *Caryopsis* elliptic, c. 0.7 mm long.

Flowering & Fruiting: July – January

Habitat: marshy areas of wetlands, open areas, along forest margins and roadsides

Specimens examined: India, Assam, Cachar district, Itkhola, 16.10.2005, *H. Begum* 19 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (Assam, Tripura), Borneo, Singapore, Malesia, Australia, West Africa, Mexico, West Indies to Paraguay, Argentina

Threat status: Not evaluated

P. notatum Retzius, *Observ. Bot.* 4: 18. 1786. Chen & Renvoize in *Fl. China* 22: 509. 2006.

Vernacular Name: Not known

Perennial. Culms 1 – 2 m long, branched, terete, glabrous, nodes glabrous to puberulous. *Leaves* cauline; *leaf sheaths* striate, puberulous to subglabrous; *leaf blades* lanceolate, 5 – 20 × 1 – 3 cm, subglabrous to pubescent, cross veins present, margins scabrid, cordate at base, finely pointed to acuminate at apex; *ligule* scarcely developed, c. 0.5 mm, a ciliolate membrane. *Panicle* broadly ovate in outline, 10 – 40 cm, much branched; *branches* slender, spreading, glabrous, smooth or scabrid, bearing spikelets toward the extremities. *Spikelets* elliptic, 2 – 2.5 mm, puberulous; *lower glume* ovate or oblong, 3/4 as long to equaling the spikelet, 3 – 5-veined, separated by an internode; *upper glume* as long as spikelet, 3 – 5-veined; *lower lemma* similar to upper glume; *palea* absent; *upper floret* as long as spikelet, pale yellow or green, smooth, shiny.

Flowering & Fruiting: September – October

Habitat: Forest margins

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, *A. Bora & D. Bhattacharyya* 11384, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Borneo, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam.

Note: Animals do not eat it readily and has very little food value.

Threat status: Not evaluated

P. paludosum Roxb., *Fl. India* 1: 310. 1820, Duthie, *Fodder Grasses* 11. 1888; Blatter & McCann, *Bombay Grasses* 162. 1935; Bor, *Fl. Assam* 5: 229. 1940; Bor, *Grasses Burma Ceyl. India Pak.* 329. 1960; Bor in *Rech.f., Fl. Iran.* 70: 471. 1970.

Vernacular Name: Swamp Panic (E)

Aquatic perennial; culms 25 – 130 cm high, spongy, erect or ascending from the creeping lower portion, this usually rooting at the nodes. *Leaf blades* linear to narrowly lanceolate, 15 – 30 cm long, 6 – 14 mm wide, subcordate at the base, flat, glabrous, blunt or sharply acute; *sheaths* glabrous and more or less loose. *Panicle* ovate or oblong, 10 – 30 cm long, the lowermost whorled. *Spikelets* narrowly lanceolate, 3.24 mm long, glabrous, acute or

shortly acuminate; *lower glume* orbicular, hyaline, up to a quarter the length of the spikelet, obtuse or truncate; *upper glume* 7-nerved; *lower lemma* 9-nerved; *palea* well developed or absent; *upper lemma* pallid, smooth and shining.

Flowering & Fruiting: April – October

Habitat: Paddy fields, marshes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11667 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Pakistan, Nepal, Ceylon, through Myanmar to Southeast Asia and tropical Australia

Threat status: Not evaluated

Paspalum L.

1a. Plant perennials.....*P. conjugatum*

1b. Plant annuals or perennials.....*P. scrobiculatum*

P. conjugatum P. J. Bergius, Acta Helv. Phys.–Math. 7: 129 – 130; t. 8. 1772; Bor, Fl. Assam 5. 255. 1940.

Vernacular Name: Hilograss (E)

Perennial with stolons. *Culms* compressed, nearly solid, 30 – 60 cm tall. *Leaf sheaths* keeled, glabrous or pilose along upper margins and mouth, a line of hairs abaxially at junction with blade; *leaf blades* lanceolate-linear, thin, 5 – 20 × 0.5 – 1 cm, glabrous or pilose along margins, acute at apex. *Inflorescence* digitate; racemes 2, 6 – 12 cm; *spikelets* single, in 2 rows; *rachis* 0.5 – 1 mm wide. *Spikelets* pale yellowish, ovate to suborbicular, 1.5 – 1.8 mm, abruptly acute; *upper glume* hyaline, ciliate along margins with long silky hairs; *lower lemma* similar but not ciliate; *upper lemma* pallid at maturity, ovate, as long as spikelet, crustaceous.

Flowering & Fruiting: May – September

Habitat: Open places in forests, forest margins, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11365; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11679, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Tropics and subtropics throughout the world

Note: It is used as forage for grazing or in cut-and-carry systems, and is rated as a very important natural pasture grass in coconut plantations. It is occasionally used as a lawn grass but is considered a weed in rice and plantation crops. The Iban of Borneo use leaf decoctions in the treatment of wounds and sores, and in the Sepik area of Papua New Guinea crushed spikelets are used for the same purpose (Rehel, 2011).

Threat status: Least concern ver 3.1

P. scrobiculatum L., Mant. Pl. 1: 29. 1767; Bor, Fl. Assam 5. 255. 1940; Chen & Phillips in Fl. China 22: 528. 2006.

Vernacular Name: Ricegrass paspalum (E)

Perennial or *annual*. *Culms* tufted, slender to robust, erect or decumbent and rooting at lower nodes, 30 – 90 cm tall. *Leaf sheaths* compressed, keeled, usually glabrous; *leaf blades* linear or linear – lanceolate, 10 – 40 × 0.4 – 1.2 cm, usually glabrous, base subrounded, margins scabrous, apex acuminate; *ligule* 0.5 – 1 mm. *Inflorescence* of 2 – 8 racemes, subdigitate or on a short axis; *racemes* 3 – 10 cm, ascending to widely spreading; *spikelets* usually single, overlapping in 2 rows, sometimes paired especially in middle of raceme; *rachis* ribbonlike, 1.5 – 3 mm wide, margins scabrous. *Spikelets* suborbicular, ovate or broadly elliptic, 2 – 3 mm, glabrous, obtuse to apiculate; *upper glume* membranous; *lower lemma* membranous or sometimes indurate; *upper lemma* brown at maturity, subequaling spikelet, coriaceous, obtuse.

Flowering & Fruiting: May – November

Habitat: Roadsides, weedy places, often on damp soils

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11377, 11381, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: tropics and subtropics of the Old World; introduced in America

Note: In the Indian subcontinent and on Socotra (Miller and Morris 2004) it is used as secondary cereal. It is also used as fodder and forage for livestock. The leaves are antiseptic in action and their paste is applied externally in cutaneous affections. On the basis of ethnobotanical records this species is also used for carbuncle, diabetes, intoxication, narcotics, ophthalmia, parturition and sores (Knees and Gupta, 2013).

Threat status: Least concern ver 3.1

Phragmites Adans.

P. karka (Retz.) Trin. ex Steud., Nomencl. Bot., ed. 2. 2: 324. 1841; Bor, Fl. Assam 5. 88. 1940. *Arundo karka* Retzius, Observ. Bot. 4: 21. 1786.

Vernacular Name: Nal, Nalkhagari (A)

Robust *perennial*, creeping rhizome. *Culms* very stout, often woody, 4 – 6 m tall, 1.5 – 2.5 cm in diam. *Leaf sheaths* greenish, glabrous; *leaf blades* erect, upto 80 × 2 – 3 cm, abaxial surface scabrous, apex stiff, long acuminate; *ligule* 0.5 – 1 mm, ciliolate. *Panicle* 30 – 50 × 10 – 20 cm; branches of lowermost whorl bare of spikelets toward base. *Spikelets* 10 – 12 mm, florets 4 – 6; *glumes* lanceolate – elliptic, obtuse to acuminate, *lower glume* upto 1/2 length of lowest lemma, 2.5 – 4 mm, *upper glume* 3.5 – 5 mm; *lowest lemma* narrowly elliptic, 7 – 12 mm; *bisexual lemmas* linear-lanceolate, 8.5 – 10 mm, apex long attenuate.

Flowering & Fruiting: April – November

Habitat: river banks, swampy places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, s. d., H. A. Barbhuiya 1042 (ASSAM).

Distribution: India, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Africa, N Australia, Pacific Islands

Note: The young leaves are used as fodder; older culms are used for thatching, screens, baskets, paper and reeds for musical instruments (Cook, 1996).

Threat status: Least concern ver 3.1

Pogonatherum P.Beauv.

P. crinitum Kunth, Enum. Pl. 1: 478. 1833; Bor, Fl. Assam 5. 348. 1940; Chen & Phillips in Fl. China 22: 591. 2006. *Andropogon crinitus* Thunberg in Murray, Syst. Veg., ed. 14, 903. 1784.

Vernacular Name: Bamboo Grass (E)

Culms erect, very slender, 10 – 30 cm tall, 0.5 – 0.8 mm in diam., branching from base. *Leaf sheaths* glabrous or pubescent, mouth ciliate; *leaf blades* 1.5 – 5 × 0.1 – 0.4 cm, puberulous, acute at apex. *Raceme* 1.5 – 3 cm (excluding awns), yellowish; *rachis* internodes, hairy. *Sessile spikelet* 1.3 – 2 mm, membranous; *lower glume* scabrid on back, apex ciliate; *upper glume awn* 1.5 – 1.8 cm; *lower floret* absent or only lemma present; *awn of upper lemma* 1.8 – 2.4 cm, strongly geniculate near base, column very short. *Stamen* 1, *anther* c. 1 mm. Pedicelled spikelet smaller; lower glume awnless.

Flowering & Fruiting: May – September

Habitat: Mountain slopes, forests, moist places, along roadsides; below 2000 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11638; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11669, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Japan, Malaysia, Nepal, New Guinea, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; Australia (Queensland)

Note: This species is used medicinally (Chen and Phillips, 2006).

Threat status: Not evaluated

Saccharum L.

1a. Culms 3 – 6 m tall; leaf blades 70 – 150 × 4 – 6 cm.....*S. officinarum*

1b. Culms 1 – 4 m tall; leaf blades 60 – 180 × 0.2 – 0.8 cm.....*S. spontaneum*

S. officinarum L., Sp. Pl. 1: 54. 1753; Bor, Fl. Assam 5. 348. 1940; Chen & Phillips in Fl. China 22: 579. 2006.

Vernacular Name: Sugarcane (E), Kuhiyar (A)

Perennial, forming tall clumps. *Culms* 3 – 6 m tall, 2 – 5 cm in diam., noded, solid, nodes glabrous. *Leaf sheaths* glabrous, pilose at mouth; *leaf blades* 70 – 150 × 4 – 6 cm, usually

glabrous, margins sharply serrate, rounded at base, acuminate at apex; *ligule* 2 – 3 mm, ciliate. *Panicle* 50 – 100 cm, axis glabrous but pubescent at nodes; *racemes* 10 – 25 cm; *rachis* internodes 3 – 6 mm, glabrous. *Spikelets* 3.5 – 4 mm; *callus* hairs 2 – 3 times length of spikelet; *lower glume* oblong, glabrous below, margins membranous and ciliate above, acuminate at apex; *lower lemma* oblong-lanceolate; *upper lemma* linear, awnless. *Lodicules* glabrous. *Anthers* 3.

Flowering & Fruiting: Autumn

Habitat: Cultivated, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11708 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, SE Asia, Pacific Islands; widely cultivated

Note: Sugar cane was originally grown in southeastern Asia and the Pacific for the sole purpose of chewing. The rind was removed and the internal tissues sucked or chewed. The production of sugar by boiling cane juice first took place in India, most likely during the first millennium BC. Sugar cane has also been used medicinally. In southern Asia it has been used to treat a wide variety of health complaints from constipation to coughs, and has been used externally to treat skin problems. Both the roots and stems are used in Ayurvedic medicine to treat skin and urinary tract infections, as well as for bronchitis, heart conditions, loss of milk production, cough, anaemia, and constipation (Website: <http://www.kew.org/science-conservation/plants-fungi/saccharum-officinarum-sugar-cane>).

Threat status: Not evaluated

S. spontaneum L., Mant. Pl. Altera 183. 1771; Bor, Fl. Assam 5. 319. 1940; Chen & Phillips in Fl. China 22: 319. 2006.

Vernacular Name: Kansh (B)

Perennial, with long rhizomes. *Culms* 1 – 4 m tall, 5 – 10-noded, often hollow in center, bearded. *Leaf sheaths* pilose at mouth and margin; *leaf blades* 60 – 180 × 0.2 – 0.8 cm, glaucous, glabrous, margins serrate, long attenuate at apex; *ligule* brown, 2 – 8 mm. *Panicle* 20 – 40 cm, axis pilose; *racemes* 4 – 17 cm; *rachis internodes* 1.5 – 5 mm, pilose. *Spikelets* 3 – 4 mm; *lower glume* papery, back glabrous, margins ciliate above, apex acuminate; *lower lemma* ovate-lanceolate, equal to glumes; *upper lemma* linear or linear-oblong, awnless. *Lodicules* ciliate. *Anthers* 3, 1.5 – 2 mm.

Flowering & Fruiting: July – September

Habitat: Mountain slopes, low grassy places; below 2000 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, s. d., H. A. Barbhuiya 204 (ASSAM).

Distribution: India, Afghanistan, Bhutan, Cambodia, China, Indonesia, Japan, Malaysia, Myanmar, New Guinea, Pakistan, Philippines, Sri Lanka, Thailand, Turkmenistan, Vietnam; Africa, SW Asia, Australia, Pacific Islands

Note: It usually forms deeply rooted clumps and is a useful soil binder but can become a serious weed in irrigation systems; it is used for decoration, thatching, making ropes and as fodder. In form it is highly variable. It does not produce sugar but it used in sugar cane breeding; hybrids between it and cultivated sugar cane (*Saccharum officinarum* L.) are sometimes found in the wild, which might, in part, explain the variability (Cook, 1996).

Threat status: Least concern ver 3.1

Sacciolepis Nash

S. indica Chase in Proc. Biol. Soc. Washington 21: 8. 1908; Bor, Fl. Assam 5. 216. 1940.

Aira indica L., Sp. Pl. 1: 63; 2: Errata. 1753.

Vernacular Name: Indian cupscale grass (E)

Annual. Culms slender, decumbent base, 20 – 100 cm tall. *Leaf sheaths* slightly keeled; *leaf blades* linear, flat to loosely involute, 5 – 20 × 0.2 – 0.5 cm, apex acute; *ligule* 0.2 – 0.5 mm. *Panicle* spikelike, 11 – 16 × 0.3 – 0.5 cm, axis glabrous. *Spikelets* green or purplish green, lanceolate, laterally compressed, 2 – 2.8 mm, glabrous or papillose-hispid, obtuse; *glumes* ovate, *lower glume* 1/3 – 1/2 spikelet length, 3 – 7-veined; *upper glume* 7 – 11-veined; *lower lemma* as long as upper glume; *palea* small and hyaline; *upper lemma* yellowish, narrowly ovate, 1/2 spikelet length.

Flowering & Fruiting: July – November

Habitat: Moist places, streams

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11655, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Japan, Myanmar, Nepal, Thailand, Vietnam; Africa, Australia, Pacific Islands.

Note: It is a low value forage crop.

Threat status: Not evaluated

Schizostachyum Nees

1a. Culms 10 – 13 m tall; Culm sheaths 12 – 15 cm × 10 – 12 cm.....*S. mannii*

1b. Culms 4.9 m tall; nodes hardly prominent; culm sheaths 15 – 30 cm × 10 – 25 cm.....*S. dullooa*

S. dullooa (Gamble) Majumdar in Karthikeyan *et al.*, Fl. Ind. Enum. Monocot. 281. 1989; D.N.Tewari, Monogr. Bamboo: 132. 1992; Barooah & Borthakur, Diver. Dist. Bamboos Assam 164. 2003. *Teinostachyum dullooa* Gamble in Ann. Roy. Bot. Card. Cal. 7:101. Pl. 89. 1896. *Neohouzaeua dullooa* (Gamble) Camus in Bull. Mus. Paris, 100.1922.

Vernacular Name: Dolu, Chunga-bans(S).

A medium sized bamboo, tufted, scandent. Blades reflexed at least at right angles, silky pubescent on the adaxial surface towards the base. Culms 4.9 m tall; nodes hardly

prominent; internodes 0.4 – 1 m long, 2.5 – 8 cm broad; wall thin. Culm sheaths 15 – 30 cm × 10 – 25 cm, striate, with scattered white hairs prominent above, rounded at the top, concavely truncate; imperfect blades 7.5 – 15 cm × 8 – 17 mm, narrow, subulate, hairy within; ligule prominent, fimbriate. Leaves oblong-lanceolate, acuminate, rounded, often unequally at the base into a short petiole, terminating in a twisted, margins rough; sheath striate, ciliate on the margins; ligule long, hairy.

Flowering & Fruiting: Not seen

Habitat: Hill slopes, forest

Specimen Examined: India, Assam, Cachar, Barail Wildlife Sanctuary, West Block, 15 No Hill, 23.04.2011, H.A. Barbhuiya 5(ASSAM).

Distribution: India (Assam, Meghalaya, Manipur, Mizoram, Tripura, Nagaland, Sikkim, W. Bengal), Bangladesh, Bhutan (Tashigang, Punakha), Myanmar, Vietnam.

Habitat: Terrestrial on hill slopes in tropical wet-evergreen forest at an altitude of ca. 190 m.

Notes: This is a very important bamboo and is used to make Quivers, mats, baskets, umbrellas, small boxes, kite frames. It is also used in the preparation of popular ethnic diet of winter season known as "*Chunga pitha*" (local people).

Threat status: Not Evaluated

S. manni R.B.Majumdar, Fl. Ind. Enum.: Monocot. 281. 1989.

Vernacular Name: Not known

An arborescent bamboo. *Culms* 10 – 13 m tall, 2.5 – 4.5 cm in diameter, arising singly from a creeping rhizome; *nodes* not prominent, internodes 12 – 36 cm long, wall 0.2 – 0.7 cm thick. *Culm sheaths* 12 – 15 cm long, 10 – 12 cm broad, striate, covered with dense tawny appressed hairs, straight, truncate at the top; *imperfect blade* as long as or longer than the sheaths, narrow at the base, central portion thickened, cuspidately acuminate, the sides widened out into large, inflated, membranous wings, broadly rounded on the sheath; *ligule* narrow, 1 mm long. *Leaves* membranous, pale, 10 – 20 cm long, 2 – 2.8 cm broad, lanceolate or oblong-lanceolate, rounded at the base into a short petiole, tip acuminate, glabrous on both surface; *main veins* prominent, *secondary veins* 6 – 8, inconspicuous.

Flowering & Fruiting: Not seen

Habitat: Hilly forests, hillslopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, West Block, Near Malidar, 23.04.2011, H. A. Barbhuiya 906 (ASSAM).

Distribution: India (Assam, Manipur, Meghalaya, Mizoram, Nagaland)

Note: Endemic

Threat status: Not evaluated

Setaria P.Beauv.

- 1a. Perennial; culms 75 – 200 cm tall.....*S. palmifolia*
1b. Annual; culms 20 – 90 cm tall.....*S. pumila*

S. palmifolia Stapf in J. Linn. Soc., Bot. 42. 186. 1914; Bor, Fl. Assam 5. 284. 1940; Chen & Phillips in Fl. China 22: 532. 2006. *Panicum palmifolium* J. König, Naturforscher 23: 208. 1788.

Vernacular Name: Indian palm grass, Bristle grass (E)

Perennial. Culms erect or slightly geniculate, 75 – 200 cm tall. *Leaf sheaths* sparsely hispid, margins ciliate near ligule, otherwise glabrous; *leaf blades* fusiform-lanceolate, plicate, 20 – 60 × 2 – 7 cm, glabrous or hispid, narrowed toward base, acuminate at apex; *ligule* 2 – 3 mm, ciliate. *Panicle* 20 – 60 × 2 – 10 cm, laxly spreading. *Spikelets* broadly lanceolate, 3 – 4 mm, acute; *lower glume* triangular – ovate, obtuse to acute; *upper glume* ovate, 5–7-veined, acute; *lower lemma* often distinctly longer than upper floret, 5-veined; *lower palea* narrow, hyaline; *upper lemma* slightly shiny, apex apiculate, green and compressed.

Flowering & Fruiting: August – December

Habitat: Open forests, thicket margins, shady roadsides

Specimen Examined: India, Assam, Cachar, Monierkhal, 14.09.1978, R. B. Majumdar 73219 (ASSAM).

Distribution: India, tropical Asia, W Africa

Note: seed boiled or roasted seeds are used as a substitute for rice. Young plants are eaten raw as a side dish with rice (Facciola, 1998).

Threat status: Not evaluated

S. pumila Roem. & Schult., Syst. Veg., ed. 15 bis 2: 891. 1817; Chen & Phillips in Fl. China 22: 534. 2006. *Panicum pumilum* Poiret in Lam., Encycl., Suppl. 4: 273. 1816.

Vernacular Name: Yellow foxtail (E)

Annual. Culms erect or geniculate, 20 – 90 cm tall, nodes glabrous. *Leaf sheaths* keeled, glabrous; *leaf blades* linear, 5 – 40 × 0.2 – 1 cm, abaxially smooth, adaxial surface scabrous or pilose at base; *ligule* 1 mm. *Panicle* densely cylindrical, 3 – 17 × 0.4 – 0.8 cm; *branches* reduced to a single mature spikelet; *axis* pubescent. *Spikelets* broadly ovate, 2.5 – 3.5 mm; *glumes* ovate; *lower glume* 1/3 – 1/2 as long as spikelet; *upper glume* 1/2 – 2/3 as long as spikelet; *lower floret* usually staminate; *lower palea* ovate, keels narrowly winged; *upper lemma* broadly ovate, coarsely rugose.

Flowering & Fruiting: June – October

Habitat: Waste places, mountain slopes, roadsides, forest margins

Specimen Examined: India, Assam, Cachar, Nagakhal, 14.09.1978, R. B. Majumdar 73309 (ASSAM).

Distribution: Temperate and subtropical Asia and Europe; widespread

Threat status: Not evaluated

Themeda Forssk.

T. villosa Hack., Monogr. Phan. 6: 675. 1889; Bor, Fl. Assam 5. 409. 1940;
Chen & Phillips in Fl. China 22: 635. 2006. *Anthistiria villosa* Poiret, Encycl. Suppl. 1:
396. 1812.

Vernacular Name: Silky Kangaroo grass (E)

Perennial. Culms tufted, stout, 2 – 3.5 m tall, 1 – 2 cm in diam. *Leaf sheaths* glabrous, basal sheaths strongly compressed; *leaf blades* 100 × 0.7 – 1.5 cm, scabrid, gradually narrowed to the thick white midrib toward base, acuminate; *ligule* c. 1 mm, ciliate. *Compound panicle* upto 1 m with many drooping branches, branches bearing several spathes; *spatheoles* 2 – 3.5 cm, minutely hispid; *peduncle* pilose at apex. *Raceme* composed of 1 – 2 spikelet pairs and a terminal triad above the involucre of 2 homogamous pairs. *Homogamous spikelets* arising at slightly different levels, male or barren, 10 – 15 mm, narrowly lanceolate, wingless, shortly pubescent. *Sessile spikelet* 7 – 8 mm; *callus* 1 – 2 mm, acute; *lower glume* oblong-lanceolate, dorsally compressed with shallow central groove, densely brown strigose; *upper lemma* lanceolate, *midvein* produced into mucro or poorly developed short awn. *Pedicelled spikelet* 10 – 15 mm.

Flowering & Fruiting: August – January

Habitat: Hill slopes, forest margins, disturbed moist grassy places; 300 – 2500 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11359, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bangladesh, Bhutan, China, Indonesia, Malaysia, Nepal, Philippines, Sri Lanka (introduced), Thailand.

Threat status: Not evaluated

Thysanolaena Nees

T. latifolia Honda in Journ. Fac. Sc. Tokyo, Sect. III. Bot. iii. 312. 1930; Chen *et al.* in Fl. China 22: 446. 2006. *Melica latifolia* Roxburgh ex Hornemann, Suppl. Hort. Bot. Hafn. 117. 1819. *Thysanolaena maxima* Kuntze, Revis. Gen. Pl. 2: 794. 1891.

Vernacular Name: Phooljharu (A), Phuljhanta (B)

Culms 1 – 3 m tall, hard, unbranched, often arching. *Leaf sheaths* smooth; *leaf blades* broadly lanceolate – oblong, leathery, upto 40 × 3 – 7 cm; *ligule* truncate, 1 – 2 mm. *Panicle* upto 60 cm, open or contracted; *main branches* 1 – 3 per node, bare of spikelets in lower part, lowest branch up to 30 cm; *pedicels* 2 mm. *Spikelets* 1.5 – 1.8 mm; *glumes* 1/5 – 1/4 spikelet length, ovate – lanceolate; *lower lemma* as long as spikelet; *upper lemma* slightly shorter than lower lemma, apex slightly recurved. *Anthers* brown, 0.5 – 1 mm. *Caryopsis* oblong, c. 0.5 mm.

Flowering & Fruiting: March – June

Habitat: Hillsides and valleys, forest margins, open grasslands, river banks.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11631; Ditekcherra (on the way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11370; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11661, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Indian Ocean Islands.

Note: The plant is frequently grown to provide screening and hedges. The flowering panicles are used to make light, dust brooms (Website: <http://tropical.theferns.info/viewtropical.php?id=Thysanolaena+latifolia>).

Threat status: Not evaluated

29. PAPAVERACEAE Juss.

- 1a. Stamen 2.....1
1b. Stamens many, free.....*Argemone*
2a. Inflorescences terminal (leaf-opposed), corymbose, pendent, 2 – 14 flowered.....*Dactylicapnos*
2b. Inflorescences leaf-opposed (displaced-terminal), racemose, subspicate.....*Fumaria*

***Argemone* L., Sp. Pl. 1: 508. 1753.**

A. mexicana L., Sp. Pl. 1: 508. 1753; Hook.f. & Th. in Hook.f., Fl. Brit. India 1: 117. 1872; Kanjial *et al.*, Fl. Assam 1(1): 66. 1934; P. J. Bora & Y. Kumar, Florist. Diversity Assam 49. 2003; Zhang *et al.* in Fl. China 7: 262. 2007.

Vernacular Name: Prickly poppy (E), Siyalkata (B)

Herbs, annual, 30 – 100 cm tall. *Basal leaves* dense; *petiole* 5 – 10 mm; *leaf blade* broadly oblanceolate or obovate to elliptic, 5 – 20 × 2.5 – 7.5 cm, glabrous, cuneate at base, margin pinnatifid, acute at apex; lobes toothed. *Flowers* solitary, sometimes in few-flowered cymes. *Pedicel* very short. *Flower buds* ovoid, c. 1.5 cm. *Calyx* 2 or 3, cymbiform, c. 1 cm, spurred at apex. *Corolla* 6, yellow or orange, broadly obovate, 1.7 – 3 cm, broadly cuneate at base, rounded at apex. *Filaments* c. 7 mm; *anthers* narrowly oblong, 1.5 – 2 mm. *Ovary* elliptic or oblong, 7 – 10 mm; *styles* very short; *stigmas* dark red, 4 – 6 lobed. *Fruit* a capsule, oblong to broadly elliptic, 2.5 – 5 × 1.5 – 3 cm.

Flowering & Fruiting: March – October

Habitat: Common, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11753, Fl. (Herbarium of Department of Life

Science & Bioinformatics, Assam University, Silchar); Included after Dutt *et al.* 1974, *D.* 392.

Distribution: India, native to Central and tropical America, subtropical regions

Note: *Argemone mexicana* is an ornamental plant and is sometimes used as a soil enricher for crops after slashing. Plant extracts can be used as an insecticide and medicinal properties have been attributed to the sap and oil from the seed (Website: [http://keys.lucidcentral.org/keys/v3/eafrinet/weeds/key/weeds/Media/Html/Argemone_mexicana_\(Mexican_Prickly_Poppy\).htm](http://keys.lucidcentral.org/keys/v3/eafrinet/weeds/key/weeds/Media/Html/Argemone_mexicana_(Mexican_Prickly_Poppy).htm)).

Threat status: Not evaluated

Dactylicapnos Wall.

D. scandens Hutch., Bull. Misc. Inform. Kew (3): 105. 1921; Zhang *et al.* in Fl. China 7: 292. 2007. *Dicentra scandens* (D. Don) Walp., Repert. Bot. Syst. (Walpers) 1: 118. 1842. *Dicentra thalictrifolia* (Wall.) Hook.f. & Thomson, Fl. Ind. 1: 273. 1855. *Diclytra scandens* D. Don, Prodr. Fl. Nepal. 198. 1825.

Vernacular Name: Not known

Climbers, perennial, herbaceous. *Petiole* 0.5 – 3 cm; *leaflets* ovate, 5 – 30 × 4 – 18 mm, margin entire, obtuse at apex, with small hooked mucro. *Inflorescence* in raceme, 1 – 5 cm; *peduncle* 2 – 8 cm; 3 – 6 × 1 mm. *Pedicel* thin, 10 – 20 mm. *Calyx* ovate-lanceolate, 3 – 4 × 2 mm, entire. *Corolla* yellow, pinkish toward apex, oblong-cordate to obtusely triangular, 18 – 21 × 8 – 10 mm. *Stigma* square. *Capsule* purple, whitish or pale yellow when mature, ovoid to lanceolate, very fleshy.

Flowering & Fruiting: July – December

Habitat: slopes, stony places; 1600 – 2500 m

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 120.

Distribution: India (Assam, Sikkim), Bhutan, China, Myanmar, Nepal, Sri Lanka, N Thailand, N Vietnam

Threat status: Not evaluated

Fumaria L.

F. indica (Hausskn.) Pugsley in J. Linn. Soc., Bot. 44: 313. 1919. *Fumaria parviflora* Lam. var. *indica* (Hausskn.) Parsa, Fl. Iran 2: 490. 1986.

Vernacular Name: Papara (H), Pid-papra (Garo)

Small *herb*, delicate, diffuse, glabrous. *Leaves* 3 – 10 × 2 – 5 cm broad, long-stalked or subsessile, 2 – 3 pinnatisect. *Inflorescence* in racemes shortly peduncled, leaf-opposite, 10 – 20 mm long; *bracts* present. *Pedicel* 1.5 – 2 mm long. *Flowers* 5 – 6 mm long, white or pale pinkish. *Calyx* minute, less than 1 mm long, 0.5 mm broad, laciniate-dentate, whitish. *Upper corolla* slightly oblong and downcurved *spurc.* 1.5 mm long. *Fruit* suborbicular, rounded apex when mature.

Flowering & Fruiting: March – June

Habitat: Weed in cultivated places; altitude up to 1500 – 2400 m

*Specimen Examined:*Included after Dutt *et al.* 1974, *D.* 346.

Distribution: India, Bhutan, Nepal, Pakistan, Afghanistan, Central and west Asia

Note: The plant is used in aches and pains, diarrhoea, fever, influenza and liver complaints. A cold infusion of the plant is used to treat wasting diseases of children and to help cooling during fever and in the treatment of constipation and dyspepsia. It is used as a blood purifier for skin diseases and applied externally in leucoderma and as a fomentation for swollen joints. The dried plant is also used as an anthelmintic, diuretic and diaphoretic and in combination with black pepper for jaundice (Website: <http://www.flowersofindia.net/catalog/slides/Indian%20Fumitory.html>).

Threat status: Not evaluated

30. Lardizabalaceae R. Br.

Holboellia Wall.

H. latifolia Wall., Tent. Fl. Nepal. 1: 24, t. 16. 1824. *Holboellia ovatifoliolata* Y.C.Wu & T.C.Chen, Fl. Yunnan. 2: 5. 1979.

Vernacular Name: Sausage Vine (E), Gomphal (H)

Evergreen. *Petiole* slender; *leaves* palmately foliolate; *leaflets* c. 4 – 13 × 1 – 7 cm, papery or leathery, base rounded or broadly cuneate, apex acuminate to caudate-acuminate. *Inflorescences* fascicled racemes; *bracts* broadly ovate, scaly. *Flowers* several per raceme. *Male flowers:* *calyx* greenish white; outer 3 calyx oblong, 11 – 15 × 4 – 5 mm; inner 3 calyx oblong-lanceolate. *Corolla* obovate to elliptic, less than 1 mm. *Stamens* c. 8 – 12 mm; filaments linear; *anthers* 3.5 – 5 mm. *Pistillodes* ovoid-subulate. *Female flowers:* *calyx* purple; outer 3 calyx ovate-oblong, 16 – 22 × 7 – 9 mm; inner 3 calyx narrower and shorter. *Stamenoids* minute. *Carpels* oblong to conical. *Stigma* sessile, oblique. *Fruit* reddish purple when matured, oblong to ellipsoid.

Flowering & Fruiting: April – September

Habitat: Forests, streams, shady moist sites, forest margins on mountain slopes

Specimens Examined: India, Assam, NC Hills dist., Halflong to Hojai, 18.01.1915, U. Kanjilal 914, Fl. (ASSAM); Included after Dutt *et al.*, 1974, *D.* 199.

Distribution: NE India, Bhutan, China, Nepal, Sikkim.

Note: Ripe fruits are eaten fresh.

Threat status: Not Evaluated

31. MENISPERMACEAE Juss

- 1a. Stamens c. 1 mm long..... *Haematocarpus*
- 1b. Stamens as long as corolla.....2
- 2a. Male flowers in racemes *Tinospora*
- 2b. Male flowers in axillary panicles or in umbels3
- 3a. Female flowers 3 – 6 together in the axils of large orbicular bracts..... *Cissampelos*

3b. Female flowers otherwise.....	4
4a. Leaves peltate; stamens connate or free.....	5
4b. Leaves not peltate; stamen free	<i>Cocculus</i>
5a. Stamens connate.....	<i>Cyclea</i>
5b. Stmens connate or free.....	<i>Pericampylus</i>

Cissampelos L.

C. pareira L., Sp. Pl. 2: 1031. 1753. *Cissampelos argentea* Kunth, Nov. Gen. Sp. v. 67. 1821.

Vernacular Name: Tubukilota (A), Akanadi, Patha (B)

Climbing *herb* or *shrub*, tomentose. *Leavesc.* 2.5 – 12 × 2.5 – 11.5 cm, broad-ovate or orbicular, obtuse, cordate or truncate at base, tomentose on both surface; *petiole* pubescent. *Flowers* minute, greenish-yellow; *pedicels* filiform. *Male flowers:* branched cymes; *calyx* 4-lobed, obovate-oblong, hairy abaxially; *corolla* 4-lobed, united, hairy abaxially; *stamens* 4, *filaments* united, column short. *Female flowers:* clustered in the axils, *bracts* imbricate, long racemes; *calyx* 1-lobed, ovate-oblong, pubescent abaxially; *corolla* 1-lobed, obtriangular; *carpel* 1, densely hairy; *style* 3-fid. *Fruit* a drupe, 4 – 6 × 3 – 4 mm, subglobose, compressed.

Flowering & Fruiting: March – October

Habitat: Open forest

Specimens Examined: Included after Dutt *et al.* 1974, *D.* 134, 111.

Distribution: India, Pakistan and through out Tropics

Note: It yields a strong fibre for making ropes. Root used in the treatment of fever (Hmar tribe).

Threat status: Not Evaluated

Cocculus DC.

C. laurifolius DC., Syst. Nat. 1: 520. 1817; Hu *et al.* in Fl. China 7: 13. 2008.

Vernacular Name: Laurel-leaved Snail Tree (E)

Erect shrubs or small *trees*. *Petiole* usually less than 1 cm, glabrous; *leaf blade* elliptic, ovate or lanceolate-elliptic, 4 – 15 × 1.5 – 5 cm, thinly leathery, both surfaces glabrous and shiny, cuneate or acute at base, acute and attenuate at apex, palmately 3-veined. *Inflorescences* axillary, cymose or thyrsoid, glabrous. *Male flowers:* *calyx* 6-lobed; *corolla* 6-lobed, obcordate, 0.2 – 0.4 mm, apex 2-lobed; *stamens* 6, *c.* 1 mm. *Female flowers:* *calyx* and *corolla* same as in male flower; *staminodes* 6, minute; *carpels* 3, glabrous. *Fruit* a drupe, black, 6 – 7 mm.

Flowering & Fruiting: Spring – Autumn

Habitat: Open forests

Specimens Examined: Included after Dutt *et al.* 1974, *D.* 206.

Distribution: India, China, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Thailand

Note: Used as medicine for hair loss and as hair cosmetic. Used for making arrow poison. Wood used as fuel (Website: <http://indiabiodiversity.org/species/show/9611>).

Threat status: Not Evaluated

Cyclea Arn. ex Wight

C. meeboldii Diels, Pflanzenr. Menispermac. 315. 1910; Hu *et al.* in Fl. China 7: 30. 2008.

Vernacular Name: Not known

Shrubs, upto *c.* 3 m. *Petiole* 5 – 10 cm, hispid; *leaf blade* broadly cordate or cordate-round, 7 – 18 cm, both surfaces tomentose, acuminate at apex. *Inflorescences* axillary, male inflorescence a narrow thyrse or racemose, *c.* 8 cm, hispid, *branches* 1 – 1.5 cm. *Male flowers:* *pedicelsc.* 1.5 mm; *calyx* 4-lobed, connate, lobes narrowly ovate, hispid abaxially; *corolla* 4-lobed, free, obovate, *c.* 0.4 × 0.3 mm, glabrous. *Infructescences* shortly pedunculate, 5 – 8 cm, hispid. *Fruit* a drupes.

Flowering & Fruiting: December – March

Habitat: Forests; 700 – 800 m

Specimens Examined: Included after Dutt *et al.* 1974, *D.* 401.

Distribution: NE India, China

Threat status: Not Evaluated

Haematocarpus Miers

H. validus (Miers) Bakh.f. ex Forman, Kew Bull. 26 (3): 420. 1972. *Baterium validum* Miers in Ann. Mag. Nat. Hist. ser. 3, 13: 124. 1864. *Haematocarpus comptus* Miers in Ann. Mag. Nat. Hist. ser. 3, 19: 197. 1867, nom. illeg. & Contrib. Bot. 3: 326, t. 134. 1871. *H. thomsonii* Miers, l.c. 1867; Hook. f. & Thomson in Fl. Brit. India, 1: 106. 1872.

Vernacular Name: Inramji-dulela (A)

Branches puberulous or glabrous. *Leaves* elliptic, obovate-elliptic or ovate-elliptic, obtuse at base, acuminate or obtuse at apex, 7 – 18 × 4 – 8 cm; *nerves and nervules* conspicuous beneath; *petioles* 1.2 – 3.5 cm long. *Inflorescences* axillary, panicles or subracemes, up to 40 cm long, puberulous or glabrous; *branches* slender, up to 9 cm long. *Male flowers:* *pedicels* 1.5 – 3.5 mm long; *sepals and petals* with dark red lines and spots; *outer sepals* of outer whorls ovate, ciliate or not; *inner ones* larger, elliptic or elliptic-ovate, glabrous; *petals* ovate or broadly elliptic-oblong, 1.5 – 2.5 mm long; *stamens* *c.* 1 mm long; *connectives* swollen. *Female flowers:* *sepals and petals* as in male; *staminodes* less than 1 mm long, rod-like. *Carpels* ovoid-ellipsoid, 1 – 1.5 mm long; *styles* sharply reflexed, *c.* 0.5 mm long. *Drupes* ovoid-ellipsoid, 4 – 5 × 2 – 2.5 cm, glabrous, red; *embryo* 3 – 3.5 mm long.

Flowering & Fruiting: Throughout the year

Habitat: From plains to hills, up to 650 m

Specimens Examined: India, Assam, NC Hills dist., Borail Reserve, 14.05.1915, *U. Kanjilal* 908, 909 (CAL).

Distribution: India (Assam, Meghalaya and Andaman & Nicobar Islands), Bangladesh, Sumatra, Java and Borneo

Threat status: Not Evaluated

Pericampylus Miers

P. glaucus (Lam.) Merr., *Interpr. Herb. Amboin.* 219. 1917; Hu *et al.* in *Fl. China* 7: 11. 2008. *Menispermum glaucum* Lam., *Encycl.* 4: 100. 1797.

Vernacular Name: Goriam-loti (A)

Woody vines. *Petiole* 3 – 7 cm, tomentose; *leaf blade* triangular-ovate to triangular-oblong, both surfaces tomentose, subtruncate to cordate at base, margin crenate or subentire, obtuse or rounded at apex, palmately 5-veined. *Inflorescences* corymbose cymes, 2 – 10 cm, tomentose. *Male flowers*: *calyx* 9-lobed, pubescent abaxially; *corolla* 6-lobed, cuneate or sometimes spatulate, 0.5 – 0.7 mm; *stamens* 6, filaments free or adnate. *Female flowers*: *calyx* and *corolla* same as in male flowers; *staminodes* 6; *ovary* 0.5 – 0.7 mm, *stigma* 2-lobed. *Fruit* a drupe, red or purple.

Flowering & Fruiting: April – October

Habitat: forests margins; *c.* 700 m

Specimens Examined: Included after Dutt *et al.* 1974, *D.* 144.

Distribution: India, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam

Note: The leaves are one of the ingredients of an infusion to cure high fever, and in combination with other plants, they are made into an infusion used for treating coughs and asthma. The pounded leaves are applied topically to soothe headache. The mucilage from soaking the pounded leaves is applied on the scalp as a remedy for hair loss (Website: <http://tropical.theferns.info/viewtropical.php?id=Pericampylus+glaucus>)

Threat status: Not Evaluated

Tinospora Miers

T. crispa (L.) Hook.f. & Thoms., *Fl. India* 183. 1855; Hu *et al.* in *Fl. China* 7: 8. 2008. *Menispermum crispum* L., *Sp. Pl.*, ed. 2, 2: 1468. 1763.

Vernacular Name: Heartleaf moonseed (E), Gulancha (B)

Vines, glabrous, very long aerial roots. *Old stems* fleshy. *Younger stems* slightly fleshy. *Petiole* 5 – 15cm, glabrous; *leaf blade* ovate to orbicular, 6 – 13 × 6 – 13 cm, slightly fleshy, both surfaces glabrous, cordate or rounded at base, margin entire, acuminate at apex, palmately 5-veined. *Inflorescences* racemose, flowers 2 or 3-fascicled. *Male inflorescences* 5 – 10 cm. *Male flowers*: *calyx* 6-lobed, in 2 whorls, outer 3 lobes ovate, *c.* 1 mm, inner 3 lobes obovate, 2.5 – 3 mm; *corolla* 3 – 6-lobed, yellow, obovate-spatulate, 1.6 – 2.5 mm; *stamens* 6, as long as corolla. *Female inflorescences* 2 – 6 cm. *Female*

flowers: calyx and corolla same as in male; *staminodes* 6; *carpels* 3, *c.* 2 mm, *stigma* lobes very short. *Fruit* a drupe, orange, subglobose.

Flowering & Fruiting: Spring – Summer

Habitat: Open forest, hill slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11523, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Cambodia, NE India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand

Note: In Indo-China, an infusion of the stem is drunk to treat fever (also when caused by malaria) and jaundice. Powdered stems are used to fatten horses and cattle by stimulating their appetite (Website: <http://tropical.theferns.info/viewtropical.php?id=Tinospora+crispa>).

Threat status: Not Evaluated

32. BERBERIDACEAE Juss.

Berberis L.

B. sublevis W.W.Sm., Notes Roy. Bot. Gard. Edinburgh 9: 83. 1916.

Vernacular Name: Not known

Shrubs. *Petiole* short; *leaves* linear-lanceolate, *c.* 4 – 12 × 1 – 1.5 cm, thinly leathery, cuneate at the base, margin slightly revolute, serrate or sometimes entire, acuminate at the apex. *Flowers* fascicled. *Calyx* in 2 whorls; *outer calyx* reddish, ovate, *c.* 2.5 × 2 mm; *inner calyx* obovate to oblong-elliptic, *c.* 5 × 3 mm. *Corolla* obovate, *c.* 5 – 5.5 × *c.* 3 mm. *Stamens* 3.5 mm. *Ovules* solitary. *Berry* purplish red, ovoid.

Flowering & Fruiting: May – November

Habitat: streamside

Specimens Examined: Included after Dutt *et al.*, 1974, D. 188.

Distribution: NE India to Myanmar

Note: According to the old herbalists the slightly acid leaves were once used to season meat with and as a salad. A decoction of the bark and yellow wood was formerly celebrated as a remedy for jaundice.

Threat status: Not Evaluated

33. RANUNCULACEAE Juss.

- 1a. Herbs perennial or annuals.....2
- 1b. Vines woody or herbaceous and perennial.....4
- 2a. Leaves usually both basal and along stem..... *Ranunculus*
- 2b. Leaves basal and cauline.....3

- 3a. Leaves basal and cauline; proximal leaves petiolate, distal leaves sessile; cauline leaves alternate.....*Thalictrum*
 3b. Leaves all basal, simple, palmate, ternate, or pinnate, sometimes reduced and scalelike, rarely absent.....*Anemone*
 4a. Inflorescences cymose, sometimes solitary.....*Clematis*
 4b. Inflorescences paniculate, terminal or axillary.....*Naravelia*

Anemone L.

A. elongata D. Don, Prodr. Fl. Nepal. 194. 1825; Wang *et al.* in Fl. China 6: 320. 2001.

Vernacular Name: Not known

Leaves 5 – 15; *petiole* 15 – 30 cm, densely pubescent; *leaf blade* 3-parted, rhombic-orbicular, 8 – 15 × 6 – 12 cm, puberulent or subglabrous. *Scape* glabrous or sparsely puberulent; cyme compound, elongate, 7 – 15-flowered. *Involucral bracts* 3 – 7, rhombic, 5 – 14 cm, sparsely puberulent. *Bracteoles* 2 – 4 cm. *Pedicel* 3 – 15 cm, base villous. *Calyx* 5-lobed, white, ovate, 12 – 20 × 6 – 12 mm, long narrowed at base, rounded at apex. *Stamens* 3 – 5 mm; filament linear, anther cylindrical. *Ovary* ovoid; style short. *Achenes* ovoid-ellipsoid, 6 – 9 × 4 – 7 mm, glabrous; *wings* 1.2 – 1.3 mm wide.

Flowering & Fruiting: Not seen

Habitat: Sparse forests; 1800 – 3700 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 8.

Distribution: India, N Myanmar, Nepal, Sikkim

Threat status: Not evaluated

Clematis L.

- 1a. Ovary pubescent.....*C. gouriana*
 1b. Ovary glabrous.....*C. montana*

C. gouriana Roxb. ex DC., Syst. Nat. 1: 138. 1817; Wencai & Bartholome in Fl. China 6: 349. 2001.

Vernacular Name: Chagalboti (B)

Woody climbers. *Leaves* pinnate, 5-foliolate; *petiole* 1 – 7 cm, sparsely puberulous to subglabrous; *leaflet blades* ovate or lanceolate, 2.4 – 10.5 × 1.2 – 5.5 cm, both surfaces glabrous or sparsely puberulous on midveins, rounded to subcordate at base, margin usually entire, attenuate to acuminate at apex. *Inflorescence* in cymes, axillary or terminal; *peduncle* 1.2 – 7 cm; *bracts* simple or foliaceous, 4 – 10 mm. *Pedicel* 6 – 12 mm, puberulous. *Calyx* 4-lobed, white, obovate-oblong, 5 – 6 × 1.8 – 2 mm. *Stamens* 3 – 4.5 mm, glabrous; *anthers* 1.1 – 1.5 mm, obtuse at apex. *Ovary* pubescent. *Style* 3 – 3.8 mm, densely villous. *Achenes* lanceolate to fusiform, 3 – 3.5 × 1 – 1.5 mm.

Flowering & Fruiting: September – December

Habitat: slopes, along streams; below 100 – 1800 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 25, 28.

Distribution: India, Bhutan, China, Myanmar, Nepal, New Guinea, Philippines, Sikkim
Threat status: Not evaluated

C. montana Buch.-Ham. ex DC., Syst. Nat. 1: 164. 1817; Wencai & Bartholome in Fl. China 6: 342. 2001.

Vernacular Name: Not known

Woody climbers. Leaves ternate; *petiole* 2.5 – 9 cm; *leaflet blades* ovate, rhombic-ovate or elliptic, 1.8 – 7 × 1 – 5 cm, both surfaces sparsely pubescent, broadly cuneate to rounded at base, margin sparsely dentate, acuminate at apex. *Flowers* 1.5 – 11 cm in diam. *Pedicel* 1 – 20 cm, sparsely puberulous. *Calyx* 4-lobed, white or tinged pink, 1.3 – 6.5 × 1 – 2.5 cm. *Stamens* 6 – 18 mm, glabrous; *anthers* narrowly oblong, 2 – 3 mm. *Ovary* glabrous. *Style* 0.5 – 1 cm, densely villous. *Achenes* ovate to rhombic-ovate, glabrous.

Flowering & Fruiting: April – September

Habitat: forests, forest margins, slopes, along streams; 1000 – 4000 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 55, 75.

Distribution: India, Afghanistan, Bhutan, China, Kashmir, N Myanmar, Nepal, N Pakistan, Sikkim

Threat status: Not evaluated

Naravelia Adans.

N. zeylanica DC., Syst. Nat. 1: 167. 1817; Kanjilal *et al.*, Fl. Assam 1 (1): 10. 1934; Fu & Robinson in Fl. China 6: 387. 2001. *Atragene zeylanica* L., Sp. Pl. 1: 542. 1753.

Vernacular Name: Gorap-choi (A)

Stem subglabrous. *Leaflet blade* ovate, 6 – 11 × 6 – 10 cm, abaxially sparsely hairy, adaxially glabrous, rounded to cordate at base. *Inflorescences* terminal or axillary, upto 40 cm. *Flowers* c. 1 cm in diam. *Calyx* pale yellow obovate to elliptic, c. 5 – 7 × 3 mm, sparsely pubescent. *Corolla* 8 – 10, obovate or spatulate, 5 – 7 × 1 – 1.5 mm. *Stamens* linear, 2.5 – 3.5 mm; *anthers* yellow, glabrous. *Pistils* linear, villous. *Style* persistent, c. 3 cm. *Achenes* fusiform, c. 4 mm, tomentose.

Flowering & Fruiting: October – November

Habitat: Forests; c. 1000 m.

Specimen Examined: Included after Kanjilal *et al.* 1934; also included after Dutt *et al.* 1974, D.84.

Distribution: India, Bhutan, China, Nepal, Sikkim

Note: The stem and roots have a strong penetrating smell and are used in folk medicine. The young branchlets are used to make ropes (Website: <http://indiabiodiversity.org/species/show/251507>).

Threat status: Not evaluated

Ranunculus L.

R. diffusus DC., Prodr. 1: 38. 1824; Kanjilal *et al.*, Fl. Assam 1 (1): 9. 1934; Wang & Gilbertin Fl. China 6: 428. 2001.

Vernacular Name: Spreading Buttercup (E)

Herbs. Basal leaves 1 – 3; petiole 4 – 9 cm; *blade* simple or ternate, 3 – partite, 1.5 – 2.6 × 2 – 4 cm, papery, cordate at base, irregularly dentate; *ternate leaves* with blade 2.8 – 4.5 × 3 – 5.5 cm, petiolules short; *central leaflet* ovate, 3 – lobed. *Flowers* leaf-opposed, 0.8 – 1.5 cm in diam. *Pedicel* 1 – 5.5 cm, puberulent. *Calyx* 5-lobed, elliptic – ovate, 4 – 6 mm, abaxially puberulent. *Corolla* 5, narrowly obovate, 5 – 7 × 2 – 4 mm. *Stamens* numerous; *anthers* oblong. *Carpels* numerous. *Achene* flat, broadly elliptic or obovate, glabrous.

Flowering & Fruiting: March – July

Habitat: Grassy places, by streams; 1100 – 3100 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 35, 46.

Distribution: N India, Afghanistan, Bhutan, China, N Myanmar, Nepal, N Pakistan, Sikkim

Threat status: Not evaluated

Thalictrum L.

T. foliolosum DC., Syst. Nat. 1: 175. 1817; Kanjilal *et al.*, Fl. Assam 1 (1): 7. 1934; Fuin Fl. China 6: 290. 2001.

Vernacular Name: Leafy Meadow-Rue (E), Mamera (H)

Shrubs, 0.9 – 1.2 m tall, glabrous. *Petiole* 1.5 – 5 cm; *leaflet blade* rhombic-elliptic or ovate, 1 – 2.5 × 0.5 – 1.5 cm, leathery, rounded or subcordate at base, obtuse or rounded at apex, 3-lobed. *Inflorescence* terminal or axillary, paniculate, c. 20 cm, many flowered. *Calyx* 4, deciduous, yellow, narrowly elliptic, 3 – 4.5 mm. *Stamens* many, 6 – 7 mm; *filament* filiform; *anther* c. 2.5 mm. *Carpels* 4 – 6; style equal as ovary; *stigma* linear. *Achenes* sessile; body fusiform.

Flowering & Fruiting: August – November

Habitat: Montane forests, slopes; 1500 – 3200 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 105.

Distribution: India, China, Myanmar, Nepal, Sikkim, Thailand.

Note: The root is antiperiodic, diuretic, febrifuge, ophthalmic, purgative, salve, stomachic and tonic (Website: <http://www.naturalmedicinalherbs.net/herbs/t/thalictrum-foliolosum.php>).

Threat status: Not evaluated

34. SABIACEAE Blume

1a. Trees or shrubs, evergreen or deciduous.....*Meliosma*

1b. Woody climbers or scandent shrubs, deciduous or evergreen.....*Sabia*

Meliosma Blume

- 1a. Ovary pubescent.....*M. arnottiana*
1b. Ovary glabrous.....2
2a. Tree; leaves both surfaces glabrous.....*M. pinnata*
2b. Small tree; leaves densely pubescent when young, glabrous or pubescent on midrib.....*M. simplicifolia*

M. arnottiana (Wight) Walp., Repert. Bot. Syst. 1 (3): 423. 1842; Guo & Brach in Fl. China 12: 41. 2007. *Millingtonia arnottiana* Wight, Ill. India Bot. 1: 144. 1840. *Meliosma wallichii* Planch. ex Hook.f., Fl. Brit. India 2 (4): 6. 1876; Kanjilal *et al.*, Fl. Assam 1 (2): 328. 1934.

Vernacular Name: Not known

Trees to 20 m tall. *Leaves* odd pinnate; *leaflets* 7 – 15, oblong-ovate or narrowly oblong-elliptic, 6 – 14 × 2.5 – 4 cm, subleathery, rounded or broadly cuneate at base, margin entire or serrulate along upper margin, caudate-acuminate at apex, tip usually curved. *Panicle* terminal or axillary, 15 – 25 cm, axis triangular. *Pedicel* 1 – 1.5 mm, pubescent. *Calyx* 5, ovate or suborbicular, c. 1 mm, ciliate. *Corolla* light yellow: 3 outer ones flattened orbicular, c. 2 mm in diam.; 2 inner corolla equal or slightly shorter than filaments, bifid to half at an obtuse angle. *Stamensc.* 1 mm. *Pistilc.* 1.3 mm; ovary pubescent; *style* equal to ovary. *Drupe* obovoid.

Flowering & Fruiting: May – October

Habitat: Evergreen broad-leaved forests on mountain slopes, valleys; 500 – 2000 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 467.

Distribution: India, China, Indonesia, Japan, S Korea, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam

Note: The bark, fruits and seeds are extensively used in indigenous system of medicine as a carminative, stomachic and anthelmintic. The bark is pungent and used to clean teeth. The fruits and seeds are employed as an aromatic tonic in fever and dyspepsia (Website: http://www.science20.com/humboldt_fellow_and_science/blog/zanthoxylum_armatum_dc_has_medicinal_value).

Threat status: Not Evaluated

M. pinnata (Roxb.) Maxim. in Bull. Acad. Imp. Sci. Saint-Pétersbourg 12: 64. 1867; Guo & Brach in Fl. China 12: 40. 2007. *Millingtonia pinnata* Roxb., Fl. India 1: 103. 1820.

Vernacular Name: Not known

Tree, evergreen or deciduous. *Leaves* odd pinnate; *leaflets* lanceolate or narrowly oblong, terminal one suboblanceolate, 7 – 17 × 2 – 4 cm, papery, both surfaces glabrous, cuneate or broadly cuneate at base, margin sparsely serrate or nearly entire, caudate-acuminate at apex. *Inflorescence* panicle, erect, pubescent. *Calyx* 5, broadly ovate, 6 – 8 mm. *Corolla:* 3

outer ones suborbicular; 2 inner ones bifid to half. *Ovary* glabrous. *Drupe* globose or obovoid.

Flowering & Fruiting: May – October

Habitat: Evergreen broad-leaved forests; 1000 – 1500 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11598 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bangladesh, Bhutan, China, N Myanmar

Note: The wood is traditionally used for boards in house building (Website: <http://tropical.theferns.info/viewtropical.php?id=Meliosma+pinnata>).

Threat status: Not Evaluated

M. simplicifolia (Roxb.) Walp., *Repert. Bot. Syst.* 1: 423. 1842.
Millingtonia simplicifolia Roxb., *Pl. Coromandel* 3: 48, 50, pl. 254. 1819.

Vernacular Name: Not known

Small tree, 4 – 5 m tall. *Young shoots* pubescent. *Leaves* simple, oblong-lanceolate, 7 – 40 cm × 2 – 16 cm, leathery, densely pubescent when young, glabrous or pubescent on midrib, serrate or subentire to entire at the margin, acuminate at apex, cuneate at the base; *petiole* 1 – 2 cm long, pubescent. *Flowers* white, sessile; *bracteoles* 3 or more, imbricate. *Calyx* similar to and larger than bracteoles. *Outer corolla* orbicular, entire, *inner corolla* with 2 patent lobes at apex. *Stamens* adnate to corolla. *Ovary* glabrous; *style* as long as or slightly shorter or longer than ovary. *Drupe* subglobose, black.

Flowering & Fruiting: April – June

Habitat: Rare, subtropical to tropical forests

Specimens Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, Kalain Range, 16.02.2012, H. A. Barbhuiya 85769 (ASSAM).

Distribution: India, Sri Lanka, Nepal, Myanmar, Thailand, Cambodia, Laos, Vietnam, Malaysia, Indonesia

Note: The wood is used for making furniture (Website: <http://tropical.theferns.info/viewtropical.php?id=Meliosma+simplicifolia>)

Threat status: Not Evaluated

Sabia Colebr.

1a. Leaf blade elliptic-oblong to lanceolate, 5 – 22 × 1.5 – 8 cm, papery to leathery, both surfaces glabrous.....*S. lanceolata*

1b. Leaf blade oblong-ovate or narrowly ovate, 1.5 – 6 × 1 – 3 cm, membranous, both surfaces glabrous.....*S. purpure*

S. lanceolata Colebr. in *Trans. Linn. Soc. London* 12(2): 355, t. 14. 1819; Guo & Brach in *Fl. China* 12: 32. 2007. *Sabia kachinica* H.Y.Chen in *Sargentia* 3: 63. 1943.

Vernacular Name: Not known

Woody climbers. *Petiole* to 1.2 cm; *leaf blade* elliptic-oblong to lanceolate, 5 – 22 × 1.5 – 8 cm, papery to leathery, both surfaces glabrous, cuneate or cordate at base, acute or acuminate at apex. Inflorescence in cymes, solitary, arranged in axillary panicles 1.5 – 7 cm, glabrous. *Pedicel* to 1.3 cm; *bracteoles* ovate to oblong – ovate, to 1.2 mm. *Calyx* 5, broadly ovate 0.75 – 1.25 × 0.7 – 1 mm, glabrous, acute to obtuse at apex. *Corolla* 5, green to white, oblong-ovate, 3.5 – 5.5 × 1.5 – 2 mm. *Stamens* 1.5 – 2.5 mm; *anthers* globose or ellipsoid, c. 0.3 mm. *Ovary* broadly transversely ellipsoid, 0.6 – 0.75 × 0.7 – 1 mm, glabrous. *Schizocarp* probably blue when fresh.

Flowering & Fruiting: October – December

Habitat: forests, riverbanks; 700 – 1100 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Detekcherra (on the way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11369; Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11430, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Myanmar

Note: Bark, leaves and roots are used for the treatment of epilepsy (Sharma *et al.*, 2014)

Threat status: Not Evaluated

S. purpurea Hook.f. & Thomson, Fl. India 1. 209. 1855.

Vernacular Name: Not known

Woody climbers, 2 – 6 m, deciduous. *Petiole* 2 – 4 mm; *leaf blade* oblong-ovate or narrowly ovate, 1.5 – 6 × 1 – 3 cm, membranous, both surfaces glabrous, broadly cuneate or rounded at base, acute or acuminate at apex. *Inflorescence* in cymes, 1 – 3 cm. *Calyx* 5, slightly unequal, ovate or suborbicular, 0.5 – 1 mm. *Corolla* 5, purple-green or purple, elliptic or ovate, 2 – 4 × 1.5 – 2 mm, 5-veined, apex obtuse or rounded. *Stamens* c. 1 mm; *anthers* introrse or extrorse. *Pistil* c. 1 mm; *ovary* glabrous. *Schizocarp* subobovoid, 5 – 7 mm.

Flowering & Fruiting: May – August

Habitat: dense forest, valleys, streamsides; 1700 – 2700 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 481.

Distribution: NE India, W Bangladesh, Bhutan, Myanmar, Nepal, and Thailand

Threat status: Not Evaluated

35. NELUMBONACEAE Rich.

Nelumbo Adans.

N. nucifera Gaertn., Fruct. Sem. Pl. i. 73. 1788; Fu *et al.* in Fl. China 6: 114. 2001.

Vernacular Name: Padum (A)

Aquatic herb. *Petiole* 1 – 2 m, terete; *leaf blade* abaxially blue-green, orbicular, 25 – 90 cm in diam., papery, glabrous, margin entire. *Flowers* 10 – 23 cm in diam.; *peduncles* longer than petioles, glabrous or sparsely spinulate. *Tepals* caducous, pink or white, oblong-elliptic to obovate, 5 – 10 × 3 – 5 cm. *Stamens* longer than receptacle; *filament* slender; *anther* linear, 1 – 2 mm; *connective appendage* clavate, to 7 mm. *Receptacle* turbinate, 5 – 10 cm in diam. *Fruit* oblong to ovoid, 1.0 – 2.0 × 7 – 15 cm, glabrous.

Flowering & Fruiting: June – December

Habitat: Lakes, ponds, cultivated

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, in a roadside pond, way to Kalaincherra, 26.11.2014, A. Bora & D. Bhattacharyya 11721, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia (Java), Japan, Korea, Malaysia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Russia (Far East), Sri Lanka, Thailand, Vietnam; SW Asia, Australia

Note: The sacred lotus has deep religious meaning to Hindus and Buddhists, to whom the lotus flower symbolises beauty, purity and divinity. In Hinduism the sacred lotus represents the sun, and is associated with mother goddesses as a symbol of fertility. The young leaves, leaf stalks and flowers are eaten as vegetables in India (Website: <http://www.kew.org/science-conservation/plants-fungi/nelumbo-nucifera-sacred-lotus>).

Threat status: Not Evaluated

36. PROTEACEAE Juss.

Helicia Lour.

H. robusta (Roxb.) R.Br. ex Blume, Ann. Sci. Nat. Bot. ser. 2, 1: 220. 1834; Hook. f., Fl. Brit. India 5: 191. 1886; Kanjilal *et al.*, Fl. Assam 4: 106. 1940. *Roupala robusta* Roxb., Fl. Ind. 1: 366. 1820. *Helicia travancorica* Bedd. ex Hook. f., Fl. Brit. India 5: 191. 1886; Gamble, Fl. Pres. Madras 1243: 870. 1925.

Vernacular Name: Not known

Small trees. Young shoot-buds pubescent without. *Leaves* 4 – 6 × 2 – 3.5 cm, elliptic-oblongate, slightly acuminate at apex, attenuate at base, dentate on margins, sparsely hairy above, glabrous below; *petioles* 0.8 – 1 cm long, thickened at base. *Flowers* in short axillary or lateral racemes. *Rachis* 6 – 8 cm long. *Bracts* minute, linear, ciliate on margins. *Flowers* dense, usually 2 or more for each bract; *pedicels* of pairs fused, 0.4 – 0.5 cm long. *Perianth* tube slender, 1 – 1.3 cm long, splitting into 4-lobes. *Stamens* 4, attached with a short filament to the lamina of the lobe; *anthers* c. 0.2 cm long, linear. *Ovary* 1-celled, ovules 2; *style* as long as perianth tube; *stigma* linear, thick. *Drupe* globose, 1-2 seeded.

Flowering & Fruiting: September – February

Habitat: evergreen forests; 1200 m

Specimen Examined: Included after Sajem *et al.* 2008.

Distribution: Indo-Malesia.

Note: Used as timber and firewood. Bark is used in the treatment of gastric (Hmar). Wood is used in house construction and for the shafts of axes. Young shoots are cooked and eaten as a vegetable (Website:<http://tropical.theferns.info/viewtropical.php?id=Helicia+robusta>).
Threat status: Not evaluated

37. DILLENACEAE Salisb.

- 1a. Trees, rarely shrubs, evergreen or rarely deciduous.....*Dillenia*
1b. Evergreen shrubs or climbers.....*Tetracera*

Dillenia L.

- 1a. Carpels 16 – 20.....*D. indica*
1b. Carpels 5 or 6.....*D. pentagyna*

D. indica L., Sp. Pl. 535 1753; Hook. f., Fl. Brit. India 1: 36. 1872; Kanjilal *et al.*, Fl. Assam 1 (2): 10. 1934; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 39. 2003.

Vernacular Name: Ou tenga (A), Chalta (B)

Evergreen trees. *Leaves* oblong or oblanceolate, *c.* 10 – 35 × 5 – 10 cm, acute to acuminate at the apex, cuneate at the base, margin serrate. *Flowers* creamy white, solitary, terminal. *Calyx* 5, rounded, 5cm long, fleshy. *Corolla* white, obovate, *c.* 7 – 9 cm. *Stamens* in 2 series, *c.* 2 cm long. *Carpels* 16 – 20. *Fruit* globose, *c.* 8 – 12 cm in diam.

Flowering & Fruiting: July – January

Habitat: stream side, forest

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11586, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam

Note: Fruit is used in the treatment of abdominal disorders (Manadhar & Manandhar 2002).

Threat status: Not Evaluated

D. pentagyna Roxb., Pl. Coromandel 1: 21 1795; Hook. f. & Th. in Hook.f., Fl. Brit. India 1: 38. 1872; Kanjilal *et al.*, Fl. Assam 1 (1): 11. 1934; Deb, Fl. Tripura 1: 102. 1981; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 108. 2003.

Vernacular Name: Akshi, Okshi (A)

Trees. *Leaves* oblong to oblanceolate, 10 – 35 × 4 – 15 cm, leathery, margin serrate. *Flowers* small, fascicled, yellow; pedicels *c.* 3 cm, bracts deciduous. *Calyx* 5-lobed.

Corolla 5-lobed, obovate. *Stamens* in 2 series, outer *c.* 60 – 80, inner *c.* 10. *Carpels* 5 or 6. *Fruit* a pseudocarp, subglobose.

Flowering & Fruiting: April – September

Habitat: Occasionally

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 18.05.2013, A. Bora & D. Bhattacharyya 11763, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Malaysia, Myanmar, Nepal, Thailand, Vietnam

Note: Plant is used in tuberculosis, fistula, sores, carbuncle, neuralgia, pleurisy and pneumonia. Barks and leaves are used for the treatment of diarrhoea and dysentery in Rema-Kalenga. Bark is used for blood dysentery in Khagrachari (Yusuf *et al.*, 2009).

Threat status: Not Evaluated

Tetracera L.

T. sarmentosa Vahl, Symb. Bot. iii. 70. 1794. *Delima sarmentosa* L., Gen. Pl., ed. 5, App. 1754.

Vernacular Name: Not known

Woody *climbers*. *Petiole* 1 – 1.5 cm, pubescent. *Leaf blade* 4 – 10 × 2 – 5 cm, leathery, scabrous, cuneate or rounded at the base, entire or serrate distally at the margin, obtuse or rounded at the apex. *Inflorescence* terminal panicles, many flowered. *Flowers* bisexual. *Calyx* 5-lobed, free, ovate, 4 – 5 mm, unequal, glabrous or sparsely hairy. *Corolla* 3-lobed, white, ovate. *Stamens* numerous. *Carpels* 1 or 2, glabrous; *style* longer than stamens. *Fruit* a follicle, *c.* 1 cm, orange. *Seed* 1, black.

Flowering & Fruiting: April – September

Habitat: sparse forests

Specimen Examined: India, Assam, Cachar dist., May 1889, J. C. Prazer 8369, Fl. (CAL).

Distribution: India, China, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand

Note: The entire plant is considered medicinal. It is used as a diuretic, and in a mixture to treat blennorrhoea, and oedema of hepatic and renal origin. An infusion is drunk as a treatment against haemoptysis in tuberculosis. The root is used as an astringent in diarrhoea and is a traditional ingredient in a mixture against burns (Website: <http://tropical.theferns.info/viewtropical.php?id=Tetracera+sarmentosa>)

Threat status: Not Evaluated

38. VITACEAE Juss.

- 1a. Lianas, climbers, woody or subwoody.....3
- 1b. Trees or shrubs.....2
- 2a. Leaves alternate, 1 – 4-pinnate.....*Leea*

- 2b. Leaves opposite, palmately (1-)3 – 8-foliolate.....*Vitex*
 3a. Tendrils unbranched or bifurcate.....4
 3b. Tendrils usually 2- or 3-furcate or racemosely 4 – 12-branched branched.....5
 4a. Leaves simple or palmately compound.....*Cissus*
 4b. Leaves usually palmately 3 – 5-foliolate or pedately 5 – 7-foliolate, rarely simple.....*Tetrastigma*
 5a. Stamens 4.....*Cayratia*
 5b. Stamens 5.....*Parthenocissus*

Cayratia Juss.

- 1a. Vines, herbaceous.....*C. japonica*
 1b. Lianas, woody.....*C. pedata*

C. japonica Gagnep. in Notul. Syst. (Paris) 1: 349. 1911; Ren & Wen in Fl. China 12: 192. 2007. *Vitis pedata* (Lam.) Wall. ex Wight, Cat. Ind. Pl. 26. 1833.

Vernacular Name: Bushkiller (E)

Vines, herbaceous. *Branchlets* terete; *tendrils* 2- or 3-furcate. *Leaves* pedately 5-foliolate, or sometimes 3-foliolate; *stipules* caducous; *petiole* 1.5 – 10 cm; *central leaflet* elliptic or elliptic-lanceolate, 2.5 – 14.5 × 1.5 – 4.5 cm, cuneate at base, acute or acuminate at apex; *lateral leaflets* elliptic, 1 – 7 × 0.5 – 3.5 cm, cuneate or subrounded at base, margin toothed on each side, acute or rounded at apex. Compound dichasium axillary. *Pedicel* 1 – 2 mm. *Calyx* cupular, margin entire or undulate. *Corolla* triangular-oval, 1 – 1.5 mm, papillose. *Anthers* oval. *Lower part of ovary* adnate to disk. *Berry* globose, 2 – 4-seeded.

Flowering & Fruiting: March – January

Habitat: forests, disturbed areas, roadsides; 300 – 2500 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11322, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam; Australia

Note: The boiled leaves, combined with onion and lime, are applied to the head as a remedy for violent headaches. The dried and powdered flowers might be used in the treatment of fever (website: <http://tropical.theferns.info/viewtropical.php?id=Cayratia+japonica>).

Threat status: Not Evaluated

C. pedata Gagnep. in Notul. Syst. (Paris) 1: 346. 1911; Ren & Wen in Fl. China 12: 190. 2007. *Cissus pedata* Lamarck, Encycl. 1: 31. 1783.

Vernacular Name: Not known

Lianas, woody. *Branchlets* terete; tendrils bifurcate. *Leaves* pedately 5-foliolate; *stipules* ovate-lanceolate; *petiole* 5.5 – 16 cm; *leaflets* hairy at both side; *central leaflet* obovate-elliptic; *lateral leaflets* ovate-elliptic, 5 – 20 × 2.5 – 8 cm, nearly truncate, rounded, or slightly cordate at base, margin with irregular teeth, caudate-acuminate at apex. *Corymbose* polychasium axillary. *Pedicel* 2 – 3 mm, densely pubescent. *Calyx* saucer-shaped, pubescent, entire. *Corolla* ovate-elliptic, 1.7 – 2.2 mm, nearly glabrous. *Anthers* ovoid-elliptic, poorly developed in female flowers. *Disk* well developed. *Lower part of ovary* adnate to disk; *style* slender; *stigma* slightly expanded or cylindrical in male flowers. *Fruit* a berry, elliptic. *Seeds* semiglobose.

Flowering & Fruiting: June – November

Habitat: Forests, roadsides; 800 m

Specimens Examined: Included after Dutt *et al.* 1974, *D.* 151.

Distribution: India, Cambodia, China, Indonesia, Malaysia, Thailand, Vietnam

Note: The leaves are used as astringents and refringents. The leaves have anti-arthritis activity (website: <http://www.iucnredlist.org/>)

Threat status: Vulnerable A2cd ver 3.1

Cissus L.

- 1a. Trees.....*C. quadrangularis*
1b. Lianas or vines.....2
2a. Lianas, woody.....*C. assamica*
2b. Vines, herbaceous.....*C. repens*

C. assamica Craib in Bull. Misc. Inform. Kew 1911(1): 31; Kanjilal *et al.*, Fl. Assam 1 (2): 291. 1934; Chen & Wen in Fl. China 12: 188. 2007. *Vitis assamica* M.A.Lawson, Fl. Brit. India 1(3): 648. 1875.

Vernacular Name: Not known

Lianas, woody. *Branchlets* terete; *tendrils* bifurcate. *Leaves* simple; *stipules* oval, *c.* 3 × 2 – 2.5 mm, herbaceous, nearly glabrous, obtuse at apex; *petiole* 2 – 9 cm, with sparse hairs or glabrescent; *leaf blade* broadly cordate or cordate-oval, 5 – 17 × 4 – 14 cm, cordate, notch rounded or obtuse at base, margin with sharp teeth on each side, mucronate or acute at apex. *Inflorescence* umbelliform, leaf-opposed; *peduncle* 2 – 2.5 cm, with sparse hairs or subglabrate. *Pedicelc.* 2.5 mm, hairy. *Calyx* entire or undulate. *Corolla* triangular-oval, 1.5 – 2 mm, glabrous. *Anthers* oval. *Disk* conspicuous, 4-lobed. *Lower part of ovary* adnate to disk; *style* conical; *stigma* slightly expanded. *Berry* purple-black at maturity. 1-seeded.

Flowering & Fruiting: May – October

Habitat: forests or shrublands by rivers; 200 – 1600 m.

Specimens examined: Included after Kanjilal *et al.* 1934.

Distribution: India, Bhutan, Cambodia, China, Nepal, Thailand, Vietnam

Note: The root extract is used for the treatment of hysteria. Stem is given for dysentery in Khagrachari (website: <http://www.mpbd.info/plants/cissus-assamica.php>).

Threat status: Not Evaluated

C. quadrangularis L., Syst. Nat., ed. 12. 2: 124. 1767. *Vitis quadrangularis* (L.) Wall. ex Wight, Cat. Ind. Pl. 26. 1833; Kanjilal *et al.*, Fl. Assam 1 (2): 290. 1934.

Vernacular Name: Harbhanga, Horjora (B)

Trees. Stem quadrangular, 4-winged, internodes 4 – 15 cm long. *Leaves* simple, 2.5 – 5 cm long, broadly ovate or reniform, sometimes 3 – 7 lobed, denticulate, glabrous, cordate, rounded, truncate or cuneate at the base; *petioles* 6 – 12 mm long; *stipules* small broadly ovate, obtuse. *Flowers* in shortly peduncle cymes with spreading umbellate branches. *Calyx* cup shaped, truncate or very obscurely lobed. *Petals* 4-lobed, ovate-oblong, short, stout. *Fruit* a berry, obovoid or globose.

Flowering & Fruiting: June – December

Habitat: forests and wastelands up to 500m

Specimens examined: Included after Kanjilal *et al.* 1934.

Distribution: India, Pakistan, Bangladesh, Shrilanka and Malaysia

Note: The roots and stems are most useful for healing of fracture of the bones. The stem is bitter; it is given internally and applied topically in broken bones, used in complaints of the back and spine. A paste of stem is useful for muscular pains.] The plant has been documented in Ayurveda for the treatment of osteoarthritis, rheumatoid arthritis and osteoporosis. The stem juice of plant is used to treat scurvy, menstrual disorders, otorrhoea and epistaxis (Shah, 2011).

Threat status: Not Evaluated

C. repens Lam., Encycl. 1 (1): 31. 1783; Chen & Wen in Fl. China 12: 186. 2007. *Vitis repens* (Lam.) Wight & Arn., Prodr. Fl. Ind. Orient. 1: 125. 1834; Kanjilal *et al.*, Fl. Assam 1 (2): 290. 1934.

Vernacular Name: Not known

Vines, herbaceous. *Branchlets* terete, glabrous; *tendrils* bifurcate. *Leaves* simple; *stipules* brownish, oblong, 5 – 6 × 2 – 3 mm, membranous, glabrous; *petiole* 2.5 – 7 cm, glabrous; *leaf blade* cordate-oval, 5 – 13 × 4 – 9 cm, glabrous, cordate at base, margin with sharp teeth on each side, acute or acuminate at apex. *Inflorescence* umbelliform, terminal or leaf-opposed; *peduncle* 1 – 3 cm, glabrous. *Pedicel* 2 – 4 mm, nearly glabrous. *Buds* oval, 4 mm, apex obtuse. *Calyx* entire or undulate. *Corolla* triangular-ovate, c. 3 mm, glabrous. *Anthers* ovoid – elliptic. *Lower part of ovary* adnate to disk; *style* conical; *stigma* slightly expanded. *Fruit* a berry, 1-seeded.

Flowering & Fruiting: July – May

Habitat: Forests, on hillsides; 100 – 1800 m

Specimens examined: Included after Kanjilal *et al.* 1934; India, Assam, Cachar Dist., Amraghat, 10.09.1978, R. B. Majumdar 54035 (ASSAM).

Distribution: India, Bhutan, Cambodia, China, Laos, Malaysia, Nepal, Philippines, Thailand, Vietnam; Australia

Note: Paste of the plant is applied to sloughing and foetid ulcerations, also to boils and small abscess as a maturant. Root paste and juice are given in dog bites (Asolkar *et al.*, 1992).

Threat status: Not Evaluated

Leea D.Royen

1a. Shrubs, erect; style c. 1.5 mm.....*L. compactiflora*
1b. Shrubs to small trees; style 0.5 mm.....*L. indica*

L. compactiflora Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42 (2): 65. 1873; Chen & Wen in Fl. China 12: 171. 2007. *Leea trifoliata* M. A. Lawson, Fl. Brit. India 1 (3): 666. 1875. *Leea bracteata* Clarke in Jot. Bot. 19. 164. 1881; Kanjilal *et al.*, Fl. Assam 1 (2): 308. 1936; P. J. Bora & Y. Kumar, Florist. Diversity Assam 102. 2003.

Vernacular Name: Not known

Shrubs, erect. Leaves 2 – 3-pinnate; *stipules* present, 3.5 – 6.5 × 2 – 6 cm, pubescent; petiole 8 – 15 cm; *leaflets* elliptic-lanceolate, 12 – 23 × 3 – 9 cm, rounded or broadly cuneate at base, margin irregularly dentate, acuminate or caudate at apex. *Inflorescences* umbelliform, glomerate; *peduncle* 1.5 – 4 cm, pubescent. *Bracts* conspicuous, ovate-elliptic, 0.8 – 1.2 × 0.4 – 0.8 cm, pubescent. *Pedicel* 2 – 4 mm, pubescent. *Calyx* tube urceolate, 2 – 3 mm; calyx lobes triangular, 0.8 – 1.2 mm, pubescent. *Corolla* elliptic, c. 3.5 mm, densely pubescent. *Staminodial tube* 2 – 2.5 mm. *Stamens* 5; anthers elliptic, 1.2 – 1.5 × 0.6 – 0.8 mm. *Ovary* globose, c. 0.6 mm; *stylec.* 1.5 mm; *stigma* capitate. *Fruit* a berry, 0.8 – 1 cm.

Flowering & Fruiting: May – January

Habitat: Hillsides; 600 – 2200 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11430, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Laos, Myanmar, Vietnam

Note: Flowers and berries pounded are tightly tied with the help of a cloth against snakebite and other insects (Srivastava & Nyishi Community, 2010).

Threat status: Not evaluated

L. indica (Burm.f.) Merr., Philipp. J. Sci. 14 (2): 245. 1919; P. J. Bora & Y. Kumar, Florist. Diversity Assam 102. 2003; Chen & Wen in Fl. China 12: 170. 2007. *Leea sambucina* Willd., Sp. Pl. 1: 1177, 1797; Lawson in Hook.f. Fl. Brit. India 1: 666. 1875;

Kanjilal *et al.*, Fl. Assam 1 (2): 307. 1936; P. J. Bora & Y. Kumar, Florist. Diversity Assam 102. 2003.

Vernacular Name: Kukura thengia (A)

Shrubs to small *trees*. *Leaves* 2 or 3-pinnate, glabrous; stipules broadly obovate; *petiole* 13 – 23 cm; *leaflets* elliptic or elliptic-lanceolate, 6 – 30 × 2.5 – 8 cm, rounded or cuneate at base, margin irregularly toothed, acuminate or caudate at apex. *Inflorescences* opposite to leaves, umbelliform; *peduncle* 1 – 2 cm. *Bracts* oval elliptic-lanceolate, 3 – 4 × 2.5 – 3 mm, deciduous. *Pedicel* 1 – 2 mm, pubescent. *Calyx tube* urceolate; *calyx* triangular, glabrous. *Corolla* elliptic, 1.8 – 2.5 mm, white or greenish white. *Staminodial tube* 0.5 – 1 mm, lobes *c.* 0.2 mm. *Stamens* 5; *anthers* elliptic, 0.8 – 1.5 × 0.4 – 0.8 mm. *Ovary* globose; style 0.5 mm; stigma expanded. *Fruit* a berry.

Flowering & Fruiting: June – December

Habitat: forests; 200 – 1200 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 278.

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Australia, Pacific islands.

Note: The tender shoots are used as a vegetable. The juice of young leaves is used as a digestive. Young shoots are chewed to relieve a severe cough. The pounded leaves are used for poulticing cuts and skin complaints in general. They are placed upon the head in cases of fever, headache and as a general anodyne for body pain (Website: <http://tropical.theferns.info/viewtropical.php?id=Leea+indica>).

Threat status: Not evaluated

Parthenocissus Planch.

P. semicordata Planch., Monogr. Phan. 5(2): 451. 1887; Chen & Wen in Fl. China 12: 174. 2007. *Vitis semicordata* Wallich in Roxburgh, Fl. Ind. 2: 481. 1824.

Vernacular Name: Himalayan Woodbine, Virginia creeper (E)

Branchlets terete; *tendrils* with 4 – 6 branches. *Leaves* 3-foliolate; *petiole* 3.5 – 15 cm, sparsely pubescent; *leaflets* usually nearly sessile; central leaflet obovate-elliptic or obovate, 5 – 13 × 3 – 6.5 cm, cuneate at base, margin toothed, cuspidate at apex; lateral leaflets ovate-elliptic or oblong, 5 – 10 × 3 – 5 cm, asymmetric, nearly rounded at base, margin toothed, mucronate at apex. *Polychasium* with inconspicuous main axis; *peduncles* 1.5 – 3.5 cm, glabrous or slightly pilose. *Pedicel* 2 – 3 mm, glabrous. *Buds* elliptic, 2 – 3 mm, rounded at apex. *Calyx* entire. *Petals* ovate-elliptic, 1.8 – 2 × *c.* 8 mm, glabrous. *Filaments* 0.6 – 0.9 mm; *anthers* ovoid-elliptic, 0.4 – 0.6 mm. *Disk* inconspicuous. *Ovary* nearly spherical; style short; stigma not expanded. *Fruit* a berry. *Seeds* obovoid.

Flowering & Fruiting: May – October

Habitat: Forest hillslopes; 500 – 1000 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11435, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Malaysia, Myanmar, Nepal, Thailand, Vietnam

Note: A poultice of the roots is used to help set dislocated bones (Manandhar and Manandhar 2002).

Threat status: Not Evaluated

Tetrastigma Planch.

T. lanceolarium Planch., Monogr. Phan. 5(2): 423. 1887; Deb, Fl. Tripura 1: 415. 1981. *Vitis lanceolaria* Wall., Numer. List n. 6013, partim. 1832.

Vernacular Name: Bherseri (H)

Large climber, upto 18 m. *Leaves* 3 to 5-foliolate, fleshy leaflets; *petioles* 2.5 – 6 cm long; *leaflets* stalked 7 – 13 × 3 – 5 cm, oblong lanceolate, irregularly serrate at margin, glabrous. *Flowers* yellowish or green, 4-merous, dioecious, axillary; *male panicle*, longer than the petiole; *female cymes* denser, corymbose, shorter than the petiole; *calyx* funnel-shaped, truncate at the apex; *petals* ovate-ovate, obtuse hooted at the apex; *stigma* large, four lobed. *Fruit* a berry, globose, 2 – 4 seeded, edible. *Seeds* ellipsoid.

Flowering & Fruiting: April – November

Habitat: Ocassionally, in hilly forest

Specimens examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, Kalaincherra, 27.08.2012, H. A. Barbhuiya 85948 (ASSAM).

Distribution: India, Bangladesh, Myanmar, Sri Lanka, South-east Asia

Note: A poultice of leaves is applied on boils, and the juice of the plant is used in cough (Website: <http://efloraindia.nic.in/efloraindia/taxonList.action?id=4905&type=4>).

Threat status: Not Evaluated

Vitex L.

Vitex pinnata L., Sp. Pl. 2: 638. 1753. *Vitex pubescens* Vahl, Symb. Bot. Iii. 85. 1794; Kanjilal *et al.*, Fl. Assam 3: 481. 1939. *Pistaciovitex pinnata* (L.) Kuntze, Post & Kuntze, Lexic. Gen. Phan. 442. 1903.

Vernacular Name: Ahoi (A)

Large tree. *Leaves* 3 – 5 foliolate; *leaflets* obovate, elliptic-lanceolate, 5 – 15 × 2.5 – 7.5 cm, acute to acuminate at the apex, margin entire, rounded or cuneate at the base. *Inflorescence* terminal panicles, pubescent. *Flower* 1.2 cm long, violet-blue; *calyx* 0.4 – 0.6 cm long, campanulate, 5-lobed; *corolla* c. 1 cm long, tomentose. *Stamens* exerted; *filament* pubescent at the base. *Ovary* glabrous. *Fruit* a drupe, globose.

Flowering & Fruiting: October – March

Habitat: banks of streams, in moist places

Specimens Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Bangladesh, Malaya, Sri Lanka

Note: A decoction of the bark is used to treat stomachache. A poultice of the leaves is used to treat fevers and wounds (website: <http://tropical.theferns.info/viewtropical.php?id=Vitex+pinnata>).

Threat status: Not Evaluated

39. ZYGOPHYLLACEAE Br.

Tribulus L.

T. cistoides L., Sp. Pl. 1: 387. 1753; Liu & Zhou in Fl. China 11: 49. 2008.

Vernacular Name: Not known

Herbs, perennial, prostrate to ascending. *Stems* 30 – 60 cm, densely pubescent; *old branches* with nodes, furrowed. *Stipules* opposite, 2.5 – 4.5 cm. *Leaves* with 8 – 14 leaflets; *petiole* very short; *leaflet blades* oblong to obovate-oblong, 6 – 15 × 3 – 6 mm, abaxially pilose, adaxially villous, oblique at base, obtuse to acute at apex. *Flowerc.* 3 cm in diam. *Pedicel* equal to or longer than leaves. *Calyx* lanceolate, c. 8 mm, villous. *Corolla* obovate-oblong, c. 2 cm. *Ovary* yellowish hispid. *Schizocarp* 0.8 – 1.2 cm.

Flowering & Fruiting: May – August

Habitat: River margins; usually near sea level

Distribution: India, throughout tropics

Specimens Examined: Included after Dutt *et al.* 1974, D. 381.

Note: The plant is used to treat colds, malaria and infections of the kidney and bladder. A decoction of the roots is given to children to relieve toothache (website: <http://tropical.theferns.info/viewtropical.php?id=Tribulus+cistoides>).

Threat status: Not Evaluated

40. FABACEAE Lindl.

Key to the Subfamilies

Papilionoideae DC.

- 1a. Leaves trifoliolate.....2
- 1b. Leaves many foliolate9
- 2a. Lianas, climbers or herbs.....3
- 2b. Trees, Shrubs or subshrubs.....7
- 3a. Lianas.....4
- 3b. Herbs, perennial.....5
- 4a. Stamens monadelphous.....*Pueraria*
- 4b. Stamens diadelphous.....6
- 5a. Stamens diadelphous.....*Parochetus*
- 5b. Stamens monadelphous.....*Tephrosia*

6a. Inflorescence of panicle.....	<i>Spatholobus</i>
6b. Inflorescence of racemes, axillary and terminal.....	<i>Mastersia</i>
7a. Shrubs or subshrubs.....	<i>Phyllodium</i>
7b. Trees.....	8
8a. Keel petals much shorter than the standard.....	<i>Erythrina</i>
8b. Keel petals longer than or equal to the standard.....	<i>Butea</i>
9a. Pods winged.....	10
9b. Pods not winged.....	11
10a. Stamens monadelphous.....	<i>Derris</i>
10b. Stamens diadelphous.....	<i>Aganope</i>
11a. Leaflets opposite or subopposite.....	12
11b. Leaflets alternate or subopposite.....	13
12a. Trees.....	<i>Pongamia</i>
12b. Lianas, scandent shrubs or rarely trees.....	<i>Callerya</i>
13a. Stamen 9.....	<i>Dalbergia</i>
13b. Stamen 10.....	<i>Ormosia</i>
14a. Herbaceous climbers.....	15
14b. Erect herbs or shrubs.....	17
15a. Leaflets 8-15 pairs.....	<i>Abrus</i>
15b. Leaflets 3.....	16
16a. Stamen monadelphous; Inflorescence rachis swollen at nodes.....	<i>Canavalia</i>
16b. Stamens diadelphous; anthers dimorphic.....	<i>Mucuna</i>
17a. Anthers dimorphic; leaves 1 or 3 foliolate; flowers in axillary or terminal racemes, cymes or umbels; pods turgid not jointed.....	<i>Crotalaria</i>
17b. Anthers uniform; leaves 1-foliolate or odd-pinnate.....	18
18a. Pods breaking into one seeded articles.....	19
18b. Pods not breaking into one seeded articles.....	21
19a. Pods twisted and encased in the calyx tube.....	<i>Uraria</i>
19b. Pods strait not enclosed in the calyx tube.....	20
20a. Calyx scarious; joints of pods turgid.....	<i>Alysicarpus</i>
20b. Calyx herbaceous; Joint of pods not turgid.....	<i>Desmodium</i>
21a. Pods 1 or 2 seeded.....	<i>Flemingia</i>
21b. Pods 3 or more seeded; plants covered with laterally adnated hairs.....	<i>Indigofera</i>

Caesalpinioideae Kunth

1a. Leaves simple, bilobed.....	2
1b. Leaves compound, pinnate.....	3
2a. Trees.....	<i>Bauhinia</i>
2b. Woody vines or lianas.....	<i>Phanera</i>
3a. Leaves bipinnate.....	4
3b. Leaves simple pinnate.....	6

4a. Trees; rachis unarmed.....	5
4b. Large shrubs or climbers; rachis armed; flowers yellow; pods not apically winged.....	<i>Caesalpinia</i>
5a. Stamen 5, free.....	<i>Acrocarpus</i>
5b. Stamen 7 or 8, exserted.....	<i>Saraca</i>
6a. Petals 4 or 5; stamens free.....	7
6b. Petals 3; stamens monadelphous.....	<i>Tamarindus</i>
7a. Stamens 10, lower 3 long and curved; fruit terete, woody, indehiscent; trees.....	<i>Cassia</i>
7b. Stamens 10 or less, subequal; fruit compressed or terete, not woody, dehiscent or not; herbs or shrubs; pods indehiscent or if dehiscent valves not elastic; seed coat with closed areole; bracteoles absent.....	<i>Senna</i>

Mimosoideae Kunth

1a. Plants armed with prickles.....	2
1b. Plants unarmed.....	3
2a. Herbs; pods bristly.....	<i>Mimosa</i>
2b. Trees, shrubs or woody climbers; pods glabrous; pinnae more than 3 pairs.....	<i>Acacia</i>
3a. Woody climbers; leaf rachis ending in hooked tendrils.....	<i>Entada</i>
3b. Trees or shrubs; leaves without tendrils.....	4
4a. Stamens numerous.....	5
4b. Stamens 10, free or connate at base and adnate to corolla.....	<i>Parkia</i>
5a. Corolla 5-merous.....	6
5b. Corolla (5 or) 6-merous.....	<i>Calliandra</i>
6a. Pods circinate.....	<i>Archidendron</i>
6b. Pods not circinate; leaves with more than 4 pairs of pinnae.....	<i>Albizia</i>

Abrus Adans.

1a. Corolla purple.....	<i>A. precatorius</i>
1b. Corolla pink, purple, or purple-red.....	<i>A. pulchellus</i>

A. precatorius L., Syst. Nat., ed. 12. 2: 472. 1767; Li *et al.* in Fl. China 10: 194. 2010. *Glycine abrus* L., Sp. Pl. 2: 753. 1753.

Vernacular Name: Coral bead vine (E), Ratti (H)

Woody climber. Stem slender, sparsely pubescent. Leaves paripinnate; leaflets opposite; petiolule short; blades suboblong, 1 – 2 × 0.4 – 0.8 cm, membranous, abaxially tomentose, adaxially glabrous, rounded at base, truncate at apex. Inflorescence in racemes, axillary, 3 – 8 cm. Flowers small, dense. Calyx campanulate, 4-toothed, pubescent. Corolla purple; standard with triangular claw; wings and keels narrower. Stamens 9. Ovary hairy. Fruit a legume, oblong, 2 – 3.5 × 0.5 – 1.5 cm, leathery. Seeds subglobose.

Flowering & Fruiting: March – October

Habitat: hill forests

Specimen Examined: Included after Dutt *et al.* 1974, D. 137.

Distribution: India, widespread in the tropics

Threat status: Not Evaluated

A. pulchellus Wall. ex Voigt, Hort. Suburb. Calcutt. 228. 1845; Li *et al.* in Fl. China 10: 194. 2010.

Vernacular Name: Showy Rosary Pea (E), Gaunchi (H)

Lianas. Stem lightly yellow strigose or villous. *Leaves* paripinnate, alternate; *leaflets* 6 – 10-paired, opposite; *petiole* short; *blades* suboblong, oblong, or obovate-oblong, 0.5 – 3 × 0.3 – 1 cm, membranous, strigose or densely villous abaxially, glabrous or pilose adaxially, rounded or subcordate at base, truncate and with mucro at apex. *Inflorescence* in racemes, axillary, 3 – 10 cm. *Flowers* dense, 3 – 9 mm. *Calyx* campanulate, 4-toothed, white strigose or densely gray villous. *Corolla* pink, purple, or purple-red. *Stamens* 9. *Legumes* oblong, 2 – 6.5 × 0.8 – 1.5 cm, densely white hairy, dehiscent. *Seeds* black-brown.

Flowering & Fruiting: October – November

Habitat: forests, hill slopes; 200 – 3000 m

Specimens Examined: India, Assam, NC Hills dist., Haflong road side, September 1903, S. Mokim 124607 (CAL).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam

Threat status: Not Evaluated

Acacia Mill.

- 1a. Woody climbers or scandent shrubs.....*A. pruinescens*
1b. Climbers.....*A. caesia* var. *subnuda*

A. caesia (L.) Willd. var. **subnuda** (Craib) I.C.Nielsen in Adansonia n.s., 19 (3): 348. 1980; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 140. 2003. *Acacia oxyphylla* Graham ex Benth. in London J. Bot. 1: 514. 1842. *Acacia caesia* (L.) Willd., Sp. Pl. 4: 1090. 1806. *Mimosa caesia* L., Sp. Pl. 1: 522. 1753.

Vernacular Name: Soap bark, Palinja (E)

Climbers. *Stipules* filiform, c. 3 × 1 mm. *Leaflets* 8 – 19 pairs, oblong, 0.6 – 1.2 cm × 1.1 – 5 mm, both surfaces glabrous, *main vein* starting from center of leaf base, parallel to upper margin, apiculate at apex. *Heads* 1 – 4 in panicles; *peduncles* tomentose. *Flowers* yellow. *Calyx* 1.5 – 2 mm; lobes ovate, 0.3 – 0.5 mm, acute at apex. *Corolla* 2 – 3 mm; lobes ovate-elliptic, 1 mm. *Ovary* 0.8 – 1 mm. *Legume* strap-shaped, 10 – 15 × 2 – 3 cm, dehiscent. *Seeds* 8-12.

Flowering & Fruiting: September – November

Habitat: Very common along the stream banks; upto 500 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11526, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Laos, Myanmar, Sri Lanka, Thailand, Vietnam.

Threat status: Not Evaluated

A. pruinescens Kurz. in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 45 (4): 296, 298. 1877; Li *et al.* in Fl. China 10: 58. 2010.

Vernacular Name: kochoi kaint (A)

Woody *climbers* or scandent *shrubs*. *Stipules* pubescent; *leaflets* numerous, sessile, linear, 7 – 11 × 1.8 – 2.5 mm, truncate at base, obtuse at apex. *Inflorescence* in axillary panicles, upto 25 cm; peduncles 1.5 – 2.2 cm. *Flowers* yellow. *Calyx* tubular, 2 – 3 mm, pubescent. *Corolla* 3 – 4 mm; tube glabrous; lobes 0.5 – 1.5 mm. *Stamens* numerous. *Ovary* sparsely pubescent at apex. *Fruit* a legume, brownish, oblong, flat, 18 – 20 × 2.9 – 3.2 cm.

Flowering & Fruiting: April – October

Habitat: thin forests; 1200 – 1600 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 370.

Distribution: India, China, Myanmar, Vietnam

Note: Plant is emetic, expectorant and used as a substitute for senega; useful in bronchitis, pneumonia and asthma. Root is cathartic. Leaves are laxative, used in scabies and snake-bites. The herb may cause gastrointestinal irritation. Plant contains a cyanogenetic glucoside and alkaloid acalyphine. In Homoeopathy, the herb is used against severe cough associated with bleeding from the lungs (haemoptysis) and insipient pthisis. Fresh juice of leaves is useful in case of croup (Website: <http://senapati.nic.in/florafauna.htm>).

Threat status: Not Evaluated

Acrocarpus Wight ex Arn.

A. fraxinifolius Arn., Mag. Zool. Bot. 2(12): 547. 1839; Li *et al.* in Fl. China 10: 39. 2010.

Vernacular Name: Bol-mangal (B)

Trees, large. *Leaves* 30 – 38 cm; *leaflets* 4 – 8 pairs, ovate or ovate-oblong, 7 – 13 × 4 – 7 cm, oblique, broadly cuneate or rounded at base, margin entire, acuminate or acute at apex. *Inflorescence* axillary racemes, 20 – 25 cm, densely flowered. *Flowers* erect at first, drooping later, large. *Pedicels* 6 – 8 mm, pubescent. *Corolla* lanceolate, alternate with calyx. *Stamens* alternate with corolla; *filaments* long, exerted from corolla. *Ovary* long stalked, compressed. *Fruit* a legume, purplish, flat, 8 – 15 × 1 – 2 cm, narrowly. *Seeds* brown.

Flowering & Fruiting: February – May

Habitat: Sparse forests; 1000 – 1200 m

*Specimen Examined:*Included after Dutt *et al.* 1974, *D.* 295.

Distribution: Bangladesh, Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand; introduced in tropical Africa (Tanzania, Uganda)

Note: The tree has an extensive root system and has been recommended for reinforcing riverbanks and stabilizing terraces. The wood is not very durable and is prone to attack by fungi and insects, but it impregnates well. It is heavy, moderately hard, and compact. It is easy to work with tools and is well suited for turnery, carving and polishing (Website: <http://tropical.theferns.info/viewtropical.php?id=Acrocarpus+fraxinifolius>).

Threat status: Not Evaluated

Aganope Miq.

A. thyrsiflora (Benth.) Polhill in Kew Bull. 25 (2): 268. 1971; Li *et al.* in Fl. China 10: 173. 2010. *Derris thyrsiflora* Benth. in J. Proc. Linn. Soc., Bot. 4 (Suppl.): 114. 1860. *Millettia thyrsiflora* Benth. in Miquel, Pl. Jungh. 249. 1852.

Vernacular name: Not known

Lianas. Leaves 5 – 9-foliolate; *petiole* 8 – 14 cm; *leaf blades* oblong-lanceolate, 10 – 15 × 3.5 – 7 cm, both surfaces glabrous, rounded at base, shortly acuminate to obtuse at apex. *Inflorescence* axillary or terminal, pseudopaniculate, 12 – 35 cm, pilose; *branches* numerous. *Pedicel* very short. *Flowers* c. 8 mm. *Calyx* campanulate, c. 3 mm, sparsely pilose. *Corolla* whitish to purplish red, 8 – 10 mm; *standard* orbicular. *Ovary* tomentose. *Fruit* a legume, oblong, 5 – 10 × 2.5 – 3 cm, thin, glabrous. *Seeds* 1 – 3 per legume.

Flowering & Fruiting: May – November

Habitat: streams sides; low elevations

*Specimen Examined:*Included after Dutt *et al.* 1974, *D.* 506.

Distribution: India, China, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, Vietnam; Pacific islands

Threat status: Not Evaluated

Albizia Durazz.

- 1a. Trees, deciduous2
- 1b. Trees, evergreen*A. odoratissima*
- 2a. Ovary tomentose, sessile.....*A. chinensis*
- 2b. Ovary glabrous, subsessile.....*A. procera*

A. chinensis Merr., Amer. J. Bot. iii. 575. 1916; Li *et al.* in Fl. China 10: 65. 2010. *Albizia stipulata* (DC.) Boivin, Encycl. Dix-Neuvième Siècle 2: 33. 1837. *Mimosa chinensis* Osbeck, Dagb. OstIndia Resa, 233. 1757.

Vernacular Name: Saw-kokoi, Sau (A)

Trees, deciduous. *Stipules* deciduous; *leaflets* sessile, oblong-linear, 6 – 10 × 2 – 3 mm, abaxially villous, subtruncate at base, margin ciliate, acuminate at apex. *Inflorescence* in a terminal panicle. *Flowers* dimorphic, green-white or yellowish, tomentose. *Calyx* funnel-shaped, c. 3 mm, 5-lobed. *Corolla* c. twice as long as calyx; lobes ovate-deltoid. *Stamens* c. 2.5 cm. *Ovary* tomentose, sessile. *Fruit* a legume, indehiscent. *Seeds* elliptic, flat.

Flowering & Fruiting: March – December

Habitat: Forests and open fields; sea level to 1000 m

Specimen Examined: Included after Borah *et al.*, 2016.

Distribution: most areas with a seasonal climate in S and SE Asia

Note: An infusion of the bark is used as a lotion for cuts, scabies and other skin diseases. Aquous extract of the bark cause uterine constriction(Asolkar *et al.*, 1992).

Threat status: Not Evaluated

A. odoratissima (L.f.) Benth. in London J. Bot. 3: 88. 1844; Kanjilal *et al.*, Fl. Assam 2: 164. 1938; Li *et al.* in Fl. China 10: 64. 2010.

Vernacular Name: Hiharu, Goroi, Siris (A)

Trees, evergreen. *Stipules* filiform, c. 2.5 mm; *leaflets* sessile, oblong, 2 – 3 × 0.7 – 1.4 cm, papery, both surfaces sparsely pubescent, obliquely truncate at base, obtuse at apex. *Inflorescence* arranged in panicles, pubescent. *Flowers* dimorphic, sessile, yellowish, fragrant. *Calyx* cup-shaped, 1 – 1.5 mm, tomentose; lobes shorter than 0.25 mm. *Corolla* funnel-shaped, 4.5 – 6.5 mm; lobes lanceolate, 2 – 2.5 mm. *Ovary* tomentose. *Fruit* a legume, oblong, compressed, 10 – 18 × 2 – 4 cm, densely pubescent.

Flowering & Fruiting: May – January

Habitat: Thin forests; sea level to 1500 m

Specimen Examined: Included after Sajem *et al.* 2008.

Distribution: India, Bangladesh, Bhutan, China, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam

Note: The wood is hard, close-grained, 20 - 40% stronger than teak. A premium quality wood, it is suitable for panelling and furniture. It is also used for carts, wheels, farm implements and construction timbers. A valuable fuel wood, dead and defective branches from shade trees are a major source of fuel (Website: <http://tropical.theferns.info/viewtropical.php?id=Albizia+odoratissima>).

Threat status: Not Evaluated

A. procera (Roxb.) Benth. in London J. Bot. 3: 89. 1844; Kanjilal *et al.*, Fl. Assam 2: 163. 1938; Li *et al.* in Fl. China 10: 63. 2010.

Vernacular Name: Korai (A)

Trees, deciduous. *Leaflets* 6 – 12 pairs, ovate or subrhombic, 3 – 4.5 × 1.2 – 2.2 cm, sparsely appressed pubescent, oblique at the base, obtuse or emarginated at apex. *Inflorescence* in axillary or terminal panicles. *Flowers* actinomorphic, sessile. *Calyx* 2 – 3

mm, glabrous. *Corolla* yellow-white, c. 6 mm. *Staminal tube* longer than corolla tube. *Ovary* glabrous, subsessile. *Fruit* a legume, ligulate, flat.

Flowering & Fruiting: July – January

Habitat: Thin forests, thickets; 100 – 600 m

Specimen Examined: Included after Borah *et al.*, 2016.

Distribution: India, S and SE Asia

Note: The cooked leaves are eaten as a vegetable. In times of scarcity the bark can be ground into a powder, mixed with flour and eaten. All parts of the plant are reported to show anti-cancer activity. A decoction of the bark is given for the treatment of rheumatism and haemorrhage. It is also considered useful in treating problems of pregnancy and for stomach-ache

(Website:

<http://tropical.theferns.info/viewtropical.php?id=Albizia+procera>).

Threat status: Not Evaluated

Alysicarpus Neck. ex Desv.

A. vaginalis (L.) DC., Prodr. 2: 353. 1825; Huang & Ohashiin Fl. China 10: 291. 2010.

Alysicarpus rupicola Edgew. in J. Asiat. Soc. Bengal 21 (2): 170. 1852.

Vernacular Name: Alyce Clover (E), Chauli / Sauri (H)

Herbs, perennial. *Stem* erect, 30 – 80 cm tall. *Petiole* 5 – 14 mm, glabrous; *leaf blade* often ovate-oblong or oblong-lanceolate, to 6.5 × 1 – 2 cm on upper stem, cordate, nearly orbicular or ovate, 1 – 3 × 1 cm on lower stem. *Inflorescence* in racemes, axillary or terminal, 1.5 – 7 cm. *Pedicel* 3 – 4 mm. *Calyx* 5 – 6 mm. *Corolla* red, reddish purple, purplish blue or yellow, slightly longer than calyx, c. 5 mm; standard obovate. *Ovary* pubescent. *Legume* compressed, cylindric, 1.5 – 2.5 cm × 2 – 2.5 mm, pubescent. *Seeds* ellipsoidal.

Flowering & Fruiting: September – November

Habitat: Roadsides, grasslands; 100 – 700 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11529, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; E and W Africa, throughout Old World tropics; introduced in the Neotropics.

Note: In India the species is used both as dry and green forage (Duke, 1981). A decoction of the roots is used as a treatment against coughs. An infusion of the powdered seeds is used as a remedy for dysentery and colic (Website: <http://tropical.theferns.info/viewtropical.php?id=Alysicarpus+vaginalis>).

Threat status: Not Evaluated

Archidendron F.Muell.

- A. clypearia** (Jack) I.C.Nielsen in Adansonia sér. 2, 19 (1): 15. 1979. *Abarema angulata* (Benth.) Kosterm. in Bull. Org. Sci. Res. Indonesia No. 20, 47. 1954. *Abarema clypearia* (Jack) Kosterm. in Bull. Org. Sci. Res. Indonesia No. 20, 42. 1954.

Vernacular Name: Grasshopper Tree (E)

Trees. *Leaf petiole* 4-angulate; *leaflets* subsessile, adaxially shiny, oblique, 1 – 7 × 0.7 – 3 cm, upper one largest, downward smaller, leathery, both surfaces slightly pubescent. *Corymbs* several flowered, terminal or axillary panicles. *Flowers* pedicellate. *Calyx* campanulate, 1 – 3 mm, 5-lobed, calyx and corolla densely villous. *Corolla* white or yellowish, 4 – 5 mm; lanceolate. *Stamens* neumerous, c. 2 times as long as corolla. *Ovary* stipitate, hairy. *Legume* twisted. *Seeds* 4 – 10.

Flowering & Fruiting: February – August

Habitat: Forests; 500 – 1800 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, near Malidahar, 24.04.2011, H. A. Barbhuiya 85888 (ASSAM).

Distribution: India, Southern China, Sri Lanka, Bangladesh, Myanmar, Thailand, Cambodia, Laos, Vietnam, Malaysia, Indonesia, Philippines, Papua New Guinea

Note: The leaves and bark are sources of tannins. The timber is used for light construction, interior joinery, furniture and cabinet work, knife handles, weapon sheaths, boxes, coffins etc. (Website: <http://tropical.theferns.info/viewtropical.php?id=Archidendron+clypearia>).

Threat status: Not Evaluated

Bauhinia L.

- 1a. Erect shrub..... *B. acuminata*
1b. Trees.....2
2a. Stamen 10, fertile.....*B. malabarica*
2b. Stamen not as above.....3
3a. Flower rose-purple.....*B. purpurea*
3b. *Flowers* white, purple veined.....*B. variegata*

B. acuminata L., Sp. Pl. 375. 1753; Baker in Hook. f., Fl. Brit. India 2: 276. 1878; Kanjilal *et al.*, Fl. Assam 2: 139. 1938; Deb, Fl Tripura 1: 112. 1981.

Vernacular Name: Kanchan (B)

Erect shrub. *Leaves* c. 7.5 – 12.5 cm long, cleft about one-third way down into two acute or subobtusate lobes; subcordate to truncate at the base, glabrous above, finely tomentose beneath, thinly coriaceous; *petiole* 1.8 – 3.8 cm long, hairy; *stipules* present. *Flowers* white, c. 6 cm across, bractate, pubescent. *Calyx* spathaceous, 5-lobed. *Stamen* 10, fertile. *Ovary* stipitate. *Pods* glabrous, beaked, tardily dehiscent seeds 5 – 8, flat.

Flowering & Fruiting: April – December

Habitat: Common, throughout the sanctuary

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11437, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India to south China, Myanmar, Cambodia, Malaysia

Note: The leaves, roots and flowers are used medicinally (Website: <http://tropical.theferns.info/viewtropical.php?id=Bauhinia+acuminata>).

Threat status: Not Evaluated

B. malabarica Roxb., Fl. India (Carey) 2. 1832; Kanjilal *et al.*, Fl. Assam 2: 139. 1938.

Vernacular Name: Kotra (A), Karmai (B)

Deciduous trees. *Leaves* simple, bifid, alternate; *stipules* small; *petiole* glabrous, swollen at tip and base. *Inflorescence* in axillary corymbs. *Flowers* bisexual, 6 – 8 mm across, cream coloured; *pedicels* upto 2.5 cm; *calyx tube* long, 5 lobed; *corolla* 5, oblong. *Stamen* 10, fertile, alternate ones short; *ovary* half inferior, stipitate; *ovules* many; *style* filiform. *Fruit* a pod, 25 – 30 × 1.8 – 2.5 cm, flattened, beaked.

Flowering & Fruiting: September – March

Habitat: Deciduous forests

Specimens Examined: Included after Kanjilal *et al.* 1938.

Distribution: Indian sub-continent, SE Asia, and Malesia, Western Australia

Note: Infusion of fresh flowers for dysentery. Bark is used for dysentery. Leaves are applied on the forehead in fever (Website: <http://www.stuartxchange.com/Alambangbang.html>).

Threat status: Not Evaluated

B. purpurea L., Sp. Pl. 375. 1753; Baker in Hook. f., Fl. Brit. India 2: 284. 1878; Kanjilal *et al.*, Fl. Assam 2: 141. 1938; Deb, Fl. Tripura 1: 113. 1981. *Bauhinia platyphylla* Zipp. ex Span., Linnaea 15: 201. 1841.

Vernacular Name: Kanchan (B)

A medium sized tree. *Leaves* 7.5 – 15 cm long, cleft one-third way down or more; cordate at the base. *Inflorescence* terminal corymbose or paniculate or sometimes racemes; *pedicel* tomentose, buds 5 angled. *Flower* rose-purple; *calyx* hairy, *bracts* and *bracteoles* very small, pubescent, spathaceous, usually splitting into two segments; *corolla* 4 – 5 cm long, oblanceolate. *Stamen* 3 fertile, slightly shorter than the corolla; *staminodes* unequal. *Ovary* downy, long stipitate. *Pods* flat, slightly falcate, greenish purple. *Seeds* dark-brown, flattened roundish.

Flowering & Fruiting: September – March

Habitat: Common, hilly forest, plain forest

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11388; Craig Park Tea Estate touching BWS,

26.11.2014, A. Bora & D. Bhattacharyya 11688, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Native to tropical Asia.

Note: The plant is used in dropsy, pain, rheumatism, thigh swelling, convulsion, delirium febris, Datura intoxication and blackness of lip or tongue. Bark acts as an astringent in diarrhoea; its decoction is used as a wash in ulcers. The roots are carminative and the flowers laxative. Alcoholic extract of the leaves possesses moderate antibacterial and poor antifungal properties (Taniya, 2004).

Threat status: Least Concern ver 3.1

B. variegata L., Sp. Pl. 375. 1753; Baker in Hook. f., Fl. Brit. India 2: 284. 1878; Kanjilal *et al.*, Fl. Assam 2: 141. 1938; Deb, Fl Tripura 1: 114. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 134. 2003.

Vernacular Name: Kotora (A), Raktakanchan (B)

Medium tree with hairy shoots during young stage. *Leaves* broad, cordate at base, lobes rounded or obtuse. *Flowers* white, purple veined, in lateral corymbs. *Calyx* pubescent, spathaceous. *Corolla* obovate-oblong, clawed. *Pods* prickly, oblong-elliptic.

Flowering & Fruiting: December – September

Habitat: Common, in hilly forest

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, on the way to Bandarkhal, 12.12.2013, A. Bora & D. Bhattacharyya 11740, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Northeast India, Western Himalaya, China, Myanmar

Note: Tree parts have anti-bacterial, anti-fungal, anti-malarial, pain reducing, swelling reducing, cytotoxic, fever reducing and thyroid hormone regulating properties. In Ayurveda, the tree is used extensively for skin treatment, glandular diseases, leprosy, intestinal worms, tumors, wounds, ulcers, inflammations, cough and bleeding disorders (Website: <http://www.bimbima.com/health/post/2012/11/16/medicinal-use-of-kachnarbauhinia-variegata-or-bauhinia.aspx>).

Threat status: Least Concern ver 3.1

Butea Roxb. ex Willd.

B. monosperma Kuntze, Revis. Gen. Pl. 1: 202. 1891. *Butea frondosa* Roxb. ex Willd., Sp. Pl., ed. 4. 3 (2): 917. 1802. *Erythrina monosperma* Lamarck, Encycl. 2: 391. 1786.

Vernacular Name: Polah, Polak (A)

Trees. Trunk to 30 cm d.b.h. *Petiole* 10 cm, robust; *stipels* subulate, c. 1.5 mm; *leaflets* unequal, thickly leathery, rough on both surfaces; *terminal leaflet* broadly obovate or suborbicular, 14 – 17 × 12 – 15 cm, broadly cuneate at base, apex rounded; *lateral leaflets* narrowly ovate or oblong, 11.5 – 16 × 8.5 – 10 cm, rounded at base. *Inflorescence* in racemes or panicles, axillary or at nodes of leafless branches. *Calyx* 1 – 1.2 cm. *Corolla*

orange-red, becoming yellow later, *c.* 3 × as long as calyx; *standard* narrowly ovate, 4 – 4.5 cm; *wings* narrowly falcate, *c.* 4 cm; *keel* broadly falcate, 5 – 5.5 cm. *Anthers* oblong. *Ovary* densely velutinous. *Fruit* a legume, 12 – 15 × 3.5 – 4 cm. *Seed* reddish brown.

Flowering: March – April

Habitat: Forests, wet places, roadside

Specimen Examined: Included after Borah *et al.*, 2016.

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Note: Different parts and extract of *Butea monosperma* shows various biological and pharmacological activities such as antimicrobial, antifertility, anticonvulsive, antihelmintic, antidiarrhoeal, antimicrobial, wound healing, anti-giardiasis and hepatoprotective, antihypertensive, antitumor, antidiabetic, anti-inflammatory, free radical scavenging activity (Chandra, 1977).

Threat status: Not Evaluated

Caesalpinia L.

- 1a. Climbers or climbing shrubs.....2
- 1b. Trees or shrubs.....*C. pulcherrima*
- 2a. Climbing shrub.....*C. microphylla*
- 2b. Climbers, woody or shrubs.....3
- 3a. Ovary pubescent*C. crista*
- 3b. Ovary glabrous.....4
- 4a. Leaflets 7 – 9 pairs, *c.* 6 – 9 × 3 mm, papery.....*C. digyna*
- 4b. Leaflets 8 – 12 pairs, 10 – 25 × 5 – 8 mm.....*C. enneaphylla*

C. crista L., Sp. Pl. 1: 380. 1753. *Caesalpinia kwangtungensis* Merr. in J. Arnold Arbor. viii. 7. 1927. *Caesalpinia laevigata* Perr., Mém. Soc. Linn. Paris 3: 104. 1825.

Vernacular Name: Latakaranja (H)

Woody climbers. *Leaves* 20 – 30 cm; *leaflets* 4 – 6 pairs, opposite, ovate or elliptic, 3 – 6 × 1.5 – 3 cm, glabrous, obtuse at the base, obtuse-rounded at the apex. *Inflorescence* racemes, terminal, lax, large panicles. *Flowers* aromatic; *calyx* 5 lobed, lanceolate, *c.* 6 mm, glabrous; *corolla* unequal, 4 lobed yellow, ovate, glabrous; upper one tinged with red stripes. *Stamens* somewhat extended. *Ovary* pubescent, 2-ovuled. *Legume* 3 – 4 × 2 – 3 cm, leathery. *Seed* solitary, compressed.

Flowering & Fruiting: April – December

Habitat: mountain slopes, forests

Specimen Examined: Included after Dutt *et al.* 1974, D. 474.

Distribution: India, Cambodia, China, Indonesia, Japan (Ryukyu Islands), Malaysia, Myanmar, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Polynesia.

Note: The leaves, fruits and roots are antiperiodic and tonic. The fruits are applied externally in the treatment of rash. Fat from the seeds is used in cosmetic preparations. It is said to soften the skin (Uphof, 1959).

Threat status: Not Evaluated

C. digyna Rottler. in Neue Schriften Ges. Naturf. Freunde Berlin iv. 200. 1803.

Vernacular Name: Not known

Large woody climbers. Leaves 12 – 20 cm; leaflets 7 – 9 pairs, oblong, c. 6 – 9 × 3 mm, papery, obliquely rounded at base, obtuse-rounded at apex. Inflorescence terminal or axillary racemes. Flower bisexual; calyx 5-lobed, 6 – 8 mm; corolla yellow, c. 1 cm, shortly clawed. Ovary glabrous. Legume brown, oblong, 3.5 – 5 × 1.6 – 2 cm, fleshy, smooth.

Flowering & Fruiting: March – November

Habitat: mountain slopes

Specimen Examined: India, Assam, Cachar dist., Jatinga, September 1903, Shaik Mokim 134392 (CAL).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam.

Note: The root is astringent. It is given internally in the treatment of phthisis, scrofula and diabetes (Website: <http://tropical.theferns.info/viewtropical.php?id=Caesalpinia+digyna>).

Threat status: Not Evaluated

C. enneaphylla Roxb., Hort. Bengal. 32; Fl. India ii. 363. *Mezoneuron enneaphyllum* Wight & Arn., Prodr. Fl. India Orient. 1: 283. 1834.

Vernacular Name: Not known

Large climbers or shrubs. Leaves alternate; leaflets 8 – 12 pairs, opposite, oblong, 10 – 25 × 5 – 8 mm, obtuse-rounded at both the base and apex. Inflorescence terminal panicles or axillary racemes, pubescent. Flowers aromatic, papilionaceous, large; calyx 5 lobed, glabrous, unequal; corolla yellow, upper one suborbicular. Stamens 10; anthers dull brown. Ovary subsessile, glabrous; style long. Legume reddish brown, compressed, winged.

Flowering & Fruiting: September – February

Habitat: slopes of mountains, open forests

Specimen Examined: India, Assam, Cachar dist., s.d., J. D. Hooker & T. Thomson 133984 (CAL).

Distribution: India, Bangladesh, China, Indonesia, Malaysia, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam.

Threat status: Not Evaluated

C. microphylla Mart., Reise Bras. ii. 611. 1828.

Vernacular Name: Wok-pin-rung (kuki)

Climbing *shrub*. *Leaves* 22.5 – 38 cm long; *leaflets* 0.7 – 1.5 × 0.2 – 0.5 cm long, sessile, linear-oblong, oblique at base. *Inflorescence* axillary or terminal, paniced racemes. *Flowers* yellow, puberulous; *calyx* 5-lobed, c. 1 – 1.2 cm long; *corolla* obovate c. 1.2 cm long. *Stamen* 10, vilous at the base. *Style* filiform, *stigma* terminal. *Fruit* a pod, fleshy.

Flowering & Fruiting: May – February

Habitat: Found in primary and secondary forests, forest edges, along rivers; upto 1400 m

Specimen Examined: India, Assam, Cachar dist., Mahmudpur, September 1903, Shaik Mokim134435 (CAL).

Distribution: India, Myanmar, China, Malaysia and Indonesia

Note: The inner bark, flowers and leaves, macerated together, are used as a digestive remedy. A yellow dye is obtained from the bark. The wood is used for general construction and general carpentry (Correa, 1926).

Threat status: Data Deficient ver 3.1

C. pulcherrima (L.) Sw., Observ. Bot. (Swartz) 166. 1791; Baker in Hook.f., Fl. Brit. India 2: 255. 1878; Kanjilal *et al.*, Fl. Assam 2: 122. 1939; Deb, Fl. Tripura 1: 116. 1981; T.C. Chen *et al.* in Fl. China 10: 45. 2010. *Poinciana pulcherrima* L., Sp. Pl. 1: 380. 1753.

Vernacular Name: Radhachura (A, B)

Shrubs or small *trees*. *Leaves* 12 – 26 cm; pinnae 4 – 8 pairs, opposite, 6 – 12 cm; *leaflets* 7 – 11 pairs, oblong or obovate, 1 – 2 cm × 4 – 8 mm, base oblique, apex emarginate. *Inflorescence* recemes subcorymbose, terminal or axillary, lax, to 25 cm. *Pedicels* unequal in length, 4.5 – 7 cm. *Receptacle* concave to turbinate, glabrous. *Calyx* 5, glabrous, lowest one c. 1.4 cm, others c. 1 cm. *Corolla* orange-red or yellow, orbicular, 1 – 2.5 cm, margin wavy. *Stamens* exserted; *filaments* red, 5 – 6 cm, thick and hairy in basal part. *Ovary* glabrous; *style* orange-yellow, long, 5 – 6.5 mm. *Legume* blackish brown when ripe, oblanceolate-oblong, not winged.

Flowering & Fruiting: Throughout the year

Habitat: Common, roadside

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 12.12.2015, A. Bora & D. Bhattacharyya 11573, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, cultivated throughout the tropics, native to South America.

Note: This species is a valuable ornamental of tropical regions. A decoction or infusion of the roots, bark, leaves or flowers is used as a purgative and emmenagogue. According to the dosage it may be used as a mouthwash for teeth or gums, a remedy for colds and fevers, or even as a strong abortifacient. The root is astringent, bitter, emmenagogue and, in larger doses, is used as an abortifacient (Website: <http://tropical.theferns.info/viewtropical.php?id=Caesalpinia+pulcherrima>).

Threat status: Not Evaluated

Callerya Endl.

C. cinerea (Benth.) Schot, *Blumea* 39 (1 – 2): 17. 1994; Li *et al.* in *Fl. China* 10: 184. 2010. *Millettia cinerea* Benth., *Pl. Jungh.* 2: 249. 1852.

Vernacular name: Not known

Shrubs, scandent. *Leaves* 5-foliolate; *petiole* 3 – 4 cm; *stipels* 4 mm; *leaflet* blades obovate-elliptic, basal pair *c.* 5.5 × 3 cm, lateral pair and terminal one *c.* 15 × 7 cm, broadly cuneate or rounded at base, acute at apex. *Inflorescence* panicles, terminal, 10 – 15 cm. *Flowers* 1.2 – 1.6 cm. *Corolla* red to lilac; ovate. *Ovary* shortly stipitate, tomentose, 5 – 7 ovules. *Fruit* a legume, linear-oblong, *c.* 13 × 2 cm, pubescent. *Seeds* 1 – 4 per legume, ellipsoid.

Flowering & Fruiting: February – November

Habitat: Secondary evergreen broad-leaved forests by ravines; 500 – 1200 m.

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 417.

Distribution: India, Bangladesh, Bhutan, China, Myanmar, Nepal, Thailand

Note: Stem anti-anemic, to enrich blood and promote blood circulation. Stem yields fibre for making ropes (Quattrocchi, 2012).

Threat status: Not Evaluated

Calliandra Benth.

C. umbrosa Benth., *Gen. Pl.* 1 (2): 597. 1865; Li *et al.* in *Fl. China* 10: 60. 2010. *Inga umbrosa* Wallich, *Pl. Asiat. Rar.* 2: 23. 1831.

Vernacular Name: Not known

Shrubs. *Stipules* spine-like; *leaflets* oblong to elliptic, 3 – 15 × 1.5 – 7.5 cm, subleathery, cuneate at base, acuminate at apex. *Inflorescence* axillary; peduncles 3 – 4 cm. *Flowers* homogeneous, tetramerous. *Calyx* campanulate, *c.* 1.3 mm, 4-lobed. *Corolla* funnel-shaped, *c.* 7 mm. *Stamens* numerous; filaments white. *Ovary* glabrous. *Fruit* a legume, flat, 10 – 14 × 2 – 2.4 cm, margin thickened.

Flowering & Fruiting: August – March

Habitat: Thickets; 300 – 400 m

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 148.

Distribution: India, China

Threat status: Not Evaluated

Canavalia DC.

C. ensiformis (L.) DC., *Prodr.* 2: 404. 1825; Li *et al.* in *Fl. China* 10: 198. 2010. *Dolichos ensiformis* L., *Sp. Pl.* 2: 725. 1753.

Vernacular Name: Horse Bean, Jack bean (E)

Herbs, annual, 0.6 – 1 m, pubescent or glabrescent. *Stipules* small, deciduous; *leaflets* thin, ovate or elliptic, 8 – 18 × 5 – 8 cm, cuneate or rounded at base, acute at apex. *Inflorescence* in racemes, solitary, 15 – 25 cm including peduncle. *Calyx*. 1.5 cm, upper lip truncate, as long as calyx tube. *Corolla* purplish or white and purple; standard *c.* 2.2 cm in diam., base with 2 semiorbicular, reflexed auricles, claw flat and broad, *c.* 5 mm; wings obovate-oblong; keel auriculate and clawed. *Fruit* a legume, ligulate, 20 – 30 × 2.5 – 4 cm. *Seeds* white, elliptic, *c.* 3 × 2 cm.

Flowering & Fruiting: May – October

Habitat: Common, roadside

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11623, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, native to Central America and West Indies; widely cultivated in tropical and subtropical regions.

Note: Seeds are rich in carbohydrates, oil and protein (up to 40% dry weight). These characteristics make this plant attractive as a potential food for humans or animals. However, the seeds are toxic if consumed raw or even after heat treatment (Udedibie & Carlini, 1998).

Threat status: Not Evaluated

Cassia L.

- 1a. Trees.....2
- 1b. Shrubs.....*C. alata*
- 2a. Flowers yellow, in axillary drupe racemes.....*C. fistula*
- 2b. Flower deep pink, fading to white, racemes.....*C. javanica* subsp. *nodosa*

C. alata L., Sp. Pl. 378. 1753; Baker in Hook. f., Fl. Brit. India 2: 264. 1878; Deb, Fl. Tripura 1: 117. 1981.

Vernacular Name: Dad mardan (B)

Shrubs with thick downy branches. *Leaves* channelled with slightly margined ridges, auricled at base. *Leaflets* 10 – 12 pairs, oblong, apiculate, glabrous above, slightly downy beneath. *Flowers* bright yellow in dense spike. *Pods* compressed with a crenulated wing along the mid of each valve.

Flowering & Fruiting: September – March

Habitat: Open forest, moist and dry areas

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, way to Jatinga, 28.02.2015, A. Bora & D. Bhattacharyya 11574, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Pantropical, weed of South America origin.

Note: Leaves or sap are used to treat fungal infections such as ringworm. They contain a fungicide, chrysophanic acid. Because of its anti-fungal properties, it is a common

ingredient in soaps, shampoos and lotions in the Philippines. The effectiveness of this plant against skin diseases is confirmed by modern scientific studies (Website: <http://www.naturia.per.sg/buloh/plants/candlesticks.htm>).

Threat status: Not Evaluated

C. fistula L., Sp. Pl. 377. 1753; Baker in Hook. f., Fl. Brit. India 2: 261. 1878; Kanjilal *et al.*, Fl. Assam 2: 128. 1938; Deb, Fl Tripura 1: 118. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 136. 2003.

Vernacular Name: Shonalu (B)

Deciduous medium sized *tree*. *Leaflets* 4 – 8 pairs, opposite, ovate, oblong-lanceolate, cuneate or rounded at the base. *Flowers* yellow, in axillary drupe racemes. *Stamen* all fertile. *Pods* cylindrical, indehiscent, dark brown when ripe. *Seeds* flat, ovate.

Flowering & Fruiting: April – January

Habitat: Common, along roadside and forest margin

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11733, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Central and Eastern Himalaya, China, Malaysia

Note: The pods are used as a remedy for malaria, blood poisoning, anthrax, diabetes and dysentery. A decoction of this is taken as a cure for kidney stones, as a vermifuge and as a laxative. The bark or leaves are widely applied to skin problems. Broken bones and tropical ulcers are bandaged with bark scrapings and leaf sap (<http://tropical.theferns.info/viewtropical.php?id=Cassia+fistula>).

Threat status: Not Evaluated

C. javanica L. subsp. **nodosa** (Buch.-Ham. ex Roxb.) K.Larsen & S.S.Larsen, Nat. Hist. Bull. Siam Soc. 25 (3 – 4): 205. 1975. *Cassia nodosa* Buch.-Ham. ex Roxb., Fl. India 2: 336. 1824.

Vernacular Name: Apple blossom cassia (E)

Trees, deciduous. *Leaves* 15 – 30 cm; *leaflets* 5 – 12 pairs, 2 – 5 × 1.2 – 2 cm, subleathery, slightly asymmetric at base, acute or obtuse at the apex. *Inflorescence* racemes. *Calyx* ovate; *corolla* deep pink, fading to white, ovate, 2.5 – 3 × 1 – 1.5 cm. *Stamens* 10, among them 3 abaxial antepalous with longer filaments than other 7. *Ovary* linear, pubescent. *Legume* blackish brown, 30 – 45 × 1 – 1.5 cm.

Flowering & Fruiting: Rainy season – Cold season

Habitat: Occasionally, roadside and sometimes cultivated

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 26.02.2016, A. Bora & D. Bhattacharyya 11547, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar); Included after Dutt *et al.* 1974, D. 162.

Distribution: Native to India, Malaysia (Peninsular), Thailand, Cultivated in S. China, Indonesia (Java).

Note: The wood is quite hard, and makes excellent flooring with its uniform dark colouring; it is also used for house construction, furniture and cabinet making. Smaller items, such as ashtrays, picture frames and bowls are also made from it (Website: <http://www.somemagneticislandplants.com.au/index.php/plants/457-cassia-javanica-ssp-nodosa>).

Threat status: Not Evaluated

Crotalaria L.

- 1a. Leaves simple.....2
- 1b. Leaves 3-foliolate.....3
- 2a. Leaf blade oblanceolate to narrowly elliptic, 5 – 15 × 2 – 4 cm.....*C. assamica*
- 2b. Leaf blade broadly elliptic-ovate, 1.2 – 3.6 × 1 – 2.4 cm*C. humifusa*
- 3a. leaf blades oblong to elliptic, 3 – 6 × 1.5 – 3 cm*C. pallida*
- 3b. leaflets 1.2 – 2.5 cm long, obovate-oblong*C. trifoliatrum*

C. assamica Benth. in London J. Bot. 2: 481. 1843; Li *et al.* in Fl. China 10: 110. 2010.
Crotalaria sericea Burm.f., Fl. India 156 .t. 48. 1768.

Vernacular Name: Indian rattlebox (E)

Herbs, erect, to 1.5 m tall. *Branches* terete. *Stipules* linear, minute. *Leaves* simple; *petiole* 2 – 3 mm; *leaf blade* oblanceolate to narrowly elliptic, 5 – 15 × 2 – 4 cm, thin, cuneate at base, obtuse and mucronate at apex. *Inflorescence* racemes, terminal or leaf-opposed, upto 30 cm; bracts linear, 1 – 2 mm. *Bracteoles* and *bracts* present. *Calyx* 2-lipped, 1 – 1.5 cm, pubescent. *Corolla* deep golden yellow; *standard* suborbicular to elliptic, 1.5 – 2 cm, apex retuse; *wings* 1.5 – 1.8 cm. *Ovary* glabrous. *Fruit* a legume, oblong, 4 – 6 × 1.5 cm.

Flowering & Fruiting: May – December

Habitat: Montane grasslands, along trails; below 100 – 3000 m.

*Specimen Examined:*Included after Dutt *et al.* 1974, D. 182.

Distribution: India, China, Laos, Myanmar, Philippines, Thailand, Vietnam.

Note: In Laos it is used as a soil fertiliser and a root extract is also used to treat bladder stones (Aubreville and Leroy 1979).

Threat status: Least concern ver 3.1

C. humifusa Benth. in Hooker's London Journal of Botany 2. 1843; Li *et al.* in Fl. China 10: 115. 2010.

Vernacular Name: Sprawling Rattlepod (E)

Herbs, to 20 cm. *Stems* terete, densely pubescent. *Stipules* linear. *Leaves* simple; *petiole* shorter than stipules; *leaf blade* broadly elliptic-ovate, 1.2 – 3.6 × 1 – 2.4 cm, broadly cuneate to rounded at base, rounded at apex. *Racemes* leaf-opposed or terminal on short

flowering branches, ascending, very lax, 2 – 8-flowered; *bracts* linear. *Pedicel* to 4 mm; *bracteoles* inserted at base of calyx. *Calyx* 2-lipped, 4 – 6 mm, deeply divided. *Corolla* yellow; *standard* oblong-orbicular, 5.5 – 6.5 mm; *keel* slightly longer than standard. *Legume* cylindrical-ovoid, 6-8 mm, glabrous. *Seeds* very pale brown.

Flowering & Fruiting: October – May

Habitat: Roadside, sandy river margins; 100 – 1000 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11750 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Malaysia, Myanmar, Nepal, Papua New Guinea, Philippines, Thailand; Australia.

Threat status: Not Evaluated

C. pallida Aiton, Hort. Kew. 3: 20. 1789; Li *et al.* in Fl. China 10: 108. 2010.

Vernacular Name: Smooth Rattlepod (E), Ghantakaran (A)

Herbs, perennial. *Stipules* very minute, caducous. *Leaves* 3-foliolate; *petiole* 2 – 4 cm; *leaf blades* oblong to elliptic, 3 – 6 × 1.5 – 3 cm, abaxially pubescent, adaxially glabrous, broadly cuneate at base, obtuse to retuse at apex. *Inflorescence* racemes, terminal, c. 25 cm; *bracts* linear, c. 4 mm, caducous. *Pedicel* 3 – 5 mm; *bracteoles* 2 mm. *Calyx* subcampanulate, 4 – 6 mm, 5-lobed, densely pubescent. *Corolla* yellow; *standard* orbicular to elliptic, c. 1 cm in diam., base with 2 appendages; *wings* oblong, c. 8 mm; *keel* c. 1.2 cm, rounded, marginally pilose at base, beak narrow. *Ovary* sessile. *Fruit* a legume, oblong, 3 – 4 × 0.5 – 0.8 cm.

Flowering & Fruiting: September – December

Habitat: Grasslands, disturbed sandy areas; 100 – 1100 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11685 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar); India, Assam, NC Hills dist., Haflong, 08.08.1908, W. G. Craib 104230 (CAL).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; Africa, tropical America

Note: Root extract is taken by Tanchangyas to cure stomachache and indigestion (Asolkar *et al.*, 1992).

Threat status: Not Evaluated

C. trifolium Willd., Sp. Pl., ed. 4. 3 (2): 983. 1802; Hook. f., Fl. Brit. India 2: 82. 1876; Sanjappa, Legumes Ind. 131. 1992.

Vernacular Name: Not known

Perennial *herbs or undershrubs*. Leaves alternate, 3-foliolate; leaflets 1.2 – 2.5 cm long, obovate-oblong, acute or cuneate at base, obtuse and emarginate at apex; petioles 2.5 – 4.0 cm long, puberulous; stipules minute. Inflorescence racemes, terminal or axillary, 10 – 15 cm long; peduncles hairy. Flowers 12 – 40; pedicels short; bracts minute. Calyx 3 – 3.5 mm long, lobes linear, tube c. 2.5 mm long. Corolla yellow; vexillum obovate, 10 – 13 × 8 – 9 mm, obtuse at apex, glabrous; wing corolla linear-oblong, c. 11 × 4 mm, rounded at apex; keel corolla c. 12 mm long. Staminal sheath c. 1.5 mm long; anthers linear or ovate. Ovary c. 4 mm long, silky at base; style upto 8 mm long. Pods sessile, subquadrangular.

Flowering & Fruiting: August – December

Habitat: Along the roadsides in the plains

Specimen Examined: Included after Dutt *et al.* 1974, D. 429.

Distribution: India and Bhutan

Notes: Exotic plant.

Threat status: Not Evaluated

Dalbergia L.f.

- 1a. Trees..... *D. sericea*
- 1b. Woody climbers.....2
- 2a. Woody climbers, sometimes erect shrubs or small trees.....3
- 2b. Large woody climber; Corolla pinkish-white.....*D. thomsonii*
- 3a. Stamens 9 or 10, monadelphous.....*D. rimosa*
- 3b. Stamens 10, diadelphous.....*D. stipulacea*

D. rimosa Roxb., Fl. India, ed. 1832. 3: 233. 1832; Baker in Hook.f., Fl. Brit. India 2: 232. 1876; Kanjilal *et al.*, Fl. Assam 2: 104. 1938; Deb, Fl. Tripura 1: 156. 1981; P. J. Bora & Y. Kumar, Florist. Diversity Assam 117. 2003.

Vernacular Name: Not known

Woody *climbers*, sometimes erect shrubs or small trees. Leaves 10 – 20 cm; rachis and petioles puberulent; leaflets 5 – 9; blade ovate or elliptic, 3 – 8 × 2 – 5 cm, firmly papery, rounded or broadly cuneate at base, acute or obtuse at apex. Panicles terminal or sometimes extending into axils of uppermost leaves, 5 – 25 × 4 – 12 cm. Flowers minute, c. 3 mm; bracts and bracteoles persistent, ovate-lanceolate. Calyx campanulate, 5-toothed. Corolla white or yellowish green; standard obovate-oblong; wings obovate or elliptic; keel half-moon-shaped. Stamens 9 or 10, monadelphous. Ovary stipitate, oblong, puberulent. Legume oblong or sometimes elliptic. Seeds reniform, shiny.

Flowering & Fruiting: April – December

Habitat: forests, open forests, mountain slopes, ravines, riversides; 800 – 1700 m

Specimens Examined: India, Assam, Cachar dist., Alnee on the Barak River, 17.08.1903, A. T. Gage 121189 (CAL).

Distribution: NE India, China, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam

Note: In Assam the stem is used for making axe handles and the seeds are eaten by the people of Cachar, India (Thothathri 1987).

Threat status: Least Concern ver 3.1

D. sericea Spreng., Syst. Veg. (ed. 16) 3: 193. 1826; Li *et al.* in Fl. China 10: 129. 2010.

Vernacular Name: Not known

Trees, 5 – 6 m tall. *Young shoots* silky puberulent, glabrous when mature. *Leaves* 15 – 25 cm; *stipules* caducous, puberulent; *leaflets* ovate or oblong, 2.5 – 5 × 2 – 2.5 cm, papery, rounded or cuneate at base, slightly obtuse at apex. *Inflorescence* in panicle, axillary, 2.5 – 5 × 1.2 – 2 cm; *peduncles*, *branches* and *pedicels* densely puberulent. *Calyx* campanulate, densely puberulent, 5-lobed. *Corolla* white; *standard* suborbicular, emarginate. *Stamens* 10, diadelphous (5 + 5). *Ovary* shortly stipitate, pubescent; *style* slender; *stigma* small. *Fruit* a legume, 2.5 – 5 × 0.6 – 1 cm, leathery. *Seeds* reniform, compressed, *c.* 5 × 2.5 mm.

Flowering & Fruiting: April – September

Habitat: Marshy river banks, Mountain slopes, roadsides; 900 – 1600 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11684; Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11604, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bangladesh, Bhutan, China, Myanmar, Nepal, N Vietnam

Note: The leaves are used as an emetic to treat poisoning in both people and dogs. Infusions of the root are used to treat infertility. The pounded leaves are mixed with lard and used as a hair dye. Small branches are used as toothbrush sticks (Website: Small branches are used as toothbrush sticks).

Threat status: Not Evaluated

D. stipulacea Roxb., Fl. India, ed. 1832. 3: 233. 1832; Baker in Hook.f., Fl. Brit. India 2: 237. 1876; Kanjilal *et al.*, Fl. Assam 2: 107. 1938; Deb, Fl. Tripura 1: 157. 1981; P. J. Bora & Y. Kumar, Florist. Diversity Assam 117. 2003.

Vernacular Name: Dat bijuli (A)

Woody climbers, sometimes small *trees*. *Branches* spreading. *Leaves* 15 – 20 cm; *stipules* early caducous, ovate-lanceolate to lanceolate; *leaflets* 17 – 21; *petiolules* 1.5 – 2 mm; *blades* oblong to obovate-oblong, 2.8 – 3.5 × 1 – 2 cm, broadly cuneate or rounded at base, acute, ultimately rounded or obtuse at apex. *Panicles* in axils of leaves, early deciduous bracts; *bracteoles* obovate. *Calyx* campanulate, puberulent; *teeth* ovate. *Corolla* pale blue or pale purplish red; *standard* orbicular. *Stamens* 10, diadelphous (5 + 5). *Ovary* glabrous; *style* slender; *stigma* small. *Legume* ovoid or elliptic. *Seeds* reniform.

Flowering & Fruiting: April – December

Habitat: open forests; 700 – 1700 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, near Kalaincherra, 08.05.2011, *H. A. Barbhuiya* 85846 (ASSAM).

Distribution: NE India, Cambodia, China, Laos, Malaysia, Myanmar, Thailand, Vietnam.

Note: Roots and leaves are used in gonorrhoea and aphthae in Khagrachari (Yusuf *et al.*, 2009).

Threat status: Not Evaluated

D. thomsonii Benth. in J. Proc. Linn. Soc., Bot. 4 (Suppl.): 33. 1860; Baker in Hook. f., Fl. Brit. India 2: 236. 1876; Sanjappa, Legumes India 141. 1992. *Amerimnon thomsonii* (Benth.) Kuntze, Revis. Gen. Pl. 1: 159. 1891.

Vernacular Name: Not known

Large woody climber. Stem glabrous. Leaves 10 – 15 cm long, petioles terete; leaflets imparipinnate, oblong-elliptic or elliptic, 2 – 3.5 × 1 – 2 cm, glabrous on both surfaces, cuneate or rounded at base, margins entire, emarginated at apex; stipules 4 – 5 mm long. Inflorescence axillary and terminal, panicles or corymbose. Flowers deciduous; bracts present. Calyx thinly minutely pubescent, unequal, 5-lobed; upper 2-lobed, rounded at apex, connate at base; lower 3-lobed. Corolla pinkish-white; standard suborbicular or elliptic-obovate, 7 – 10 × 5 – 8 mm, emarginate at apex; wings oblong; keels boat shaped. Anther filaments unequal, connate at base. Fruit a pod, greenish, 5 – 10 × 2.5 – 4 cm.

Flowering & Fruiting: July – January

Habitat: Found occasionally in the primary dense forests, 400 – 1200 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 579.

Distribution: India (Assam, Meghalaya, Tripura)

Notes: *Dalbergia thomsonii* Benth. is endemic to Assam, Meghalaya and Tripura (Kumar & Sane 2003).

Threat status: Not Evaluated

Derris Lour.

D. cuneifolia Benth., Pl. Jungh. 2: 253. 1852; Baker in Hook. f., Fl. Brit. India 2: 243. 1878; Kanjilal *et al.*, Fl. Assam 2: 113. 1938; Sanjappa, Legumes of India 144. 1992; P. J. Bora & Y. Kumar, Florist. Diversity Assam 119. 2003. *Galedupa marginata* Roxb., Fl. Ind. 3: 241. 1832.

Vernacular name: Not known

Large woody climber. Leaves 15 – 30 cm long; leaflets variable, 7 – 12.5 cm long, alternate, obovate-oblong or elliptic-oblong, acuminate or cuneate or rounded at base, margin entire. Inflorescence axillary racemes, sometimes fascicled, pubescent. Calyx lobes shortly segmented, c. 0.3 cm long, campanulate, ciliate. Corolla c. 1.2 cm long, red or purple. Fruit a pod, elliptic-obovate.

Flowering & Fruiting: April – December

Habitat: moist soil along the roadside

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 525.

Distribution: India, Bangladesh, China, Myanmar, Nepal, Thailand

Threat status: Least Concern ver 3.1

Desmodium Desv.

- 1a. Corolla purple, purple-red, or white, c. 5 mm*D. heterocarpon*
1b. Corolla white to violet, 4 – 7 mm*D. laxiflorum*

D. heterocarpon (L.) DC., *Prodromus* 2. 1825; Huang & Ohashi *Fl. China* 10: 273. 2010. *Desmodium polycarpum* (Poir.) DC., *Prodromus* 2. 1825.

Vernacular name: Asian Tick Trefoil (E)

Shrubs or *subshrubs*, erect or prostrate, 30 – 150 cm tall, much branched from base of stem. *Leaves* 3-foliolate; *petiole* 1 – 2 cm, slightly pubescent; *terminal leaflet* blade elliptic, narrowly elliptic, or broadly obovate, 2.5 – 6 × 1.3 – 3 cm, abaxially white adpressed pubescent, adaxially glabrous, base obtuse, apex rounded or obtuse, emarginate, mucronate. *Racemes* terminal or axillary, 2.5 – 7 cm; *rachis* with white, spreading, hooked hairs or yellowish or white, straight, appressed hairs, densely flowered. *Pedicel* 3 – 4 mm. *Calyx* 1.5 – 2 mm, 4-lobed; upper lobes slightly 2-toothed at apex. *Corolla* purple, purple-red, or white, c. 5 mm; *standard* obovate-oblong, shortly clawed; *wings* obovate, auriculate, clawed; *keel* extremely curved, apex obtuse. *Infructescence* crowded. *Legume* erect, narrowly oblong.

Flowering & Fruiting: July – October

Habitat: Grasslands, watersides, thickets, forests; 300 – 1800 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, near Gumra, 11.09.2010, H. A. Barbhuiya 85076 (ASSAM).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Australia, Pacific islands

Note: Plant is used in fainting and convulsion. Decoction of the plant is considered tonic and used in coughs (Yusuf *et al.* 2009).

Threat status: Not Evaluated

D. laxiflorum DC., *Ann. Sci. Nat. (Paris)* 4: 100. 1825; Huang & Ohashi in *Fl. China* 10: 270. 2010.

Vernacular name: Not known

Subshrubs or *shrubs*, erect, 30 – 120 cm tall. Young *branchlets* with adpressed and minute hooked hairs. *Leaves* 3-foliolate; *petiole* 1.5 – 4 cm; *terminal leaflet* blade ovate or ovate-elliptic, 9 – 19 × 3 – 8 cm, abaxially densely yellow sericeous, adaxially sparsely adpressed hairy. *Racemes* terminal and axillary, often 2 axillary, to 28 cm; *rachis* pubescent intermixed with minute hooked hairs, 2 – 7-flowered, fascicled. *Pedicel* 5 – 10

mm, densely hairy as rachis. *Calyx* densely villous; upper lobes entire or nearly so at apex. *Corolla* white to violet, 4 – 7 mm; *standard* broadly obovate or orbicular; *wings* auriculate and clawed; *keel* clawed. *Legume* linear, 2 – 6 cm, with dense, minute, hooked hairs.

Flowering & Fruiting: August – November

Habitat: forest margins, grassy slopes; 200 – 2400 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, near Gumra, 11.09.2010, H. A. Barbhuiya 85074 (ASSAM); Barail Wildlife Sanctuary, near Bihara, 09.10.2011, H. A. Barbhuiya 85669 (ASSAM).

Distribution: India, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam.

Threat status: Not Evaluated

Entada Adans.

E. gigas (L.) Fawc. & Rendle, Fl. Jamaica 4: 124. 1920. *E. rheedei* Spreng., Syst. Veg. 2: 325. 1825; Panigar. in Taxon 34: 714. 1985. *Entada scandens* Benth. in J. Bot. 4: 332. 1841. *Mimosa entada* L., Sp. Pl. 518. 1753. *Entada phaseoloides* (L.) Merr. in Philippine J. Sci. Bot. 9: 86. 1914; Deb, Fl. Tripura 1: 132: 1981.

Vernacular name: Not known

Liana. *Tendrils* climber, 15 – 20 m high. *Stem* woody. *Petiole* 0.3 – 0.5 cm long, glabrous. *Leaf* bipinnate, coriaceous, 4 – 10 cm long, alternate distichous; *leaf blades* oblong, 3.5 – 5 × 2.5 – 3 cm, cuneate at base, entire at margin, adaxially and abaxially glabrous; rachis ending in a long bifid tendril; *stipules* bristle. *Inflorescence* axillary pendulous spike. *Bracts* minute, linear. *Flowers* hermaphrodite, 1 – 1.5 cm long, pale-yellow, fragrant. *Calyx* 5-lobed, campanulate. *Corolla* 5-lobed, oblong-lanceolate, 0.3 × 0.1 cm, connate at base, abaxially pubescent, acute at apex. *Stamens* 10, free, exerted; *style* minute, c. 0.1 cm long. *Pod* elongated, flat, woody. *Seeds* orbicular, compressed, hard, dark-brown, shining.

Flowering & Fruiting: March – October

Habitat: The species grows both in plains and hills at altitudinal range of 100 – 800 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11417, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (Assam, Central and Eastern Himalaya, Sikkim, Tripura); Africa, Australia, Bangladesh, Bhutan, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka and Zimbabwe.

Notes: The seeds are used in the preparation of tonic which is emetic, antiperiodic and anthelmintic. Seeds are also used as fish poison; the juice extracted from wood and bark is used externally for the treatment of ulcers (Anonymous, 1952).

Threat status: Not Evaluated

Erythrina L.

E. variegata L., Herb. Amboin. 10. 1754; Sa and Gilbert in Fl. China 10: 237. 2010.

Vernacular Name: Indian coral tree (E)

Trees. Leaves pinnately 3-foliolate; *stipules* deciduous; *petiole* 10 – 15 cm; *leaflets* rhomboid-ovate, 15 – 30 × 15 – 30 cm, both surfaces glabrous, basal veins 3, broadly cuneate or truncate at base, margin entire, acuminate to obtuse at apex. *Inflorescence* terminal raceme, 10 – 16 cm, pubescent. *Calyx* spathe-like, 2 – 3 cm, mouth oblique. *Corolla* red, 6 – 7 cm; *standard* elliptic, 5 – 6 × c. 2.5 cm, obtuse at apex; *wings* and *keels* subequal; *keel corolla* separate. *Ovary* villous; *style* glabrous. *Fruit* a legume, black, reniform, c. 1.5 × 1 cm.

Flowering & Fruiting: February – August

Habitat: Common, sparse forest

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, Madhura khwari, 07.04.2013, A. Bora & D. Bhattacharyya 11732, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Pacific islands; introduced to Africa and Central and South America

Note: It is used as a windbreak and shade tree within commercial plantations, as a hedge and for cultivated and grown for its ornamental value. It is also used for fodder and medicinal purposes. It is used in traditional medicine across its native range including China and India to treat a range of ailments including joint pain and parasitic infections (Tanaka, 2004).

Threat status: Least concern ver 3.1

Flemingia Roxb. ex W.T.Aiton

- 1a. Leaves digitately 3-foliolate.....*F. macrophylla*
1b. Leaves simple.....*F. strobilifera*

F. macrophylla (Willd.) Kuntze ex Merr. in Philipp. J. Sci., C 5: 130. 1910; Li *et al.* in Fl. China 10: 235. 2010. *Flemingia latifolia* Benth., Pl. Jungh. 2: 246. 1852. *Crotalaria macrophylla* Willdenow, Sp. Pl. 3: 982. 1802.

Vernacular name: Not known

Shrubs, 0.8 – 2.5 m tall. *Leaves* digitately 3-foliolate; *stipules* lanceolate, long acuminate at apex, deciduous; *petiole* 3 – 6 cm; *leaflets* papery; *terminal leaflet* broadly lanceolate to elliptic, 8 – 15 × 4 – 7 cm, broadly cuneate at base, acuminate at apex; *lateral leaflets* smaller, oblique, base rounded at one side, cuneate on other. *Inflorescence* racemes, 3 – 8 cm, clustered flowers. *Calyx* campanulate, 6 – 8 mm, villous; lobes linear-lanceolate. *Corolla* purple, faintly longer than calyx; *standard* oblong; *wings* narrowly elliptic; *keel* oblong, long clawed. *Ovary* elliptic, hairy. *Fruit* a legume elliptic, 10 – 16 × 7 – 9 mm, pubescent. *Seeds* 1 or 2.

Flowering & Fruiting: June – December

Habitat: Disturbed meadows, roadsides, forest margins; 200 – 1800 m.

*Specimen Examined:*Included after Dutt *et al.* 1974, *D.* 472.

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

Note: The leaves are febrifuge and are used for treating postpartum fever and to treat paralysis and pain in the joints. A decoction of the leaves is used to bathe sores and swellings. The entire plant is given to relieve stomach-ache. The roots are applied externally to ulcers and swellings. A decoction is used to bathe swellings and sores (Website: <http://tropical.theferns.info/viewtropical.php?id=Flemingia+macrophylla>)

Threat status: Not Evaluated

F. strobilifera (L.) W.T.Aiton, Hort. Kew., ed. 2. 4: 350. 1812; Li *et al.* in Fl. China 10: 234. 2010. *Hedysarum strobiliferum* L., Sp. Pl. 2: 1053. 1753.

Vernacular Name: Makhioti (A)

Shrubs, 0.3 – 3 m tall. *Leaves* simple; stipules linear-lanceolate, 0.8 – 1.8 cm; *petiole* 0.5 – 1.5 cm, densely hairy; *leaf blade* ovate-elliptic, broadly elliptic or oblong, 6 – 15 × 3 – 7 cm, glabrous, rounded or slightly cordate at base, , acuminate, obtuse or acute at apex. *Inflorescence* a thyrses; bracts present, 1.2 – 3 × 2 – 4.4 cm. *Flowers* small; *pedicel* 1.5 – 3 mm. *Calyx* pubescent; lobes ovate, longer than tube. *Corolla* longer than calyx; *standard* broadly orbicular; *wings* narrower than keels. *Fruit* a legume, elliptic, 6 – 10 × 4 – 5 mm, sparsely pubescent.

Flowering & Fruiting: February – November

Habitat: Mountain slopes; 200 – 1600 m

*Specimen Examined:*Included after Dutt *et al.* 1974, *D.* 546.

Distribution: India, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam

Note: Roots are used in epilepsy, hysteria and to induce sleep; pounded roots are given in fever. The leaves are used as a vermifuge for children. The Marma tribe uses this plant as fly repellent; decoction of the leaf is taken orally by them to cure body swellings due to cessation of menstruation; bath taken with leaf-boiled water has similar effect. The plant is also used for rheumatic fever (Yusuf *et al.* 2009).

Threat status: Not Evaluated

Indigofera L.

1a. Shrub.....*I. atropurpurea*

1b. Herbs.....*I. cordifolia*

I. atropurpurea Buch.-Ham. ex Hornem., Hort. Bot. Hafn. 152. 1819. *Indigofera atropurpurea* Buch.-Ham. ex Roxb., [Hort. Beng.: 57. 1814, nom. nud. ex]; Fl. Ind. 3: 381. 1832.

Vernacular name: Not known

Shrub, 2 – 3 m high. *Leaves* 12 – 24 cm long; *stipules* caducous; *leaflets* opposite, ovate, 19 – 21. *Racemes* compact, 10 – 20 cm long, many-flowered, ebracteate. *Floral bracts* linear to ovate, 1 – 1.5 mm broad, gradually narrowed towards apex. *Pedicel* up to 2 mm long. *Calyx* hairy c. 2.5 mm long. *Corolla* dark purple; *standard* elliptic, glabrous. *Stamens* 6 – 7 mm; *anthers* globose without hairs at base. *Pod* cylindrical 3 – 5 cm, glabrous.

Flowering & Fruiting: August – November

Habitat: Roadsides; 500 – 1000 m

Specimen Examined: India, Assam, Cachar dist., Borail Wildlife Sanctuary, West Block, Kalaincherra, 27.08.2012, H. A. Barbhuiya 957 (ASSAM).

Distribution: India (Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, West Bengal, Uttar Pradesh, Himachal Pradesh, Jammu & Kashmir, Haryana, Punjab), Bangladesh, Bhutan, Nepal, Pakistan, Afghanistan, China, Sri Lanka, Myanmar, Vietnam, Mauritius.

Threat status: Not Evaluated

I. cordifolia Roth, Nov. Pl. Sp. 357. 182.

Vernacular Name: Heart-Leaf Indigo (E)

Herbs, 10 – 30 cm tall. *Stipules* lanceolate, c. 2 mm. *Leaves* simple; *petiole* c. 1 mm; *leaf blade* oblong to cordate, 4 – 8 × 3 – 6 mm, cordate at base, acute at apex. *Inflorescence* racemes, 2 – 3 mm, 1 – 4-flowered; *bracts* c. 2 × 0.5 mm. *Pedicel* 0 – 0.5 mm. *Calyx* tomentose; *tube* c. 0.5 mm. *Corolla* spatulate to cuneate, 2.5 – 3 × 1 – 1.5 mm, obtuse at apex; *wingsc.* 2.5 × 0.2 mm, glabrous; *keelc.* 2.5 × 0.5 mm, glabrous, lateral spur c. 0.3 mm. *Stamens* 2 – 2.5 mm. *Ovary* with trichomes, 1 – 2 ovules. *Fruit* a legume, ellipsoid to subglobose, 2.5 – 3 × c. 1.6 mm. *Seeds* 1 or 2 per legume.

Flowering & Fruiting: October – November

Habitat: Sunny mountain slopes; 100 – 400 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 490.

Distribution: India, Afghanistan, China, Indonesia, Pakistan; NE Africa, SW Asia, N Australia

Threat status: Not Evaluated

Mastersia Benth.

M. assamica Benth. in Trans. Linn. Soc. London 25 (2): 300. 1865; Li *et al.* in Fl. China 10: 207. 2010.

Vernacular Name: Not known

Woody *climbers*, young parts pubescent. *Stipels* linear, 7 – 8 mm; *leaflets* subrhombic, elliptic, or ovate, 8 – 14 × 6 – 12.5 cm, glabrous adaxially, rounded at base, acuminate at apex. *Inflorescence* in racemes, 30 cm or more. *Bracts* ovate-lanceolate, 7 – 8 mm, ciliate; *bracteoles* 5 – 7 mm. *Calyx* campanulate, 4-lobed; *tube* 4 – 5 mm; lobes 7 – 12 mm.

Corolla purplish, 10 – 18 mm. *Fruit* a legume, blackish, 10 – 12 × 2.5 – 3 cm, thinly leathery, glabrous. *Seeds* brown, reniform, c. 5 × 2.5 mm.

Flowering & Fruiting: October – January

Habitat: Semi-evergreen rain forests; below 900 m.

Specimen Examined: Included after Kanjilal *et al.* 1938; Included after Dutt *et al.* 1974, D. 586.

Distribution: India, Bhutan, China

Note: Exudate from stem applied for drying and healing of an open wound (Quattrocchi, 2012).

Threat status: Not Evaluated

Mimosa L.

1a. Large deciduous shrub; leaf bipinnate.....*M. himalayana*

1b. Undershrub, spreading, spiny. Pinnae 4, digitately arranged.....*M. pudica*

M. himalayana Gamble in Bull. Misc. Inform. Kew (1): 4. 1920; Li *et al.* in Fl. China 10: 58. 2010.

Vernacular Name: Not known

Large deciduous *shrub*, densely hairy. *Leaf* bipinnate; *rachis* 10 – 23 cm long, prickly, prickles hooked, hairy, ribbed. *Leaflets* c. 3 – 8 × 2 mm, oblong, obtuse, mucronate, glabrous adaxially, pubescent abaxially, subsessile. *Inflorescence* globose, terminal panicle. *Flowers* light pink to white, pedicellate; *pedicel* minute; *bract* small, linear, ciliate. *Calyx* c. 1 mm, tomentose. *Corolla* c. 3 mm long, tubular, 4-lobed; lobes c. 1 mm long. *Stamens* 8, long, exserted. *Ovary* short stalked, glabrous. *Fruit* 6 – 10 × 1.0 – 1.3 cm, strap-shaped.

Flowering & Fruiting: June – August

Habitat: Roadside, open places

Specimen Examined: Included after Dutt *et al.* 1974, D. 132.

Distribution: India, Afghanistan, Sikkim, W. Pakistan

Threat status: Not Evaluated

M. pudica L., Sp. Pl. 518. 1753; Baker in Hook. f., Fl. Brit. India 2: 159. 1879; Kanjilal *et al.*, Fl. Assam 2: 152. 1938; Deb, Fl. Tripura 1: 133. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 143. 2003.

Vernacular Name: Sensitive plant (E), Lajuki bon (A)

Undershrub, spreading, spiny. *Pinnae* 4, digitately arranged, sensitive; *pinnules* 12 – 20 pairs; *stipule* present, linear-lanceolate, acuminate. *Flowers* pinkish purple, in axillary peduncled globular heads. *Stamens* 4. *Pods* spiny, 3 – 4 jointed.

Flowering & Fruiting: July – December

Habitat: Common, grassland, open places, road side

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11651, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Hotter regions of India, Pantropic, originally from Tropical America.

Note: In India it is used as forage for cattle, and is considered to lead to high meat and milk production. Regular grazing is necessary so that thorny stems do not develop. Despite its use as forage, trials in India and Hawaii have shown it can be toxic if fed in high quantities to cattle or horses. It is also used in some areas as ground cover to prevent soil erosion (Website: <http://www.kew.org/science-conservation/plants-fungi/mimosa-pudica-sensitive-plant>).

Threat status: Least concern ver 3.1

Mucuna Adans.

- 1a. Corolla dull purple*M. imbricata*
1b. Corolla bicolored, standard greenish or pinkish white, wings deep purple, keel lighter purple*M. macrocarpa*

M. imbricata DC. ex Baker, J. D. Hooker, Fl. Brit. India 2:185. 1876 (DC., Prodr. 2:406. 1825, nom. nud.); Kanjilal *et al.*, Fl. Assam 2: 185. 1938. *Mucuna nigricans* (Lour.), Steud., Nomencl. Bot. ed. 2 (2):163. 1841. Ali, Fl. Pakistan 100: 238. 2011.

Vernacular Name: Horse eyebean (E), Makori ghila (A)

A woody climber, branches sparsely pubescent. *Leaf* trifoliate, *petiole* 7.5 – 15 cm long, twisted at the base, *leaflet*. 15 cm long, c. 10 cm broad, elliptic, acuminate, sparsely pubescent on both sides; *lateral leaflets* oblique, broader than the terminal; *stipules* 3.5 – 4.0 mm long; *stipulesc.* 7.5 mm long. *Inflorescence* a raceme, usually axillary pendulous, peduncle up to 30 cm long; *flowers* clustered in threes; each cluster supported by a deciduous bract. *Pedicel*. 1.2 cm long. *Calyx* 1.7 – 2.5 cm long, velvety, teeth almost as long as the tube. *Corolla* dull purple. *Vexillum* 3.7 – 3.8 cm long. *Keel* 5 – 6.3 cm long, incurved. *Fruit* 10 – 15 cm × c. 5.0 cm.

Flowering & Fruiting: June – November

Habitat: Deciduous montane forests; hilly forest near river bank; 300 – 500 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11503, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Northeast India, Bhutan, Bangladesh, Myanmar, Pakistan, Taiwan, Sri Lanka and Vietnam

Threat status: Least Concern ver 3.1

M. macrocarpa Wall., Pl. Asiat. Rar. 1: 41. 1830; Li *et al.* in Fl. China 10: 212. 2010.

Vernacular name: Not known

Large woody vines. *Leaves* 25 – 33 cm; *petiole* 8 – 13 cm; *stipules* usually not persistent, robust, 2 – 5 mm; *leaflets* glabrous or with spreading hairs especially on veins; *terminal leaflet* ovate, elliptic, or slightly obovate, 10 – 19 × 5 – 10 cm, rounded at base, broadly acute or shortly acuminate at apex; *lateral leaflets* 10.5 – 17 cm. *Inflorescence* 5 – 23 cm; *pedicels* 8 – 10 mm; *bracts* and *bracteoles* ovate, bracteoles 2 – 5 mm, caducous. *Calyx* hairy; tube 8 – 12 × 12 – 20 mm. *Corolla* bicolored, standard greenish or pinkish white, wings deep purple, keel lighter purple. *Fruit* a legume, linear, 26 – 48 × 3 – 5 cm, woody. *Seeds* 6 – 15.

Flowering & Fruiting: November – October

Habitat: Evergreen or deciduous montane forests, dry sandy lands; 800 – 3000 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 422.

Distribution: India, Bhutan, China, Japan, Laos, Myanmar, Nepal, Thailand, Vietnam

Threat status: Not Evaluated

Ormosia Jacks.

O. robusta (Roxb. ex Wight) Voigt, Hort. Suburb. Calcutt. 205. 1845; Kanjilal *et al.*, Fl. Assam 2: 118. 1938; Pal, Fl. Lower Subansiri district, Arunachal Pradesh 1: 256. 2013. *Arillaria robusta* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 71. 1873. *Sophora robusta* Roxb., Hort. Bengal. 31. 1814.

Vernacular Name: Porghum (Miri), Sanchi or Sanchi-bloma (Garo)

Tree. *Leaves* imparipinnate, 30 – 40 cm; *leaflets* 7 – 9, ovate-lanceolate to oblong-lanceolate, 7 – 18.5 × 2.5 – 5.5 cm, thinly leathery, glabrous, entire, rounded-attenuate at base, acuminate at apex. *Inflorescences* terminal, 7.0 – 10.5 cm; *bracts* linear, 3 – 4 mm, pubescent; bracteoles 2. *Flowers* creamy-white, 0.9 – 1.2 cm across. *Calyx* campanulate, 0.5 – 6.0 cm; pubescent. *Corolla* creamy-white; orbicular, 0.6 – 0.7 × 0.5 – 0.6 cm when flattened; *wings* spathulate-obovate, 0.5 – 0.6 × 0.3 – 0.4 cm; *keel* broadly spathulate, 0.5 – 0.6 × 0.30 – 0.35 cm. *Stamens* 10, unequal, all fertile; *filaments* 0.6 – 1.1 cm. *Ovary* densely pubescent, 0.3 – 0.4 × 0.20 – 0.25 cm; style c. 0.4 cm long, pubescent at base; *stigma* bilobed. *Fruit* a legume, 1 – 2 seeded, cylindrical.

Flowering & Fruiting: April – July

Habitat: hills of tropical semi-evergreen forest; 110 – 370 m

Specimen Examined: India, Assam, Cachar dist., 18.11.1914, U. Kanjilal 8612, 8617 and 8618 (ASSAM); Included after Dutt *et al.* 1974, D. 484.

Distribution: India (Assam, Arunachal Pradesh, Meghalaya, Mizoram), Bangladesh, Myanmar, Thailand

Note: Used as timber and fire wood. The extract of bark (soaked in water overnight) is used in treatment of Jaundice by the Garos (Roy *et al.*, 2014).

Threat status: Not Evaluated

Parkia R.Br.

P. timoriana Merr. in Philipp. J. Sci., C 5: 33. 1910; Li *et al.* in Fl. China 10: 50. 2010. *Parkia javanica* Merr., Sp. Blancoanae 169. 1918. *Parkia roxburghii* G.Don, Gen. Hist. 2: 397. 1832. *Inga timoriana* Candolle, Prodr. 2: 442. 1825.

Vernacular Name: Yongchak (Manipuri)

Trees. Leaflets 50 – 60 pairs, falcate, linear, 5 – 10 × 1 – 2 mm, truncate at base, acute at apex. *Heads* 3 – 4 cm in diam. *Flowers* small. *Calyx* tubular, c. 6 mm. *Corolla* 5-lobed, tubular, 10 – 11 mm, villous. *Stamens* 10; filaments exerted, base adnate to collar. *Ovary* stipitate. *Fruit* a legume, straight, flat, 20 – 36 × 3 – 4.5 cm, glabrous.

Flowering & Fruiting: February – April

Habitat: roadside, spare forest

*Specimen Examined:*Included after Dutt *et al.* 1974, D. 183.

Distribution: native to tropical Asia

Note: Seeds are cooked as vegetables. The seeds are considered beneficial in the treatment of hepatalgia, oedema, nephritis, diabetes and colic, probably as a result of their diuretic and relaxing activity. They are also used as an anthelmintic (Website: <http://tropical.theferns.info/viewtropical.php?id=Parkia+timoriana>)

Threat status: Not Evaluated

Parochetus Buch.-Ham. ex D.Don

P. communis Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 240. 1825; Kanjial *et al.*, Fl. Assam 2: 17. 1938; Li *et al.* in Fl. China 10: 552. 2010.

Vernacular Name: Blue oxalis, Shamrock pea (E)

Stems c. 10 – 20 cm. *Stipules* 4 – 5 mm, entire, free; *petiole* 8 – 15 cm, pubescent; *leaflets* 8 – 20 × 10 – 20 mm, narrowly cuneate at base, entire or minutely serrate at margins. *Inflorescence* umbellate; *pedicels* 5 – 10 mm; *flowers* 1 – 3. *Calyx* 6 – 9 mm, pubescent. *Corolla* blue or purple, c. 20 mm; *standard* 1.4 – 2 cm, claw 3 – 5 mm; *wings* falcate-oblong; *keel* inflexed, acute. *Fruit* a legume, linear-ovate, 20 – 25 × 3 – 4 mm. *Seeds* 8 – 12.

Flowering & Fruiting: April – November

Habitat: grasslands, roadsides; 1800 – 3000 m.

*Specimen Examined:*Included after Dutt *et al.* 1974, D. 565.

Distribution: India, Bhutan, China, Malaysia, Myanmar, Nepal, Sri Lanka, N Thailand, Vietnam.

*Threat status:*Least Concern ver 3.1

Phanera Lour.

- 1a. Petiole 1.5 – 4 cm long2
1b. Petiole 4 – 11 cm long3

- 2a. Ovary glabrous, shortly stalked.....*P. glauca*
 2b. Ovary pubescent, stalked.....*P. nervosa*
 3a. Flower white or cream coloured.....4
 3b. Flower yellowish orange.....*P. wallichii*
 4a. Inflorescence in corymbose racemes, terminal or lateral.....5
 4b. Inflorescence an elongated terminal raceme; Staminodes 2.....*P. scandens*
 5a. leaf blade apex bifid to 1/3 – 1/2 of the length, lobes acute or obtuse acuminate at apex.....*P. ornata* var. *kerrii*
 5b. leaf blade apex bifid, to about 1/3 of the length; lobes obtuse rounded at apex.....*P. vahlii*

P. glauca Wall. ex Benth., Pl. Jungh. 2: 265. 1852.

Vernacular name: Not known

Climbers with tendrils. *Stipules* linear, c. 4 mm; *petiole* sparsely pubescent, 2 – 4 cm; *leaf blade* ovate to orbicular, 4 – 8 cm in diam., truncate to cordate at base, apex bifid, tip of lobes rounded. *Flowers* in short dense corymbs; *bracts* linear; *bracteoles* similar, inserted near middle of pedicel. *Pedicel* slender, 10 – 20 mm. *Flower buds* ovoid, glabrous to hairy. *Receptacle* striate, tubular, 7 – 20 mm, subglabrous. *Calyx* splitting into 2 or 3 segments. *Corolla* white, subequal, broadly obovate, 8– 12 mm including claw 2 – 3 mm. *Fertile stamens* 3; filaments glabrous; anthers red, ellipsoid, c. 2 mm. *Staminodes* 7, 2 in between stamens, c. 3 mm, 5 short, connate at base. *Ovary* glabrous, shortly stalked; *style* very short; *stigma* obliquely peltate. *Legume* flat.

Flowering & Fruiting: April – September

Habitat: lowland and mountain forests, also along the edges of forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 12.12.2013, A. Bora & D. Bhattacharyya 11358; Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11694; NC Hills dist., Barail Wildlife sanctuary, on the way to Haflong, 28.02.2015, A. Bora & D. Bhattacharyya 11512, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Cambodia, Indonesia, Laos, Malaysia (Peninsular), Myanmar, Thailand, Vietnam.

Note: Used in medicinal purpose (Website: <http://herbarium.gov.hk/SpecialTopicsDetails.aspx?oneId=22&SectionId=3>).

Threat status: Least Concern ver 3.1

P. nervosa (Benth.) Wall. ex Baker, Fl. Brit. India 2 (5): 283. 1878; T.C. Chen *et al.* in Fl. China 10: 14. 2010. *Bauhinia nervosa* (Benth.) Wall. ex Baker, Fl. Brit. India 2 (5): 283. 1878; Kanjial *et al.*, Fl. Assam 2: 145. 1938. *Phanera nervosa* Wall. ex Benth. in Miquel, Pl. Jungh. 262. 1852.

Vernacular Name: Mi-jalong (Khasi)

Climbers, robust with tendrils. *Stipules* ovate-auriculate; *petiole* 1.5 – 3 cm; *leaf blade* suborbicular, 6 – 8 × 7 – 9 cm, subleathery, shallowly cordate at base, apex bifid to *c.* 1/3, lobes rounded at apex. *Inflorescence* racemose-corymbose, pubescent; *bracts* lanceolate, 1.3 – 1.8 cm; *bracteoles* smaller than bracts. *Pedicel* 4 – 5 cm. *Flower buds* to 4.5 cm. *Receptacle* tubular, *c.* 2 cm; *calyx* lobes linear-lanceolate, 2.5 – 3 × 0.4 cm. *Corolla* white and reddish at base, broadly obovate, *c.* 3 × 2.2 cm, apex emarginate. *Fertile stamens* 3; filaments strong, *c.* 3.5 cm, glabrous; anthers oblong, hairy. *Staminodes* 2. *Ovary* stalked, pubescent; *style* stout; *stigma* disciform.

Flowering: September

Habitat: open forest, 1500 – 1600 m

Specimens Examined: Included after Kanjilal *et al.* 1938.

Distribution: India, China, Myanmar, Thailand

Threat status: Not Evaluated

P. ornata Kurz var. **kerrii** (Gagnep.) K.Larsen & S.S.Larsen, Fl. Cambodge, Laos & Vietnam 18: 208 (1980); T.C. Chen *et al.* in Fl. China 10: 19. 2010. *Bauhinia kerrii* Gagnepain, Notul. Syst. (Paris) 2: 173. 1912.

Vernacular Name: Not known

Lianas, woody, robust with tendrils. *Stipules* caducous; *petiole* 8 – 11 cm; *leaf blade* cordate-orbicular or cordate-ovate, 18 – 21 × 16 – 18 cm, papery, deeply cordate at base, apex bifid to 1/3 – 1/2, lobes acute or obtuse acuminate at apex. *Inflorescence* a corymbose raceme, terminal or lateral, many flowered; *bracts* persistent, lanceolate, 3 – 5 mm, pubescent; *bracteoles* oblong lanceolate. *Pedicel* 2.5 – 5 cm, slender. *Flower buds* upper part pyriform; *calyx* lobes 5, ovate. *Corolla* white, subequal, obovate, 15 – 25 × 10 – 15 mm. *Fertile stamens* 3; *filaments* *c.* 30 mm; *anthers* oblong. *Ovary* sessile; *style* slender; *stigma* capitate, small. Mature *fruit* brown tomentose.

Flowering: May

Habitat: mountain forests, open thickets; 100 – 800 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11691, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, China, Laos, Myanmar, N Thailand, N Vietnam.

Threat status: Not Evaluated

P. scandens (L.) Raf., Sylva Tellur. 122. 1838. *Bauhinia scandens* L., Sp. Pl. 374. 1753, *pro parte*. *Bauhinia anguina* Roxb., Pl. Coromandel 3: 82, t. 285. 1820 & Fl. Ind. 2: 328. 1832; Baker in hook.f., Fl. Brit. India 2: 248. 1878; Kanjilal *et al.*, Fl. Assam 2: 147. 1938; Deb, Fl. Tripura 1: 113. 1981; Sanjappa, Legumes India 5. 1992. *Lasiobema horsfieldii* Miq., Fl. Ind. Bat. 1: 71. 1855. *Bauhinia anguina* Roxb. var. *horsfieldii* (Miq.) Wall. ex Prain in J. Asiat. Soc. Beng. 66: 194. 1897. *Bauhinia horsfieldii* (Miq.) Macbr. in Contrib. Gray Herb. n.s. 2: (59): 23. 1919. *Bauhinia subrhombicarpa* Merr. in Lingn. Sci. J. 14: 9.

1935. *Lasiobema scandens* (L.) de Wit var. *horsfieldii* (Miq.) de Wit in Reinwardtia 3: 437. 1956. *Bauhinia scandens* L. var. *horsfieldii* (Miq.) K. & S. Larsen in Nat. Hist. Bull. Siam. Soc. 25: 16. 1973. *Bauhinia scandens* L. var. *Anguina* (Roxb.) Ohashi in J. Jap. Bot. 63: 159. 1988.

Vernacular name: Snake Climber, Monkey ladders (E), Nagbeli (H)

Tendrils climber, c. 10 m high. *Stem* woody with basal diameter of 60 cm, breast girth 40 cm, sinistrorse, flattened, twisted to form alternately convex and concave on the flexures; *young branches* cylindrical, puberulent, later glabrous. *Tendrils* in pairs, opposite, coiled, pubescent when young. *Stipules* caducous. *Petiole* 4 – 6 cm long, slender, pubescent. *Leaves* simple, alternate; *leaf blade* broadly ovate, 6 – 12 × 5 – 10 cm, chartaceous, cordate at base, entire at margin, both surfaces glabrous; primary nerve usually 7 – 9, apex bifid to more than ½ almost to the base, lobes with acuminate at apex. *Inflorescence* an elongated terminal raceme, 10 – 15 cm long, many flowered, puberulent. *Bracts* linear, 0.1 – 0.2 cm long, abaxially pubescent; *bracteoles* linear, pubescent. *Pedicel* 3 – 4 mm, slender. Flower buds ovoid, 1.8 – 2 mm in diam., apex open. *Flower* hermaphrodite, faintly fragrant. *Calyx* lobes 5, triangular, outside pubescent. *Corolla* subequal, obovate to oblanceolate, c. 3 mm, shortly clawed, white. *Fertile stamens* 3; filaments glabrous. *Staminodes* 2. *Floral disk* fleshy, swollen. *Ovary* shortly stalked, oblique, glabrous; style stout; stigma small. *Legume* rhombic to oblong, 3.5 – 4 × 1.2 – 1.6 cm, oblique, curved flat, tip recurved pointed, valves thin, reticulate veined, glabrous. *Seeds* 1, ellipsoid to obovoid-orbicular, c. 0.4 – 0.6 cm.

Flowering & Fruiting: September – December

Habitat: The species grows in moist places, both in plains and hills at altitudinal range from 120 – 720 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11534, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: INDIA (Assam, Bihar, Tripura, West Bengal); Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Nepal, Thailand and Vietnam.

Note: Indeterminate taxa

Threat status: Not Evaluated

P. vahlii Wight & Arn., Prod. 297. 1834; Baker in Hook. f., Fl. Brit. India 2: 279. 1878; Kanjilal *et al.*, Fl. Assam 2: 142. 1938.

Vernacular Name: Kanchan lota, Nak-kati-lewa (A)

A gigantic woody climber. *Branchlets* often ending in a tendril pair; *leaf blade* bifid, cleft through about one-third of the length; lobes apex obtuse rounded, base cordate; *petiole* 7 – 9 cm long; *stipules* present, c. 0.5 cm long. *Inflorescence* in terminal corymbose racemes. *Flowers* 3.5 – 5 cm across, white or cream coloured; *calyx* lanceolate caducous; *corolla* 2

– 3 cm long, obovate or oblanceolate; *bracts* present. *Fertile* stamen 3; *ovary* densely woolly; *style* glabrescent towards the apex. *Staminodes* 7. *Seeds* 8 – 12.

Flowering & Fruiting: April – Cold season

Habitat: slopes of hilly forests; upto 1500 m altitude

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11682; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11495, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (Assam, West Bengal, Coimbatore)

Note: The seeds are tonic and aphrodisiac. The leaves are demulcent and mucilaginous. A good quality fibre is obtained from the inner bark. It can be made into very strong ropes (Website: <http://tropical.theferns.info/viewtropical.php?id=Bauhinia+vahlii>).

Threat status: Not Evaluated

P. wallichii J. F. Macbr., Contr. Gray Herb. n.s. 2 (59): 23.1919; Sanjappa, Legumes of India: 7. 1992; Chen Dezhao *et al.*, Flora of China 10:15. 2010. *Bauhinia macrostachya* Wall. (Cat. 5774. 1831 – 32, nom.nud.) ex Roxb. Flora Indica 2: 326. 1832 non L. *Phanera macrostachya* Benth. in Miq., Pl. Jungh. 262. 1852. *Phanera wallichii* (Macbr.) Thoth., Bull. Bot. Surv. India 19.131. 1965.

Vernacular Name: Not known

A large *liana*, branched, 2-forked opposite tendril. *Leaves* 7 – 16 cm long, broadly ovate, cordate at base, entire, cleft at the apex, glabrous, *leaf veins* converging towards the apex, petiole *c.* 4.2 – 7.5 cm long, alternative. *Inflorescence* terminal racemes; *bracts* present small. *Flower* yellowish orange, in terminal racemes. *Calyx* 5 lobed, pubescent, campanulate. *Corolla* 5 lobed, imbricate in bud stage, *c.* 2.5 cm long, obovate, densely pubescent. *Fertile stamen* 3, *stamenoid* 7. *Ovary* densely pubescent, ferruginous, *style* short, glabrate at the apex.

Flowering & Fruiting: April – July

Habitat: Occasionally, hilly forest slopes

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11601, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (Arunachal Pradesh, Assam, Meghalaya, W. Bengal), Bangladesh, Myanmar, Thailand, N. Vietnam, Yunnan (Mengla)

Note: Indeterminate taxa, local inhabitants in Bangladesh use this plant for fuel l (Rezia Khatun 2008).

Threat status: Least Concern ver 3.1

Phyllodium Desv.

P. pulchellum (L.) Desv. in J. Bot. Agric. 1 (2) 1813; Li *et al.* in Fl. China 10: 266. 2010. *Desmodium pulchellum* (L.) Benth. Fl. Hongk. 83. 1861. *Hedysarum pulchellum* L., Sp. Pl. 2: 747. 1753.

Vernacular name: Ursi (A)

Shrubs, 0.5 – 2 m tall. *Branchlets* pubescent. *Petiole* 5 – 7 mm; *terminal leaflets* blade ovate, elliptic or obovate, 6 – 10 × 2.5 – 4.5 cm, *c.* twice as long as lateral leaflets. *Flowers* 5 or 6; *bracts* leaflike, orbicular, 1 – 1.5 cm in diam., both surfaces pubescent. *Pedicel* 2 – 3 mm, pubescent. *Calyx* *c.* 2 mm. *Corolla* white or pale yellow; *standard* 5 – 6 mm, attenuate at base, clawed; *wings* *c.* 5 × 1 mm; *keel* *c.* 6 × 2 mm, clawed. *Pistil* 6 – 7 mm; *style* 4.5 – 5.5 mm. *Fruit* a legume, *c.* 6 × 2.5 mm. *Seed* broadly elliptic.

Flowering & Fruiting: July – November

Habitat: roadsides, sparse forests on mountain slopes; 200 – 2000 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11506, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, throughout tropical Asia to Australia and New Guinea

Note: The roots and leaves are used medicinally for reducing fever and as an antiphlogistic (to reduce inflammation) and diuretic (Lopez Poveda, 2012).

Threat status: Least Concern ver 3.1

Pongamia Vent.

P. pinnata (L.) Pierre, Fl. Forest. Cochinch. sub t. 385. 1899; Zhang & Pedley in Fl. China 10: 188. 2010. *Pongamia glabra* Vent., Jard. Malmaison 1: 28, t. 28. 1803. *Cytisus pinnatus* L., Sp. Pl. 2: 741. 1753.

Vernacular Name: Karchaw (A)

Trees. *Leaves* 5 – 7 foliolate; *petiole* 5 – 6 cm; *leaflet* blades ovate, broadly elliptic or oblong, 5 – 10 × 4 – 8 cm, leathery, rounded, broadly cuneate or truncate at base, rounded to acuminate at apex. *Inflorescences* axillary, racemose, 15 – 20 cm. *Pedicel* 5 – 8 mm; *bracteoles* 2. *Calyx* campanulate, *c.* 3 mm, outside sparsely pubescent. *Corolla* white or pink, 1.2 – 1.4 cm; *standard* orbicular; *wings* oblong, base auriculate; *keels* falcate. *Stamens* 10; *anthers* basifixed. *Ovary* sessile, with 2 ovules; *style* glabrous; *stigma* capitate. *Fruit* a legume, ellipsoid to oblong, flat, 4 – 5 × 1.5 – 2.5 cm, indehiscent. *Seed* reniform.

Flowering & Fruiting: May – October

Habitat: riverbanks, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11522, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, China, Indonesia, Japan, Malaysia, Myanmar, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; C Africa, Australia, Central America, Pacific islands.

Note: *Pongamia pinnata* is being cultivated for the seed oils which are used in biofuels. This plant also has many medicinal uses, for example, bactericide, stomach aches, tonic, used against fever, arthritis, bronchitis, herpes and rheumatism. It is also planted as ornamental tree (Groom, 2012).

Threat status: Least Concern ver 3.1

Pueraria DC.

- 1a. Herbaceous to semiwoody, perennial vine or liana.....*P. montana* var. *lobata*
1b. Herbaceous vines.....*P. phaseoloides*

P. montana (Lour.) Merr. var. **lobata** (Willd.) Maesen & S. M. Almeida ex Sanjappa & Predeep in M. Sanjappa, Legumes of India 288. 1992; Li *et al.* in Fl. China 10: 246. 2010. *Dolichos lobatus* Willdenow, Sp. Pl. 3: 1047. 1802.

Vernacular Name: Kudzu (H)

Semiwoody, perennial *vine* or *liana*. *Leaves* c. 5 – 20 cm long. *Inflorescence* in axillary racemes. *Flowers* 2 – 2.5 cm long. *Calyx* 8 – 10 mm. *Standard* obovate, 10 – 12 mm; wings subequal to keel. *Fruit* a legume, 5 – 9 cm × 8 – 11 mm.

Flowering & Fruiting: July – October

Habitat: open, mountain forests, roadsides and forest edge

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11696 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, SE Asia to Australia; also introduced in Africa, America, and Europe.

Note: Leaves, shoots and flowers can be steamed or pickled and eaten as a vegetable. Various parts of the plant are used as medicines and for the treatment of alcohol hangovers (Miller and Edwards, 1983; van der Maesen, 1985).

Threat status: Not Evaluated

P. phaseoloides Benth. in J. Linn. Soc., Bot. 9: 125. 1865; Kanjilal *et al.*, Fl. Assam 2: 82. 1938; Li *et al.* in Fl. China 10: 245. 2010. *Dolichos phaseoloides* Roxb., Fl. India, ed. 1832, 3: 316. 1832.

Vernacular Name: Not known

Herbaceous *vines*. *Stipules* ovate-lanceolate, 3 – 5 mm; *leaflets* broadly ovate or ovate-rhomboid, terminal one broader, 6 – 10 × 4.5 – 9 cm, lateral ones smaller, oblique, entire or 3-lobed. *Inflorescence* in racemes, solitary, 8 – 15 cm or more. *Bracts* and *bracteoles* linear-lanceolate, 3 – 4 mm, hirsute. *Flowers* with short pedicels. *Calyx* c. 6 mm; lower tooth as long as tube, apex hirsute, others deltoid, shorter than tube. *Corolla* bluish or lilac;

standard 8 – 12 mm; wings obovate-oblong, slightly longer than keel; keel falcate, apex with short beak. Ovary linear, hairy. Fruit a legumes subcylindric, 5 – 8 cm × c. 4 mm.

Flowering & Fruiting: August – November

Habitat: mountainous and hilly areas

Specimen Examined: Included after Kanjilal *et al.* 1938.

Distribution: India, Bhutan, Cambodia, China, Laos, Malaysia (Peninsular), Myanmar, Nepal, Thailand, Vietnam; widely cultivated elsewhere in the tropics

Note: A decoction of the plant is used as an anti-infective agent. A poultice of the plant is applied to ulcers and boils, especially in children (Chopra *et al.*, 1886).

Threat status: Not Evaluated

Saraca L.

S. asoca (Roxb.) de Wilde, Blume 15 (2): 394. 1967; Deb, Fl. Tripura 1: 123. 1981.

Saraca indica Baker in Hook. f., Fl. Brit. India 2: 271. 1878.

Vernacular Name: Ashok (B)

Small tree. Bark blackish, wood reddish brown, soft. Leaves paripinnate; stipules united, pubescent, ovate-oblong; leaflets 4 – 6 pairs, large, oblong-lanceolate, subsessile, glabrous, purplish pink. Flowers fragrant, orange-scarlet, 2.5 – 4 cm long; pedicels red; bracts ovate, erect, persistent embracing the pedicel. Calyx yellowish orange to scarlet, corollaoid, cylindrical, 4 lobed. Corolla absent. Stamens 6 – 8. Ovary stipitate, ciliate.

Flowering & Fruiting: March – July

Habitat: Common, forest margin

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11474, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Sri Lanka, Bangladesh, Myanmar

Note: The bark is used for its medicinal value and it is reported to have a stimulating effect on the endometrium and ovarian tissue. The bark is useful in all cases of uterine bleeding where ergot is indicated (Website: http://www.ntbg.org/plants/plant_details.php?plantid=10217).

Threat status: Vulnerable B1+2c ver 2.3

Senna Mill.

1a. Shrubs, erect; leaflets 3 – 6 pairs.....*S. occidentalis*

1b. Annual herbs; leaflets 3 pairs.....*S. tora*

S. occidentalis (L.) Link, Handbuch 2: 140. 1831. *Cassia occidentalis* L., Sp. Pl. 1: 377. 1753.

Vernacular name: Coffee senna (E)

Shrubs, erect, glabrous. *Leavesc.* 20 cm; *stipules* lanceolate; *leaflets* 3 – 6 pairs, ovate-oblong, 4 – 10 × 2 – 3.5 cm, rounded at the base, acuminate at the apex. *Inflorescence* corymbose racemes, axillary or terminal; *bracts* linear-lanceolate. *Flowersc.* 2 cm; *calyx* unequal; *corolla* yellow, purplish veined. *Fertile* stamens 7, *staminodes* 3 without anthers or with tiny anthers. *Ovary* pubescent; *style* glabrous. *Legume* brown, flattened.

Flowering & Fruiting: Throughout the year

Habitat: riverbanks, sparse forests, wastelands

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11648, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, widely introduced in the tropics and subtropics.

Note: It mainly used to detoxify liver, use to cure internal bacterial and fungal disorders, to kill parasites and viruses, enhances immunity, and promotes perspiration. It is also helpful in cough, convulsions, reduces blood pressure, reduces spasms and as cardiogenic. Leaves are used in the treatment of gonorrhoea, fevers, urinary tract disorders and edema (Website: <http://ehpbihar.weebly.com/indian-plants.html>).

Threat status: Not Evaluated

S. tora (L.) Roxb., Flora Indica (ed. Carey) 2 1832. *Cassia tora* L., Sp. Pl. 1: 376. 1753; Baker in Hook.f., Fl. Brit. India 2: 263. 1878; Kanjilal *et al.*, Fl. Assam 2: 131. 1938; P.J.Bora & Y.Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 138. 2003

Vernacular Name: Medelua (A), Chakunda (B)

Annual herbs, erect, 1 – 2 m tall. *Leaves* 4 – 8 cm; *stipules* linear; *leaflets* 3 pairs, obovate-oblong, 2 – 6 × 1.5 – 2.5 cm, pubescent, cuneate to rounded and oblique at the base, rounded at the apex. *Inflorescence* axillary racemes; *bracts* linear, acute. *Calyx* ovate-oblong, 5 – 8 mm, abaxially pubescent. *Corolla* yellow, unequal, obovate, 12 – 15 × 5 – 7 mm. *Stamens* 7, fertile, almost equal; *anthersc.* 4 mm, 3 larger, 4 smaller. *Ovary* sessile, densely pubescent; *style* glabrous. *Legume* terete, 10 – 15 × 0.3 – 0.5 cm.

Flowering & Fruiting: July – November

Habitat: Common, mountain slopes, riverbank

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11575, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: native to tropical America; widely cultivated in the tropics and subtropics

Note: According to Ayurveda the leaves and seeds are acrid, laxative, antiperiodic, anthelmintic, ophthalmic, liver tonic, cardiogenic and expectorant. The leaves and seeds are useful in leprosy, ringworm, flatulence, colic, dyspepsia, constipation, cough, bronchitis, cardiac disorders (Website: <https://hort.purdue.edu/newcrop/CropFactSheets/cassia.html>).

Threat status: Not Evaluated

Spatholobus Hassk.

S. parviflorus Kuntze, Revis. Gen. Pl. 1: 205. 1891; Li *et al.* in Fl. China 10: 219. 2010. *Butea parviflora* Roxb. ex Candolle, Prodr. 2: 415. 1825. *Spatholobus roxburghii* Benth., Pl. Jungh. 2: 238. 1852; Kanjilal *et al.*, Fl. Assam 2: 75. 1938.

Vernacular Name: Hati bandhalata (A)

Woody climbers. *Petiole* 9 – 13 cm, puberulent; *stipels* subulate, *c.* 1.5 mm; *petiole* 5 – 6 mm, thick, puberulent; *leaflets* leathery, slightly puberulent abaxially, glabrous adaxially; *terminal leaflet* obovate or broadly elliptic, 14 – 17 × 9.5 – 12 cm, rounded at both ends or slightly narrowed at base; *lateral leaflets* asymmetric, broadly ovate, 12 – 16 × 6.5 – 10 cm, rounded at base, apex obtuse. *Inflorescence* 30 – 40 cm. *Calyx* 3 – 4 mm, pubescent. *Corolla* white or pinkish white; *standard* broadly ovate, 5 – 6 × 5.5 – 8 mm; *wings* 5 – 7.5 mm, auriculate, claw 3 – 4 mm; *keel* 4 – 5 mm. *Ovary* tomentose. *Fruit* a legume, falcate-oblong, 12 – 14 cm. Seeds brownish red.

Flowering & Fruiting: October – March

Habitat: slopes, open forests, along river bank

Specimen Examined: India, Assam, Cachar dist., Katakhal, September 1903, Shaik Mokim 126209 (CAL); Included after Kanjilal *et al.* 1938.

Distribution: India, Bangladesh, Cambodia, China, Laos, Myanmar, Sri Lanka, Thailand, Vietnam

Note: In Kerala a leaf paste is used to treat conjunctivitis (Vijayan *et al.* 2007). Gum extracted from the wood, fibre from the bark and oil from the seeds is reputed to have economic use in Bangladesh (Khatun, 2009).

Threat status: Least concern ver 3.1

Tamarindus L.

T. indica L., Sp. Pl. 1: 34. 1753, Baker in Hook.f., Fl. Brit. India 2: 273. 1878; Kanjilal *et al.*, Fl. Assam 2: 135. 1938; Deb, Fl. Tripura 1: 123. 1981; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 139. 2003.

Vernacular Name: Tetul (B), Teteli (A)

Tall trees. *Leaflets* oblong, small, 1.3 – 2.8 cm × 5 – 9 mm, obliquely rounded at base, rounded at apex. *Flowers* yellowish tinged with purplish stripes; *bracteoles* 2. *Calyx* lobes lanceolate-oblong, *c.* 1.2 cm. *Corolla* obovate, margin curled. *Stamens* 1.5 cm, pubescent near the base. *Ovary* terete, *c.* 8 mm, hairy. *Fruit* a legume, brownish.

Flowering & Fruiting: May – April of next year

Habitat: sparse forest

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11576 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Native to Africa; widely cultivated in the tropics

Note: The tender, immature, very sour pods are cooked as seasoning with rice, fish and meats in India. Tamarind leaves and flowers, dried or boiled, are used as poultices for swollen joints, sprains and boils. Lotions and extracts made from them are used in treating conjunctivitis, dysentery, jaundice, hemorrhoids and various other ailments, because of their antiseptics and vermifuges properties (Website: http://www.ntbg.org/plants/plant_details.php?plantid=10971).

Threat status: Not Evaluated

Tephrosia Pers.

T. candida DC., Prodr. 2: 249. 1825; Li *et al.* in Fl. China 10: 191. 2010.

Vernacular name: Not known

Herbs, perennial, 1 – 3.5 m tall. *Leaves* 17 – 25 foliolate; *petiole* 1 – 3; *leaflet* blades oblong, 3 – 6 × 0.6 – 1.4 cm. *Inflorescence* pseudoracemes, terminal or lateral, 15 – 20 cm. *Pedice*l c. 1 cm, densely villous. *Flowers* c. 2 cm. *Calyc*e. 5 × 5 mm; lobes equal, c. 1 mm, rounded at apex. *Corolla* white; standard densely sericeous. *Ovary* tomentose, numerous ovules. *Fruit* a legume, linear, 8 – 10 cm × 7.5 – 8.5 mm. *Seeds* 10 – 15 per legume.

Flowering & Fruiting: October – December

Habitat: grasslands, open places, slopes

Specimens Examined: India, Assam, NC Hills dist., Haflong, 20.12.1953, Bro. Goodfrey 163172 (CAL).

Distribution: native to India, China

Note: Powdered leaves are used as an insecticide. When the species becomes woody with age, it provides suitable fuel wood (Website: <http://tropical.theferns.info/viewtropical.php?id=Tephrosia+candida>).

Threat status: Not evaluated

Uraria Desv.

Straggling subshrubs; leaflets c. 5 × 2.5 cm.....*U. alopecuroides*

Subshrubs or shrubs; leaflet 4.5 – 13 × 1 – 2 cm.....*U. picta*

U. alopecuroides Sweet, Hort. Brit., ed. 2. 149; Wight, ic. t. 290. 1830.

Vernacular name: Not known

Straggling *subshrubs*; *stems* tomentose. *Leaflets* c. 5 × 2.5 cm, ovate-oblong, obtuse, hispid abaxially, subcordate at base; *petiole* 1.5 cm long; *stipule* 12 mm long, filiform. *Inflorescence* racemes, 2 cm broad; *bracts* ciliate. *Flowers* numerous, pedicelled; *calyx* lobes 10 mm long, upper lobes smaller; *standard* 7 × 5 mm, acute at base; *wings* 5 × 2 mm, clawed; *keel* 6 mm long.

Flowering & Fruiting: November – December

Habitat: Moist deciduous forests

Specimen Examined: Included after Dutt *et al.* 1974, D. 55.

Distribution: Indo-Malesia to Australia and Pacific Islands

Note: Pods and roots are used against ringworm (Khare, 2008).

Threat status: Not evaluated

U. picta (Jacq.) DC., Prodr. 2: 324. 1825; Li *et al.* in Fl. China 10: 286. 2010. *Hedysarum pictum* Jacq., Collectanea 2: 262. 1788.

Vernacular name: Sankarjata (B)

Subshrubs or shrubs. Leaves imparipinnate, 5 or 7 foliolate; *petiole* 4 – 7 cm; *leaflet* blades linear-oblong or narrowly lanceolate, terminal one 4.5 – 13 × 1 – 2 cm, rounded at base, narrowly acute at apex. *Inflorescence* raceme, terminal, 10 – 30 cm. *Pedicel* 5 – 6 mm. *Calyx* 5-lobed, ciliate; unequal. *Corolla* pink or pale blue, 5 – 6 mm; *standard* obovate, long clawed; *wings* auriculate, 4 – 7 mm; *keelc.* as long as wings. *Ovary* glabrous, 3 – 5-ovuled. *Fruit* a legume, glabrous.

Flowering & Fruiting: April – October

Habitat: Grassy slopes; 400 – 1500 m

Specimens Examined: India, Assam, Cachar dist., Monier Khal on the Sonai Road, 20.08.1903, A. T. Gage 121189, Fl. (BSI).

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

Note: This taxon is used in Nigeria to treat ectoparasites (parasites that live in hair or skin) in people and domestic animal (Groom, 2012). The pounded leaves are used in the treatment of gonorrhoea. The plant is said to be an antidote to the bites of phursa snakes in India (Uphof, 1959).

Threat status: Least Concern ver 3.1

41. POLYGALACEAE Hoffmanns. & Link.

- 1a. Herbs, shrubs or small trees, rarely woody climbers.....*Polygala*
1b. Trees or shrubs.....*Xanthophyllum*

Polygala L.

- 1a. Herbs.....2
1b. Shrubs or small trees.....*P. arillata*
2a. Ovary compressed-orbicular, c. 3 mm in diam.....*P. chinensis*
2b. Ovary ovoid, c. 0.5 mm in diam.....*P. longifolia*

P. arillata Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 199. 1825; Kanjilal *et al.*, Fl. Assam 1 (1): 97. 1934; Chen *et al.* in Fl. China 11: 145. 2008.

Vernacular Name: Yellow Milkwort, Red eye, Marcha Plant (E)

Shrubs or small trees. *Petiole* c. 1 cm, pubescent; *leaf blade* green, oblong-elliptic to oblong-lanceolate, 6.5 – 14 × 2 – 2.5 cm, papery, both surfaces sparsely pubescent,

cuneate or obtuse at base, margin entire, ciliate, acuminate at apex. *Inflorescence* in racemes, opposite to leaves, drooping, densely pubescent, 7 – 10 cm. *Pedicel* c. 3 mm, pubescent; *bract* 1, basal, triangular-acuminate. *Flowers* 1.3 – 2 cm. *Calyx* 5, unequal, pubescent; outer calyx 3, small, upper one deeply cucullate, 8 – 9 mm, lateral calyx ovate, c. 5 × 3 mm; inner calyx 2, red-purple, oblong-obovate, 1.5 – 1.8 cm. *Corolla* 3, connate at base, yellow, slightly fleshy; keel longer than lateral corolla. *Stamens* 8; filaments c. 1.4 cm, adnate with corolla; *anthers* ovoid. *Disk* fleshy. *Ovary* compressed globose, c. 3 mm in diam., narrowly winged, ciliate; *style* 8 – 12 mm, apex 2-lobed; *stigma* on lower lobes. *Fruit* a capsule, purple-red at maturity, c. 1 cm, margin winged.

Flowering & Fruiting: May – November

Habitat: Forests, forest margins on mountain slopes

Specimen Examined: Included after Kanjilal *et al.* 1934.

Distribution: India, Bhutan, Cambodia, China, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam.

Threat status: Not evaluated

P. chinensis L., Sp. Pl. 2: 704. 1753; Chen *et al.* in Fl. China 11: 154. 2008. *Polygala glomerata* Lour., Fl. Cochinch. 2: 426. 1790; Kanjilal *et al.*, Fl. Assam 1 (1): 98. 1934.

Vernacular Name: Field Milkwort (E), Mirdoi (H)

Herbs, erect, 10 – 25 cm tall. *Stems* woody at base. *Petiole* c. 1 mm, pubescent; *leaf blade* green, obovate, elliptic or lanceolate, 2.6 – 10 × 1 – 1.5 cm, pubescent, cuneate to rounded or cordate at base, margin entire, obtuse or acuminate at apex. *Inflorescence* in racemes, super – axillary, densely few flowered. *Pedicel* c. 1.5 mm; *basal bracts* 2, caducous. *Flowers* c. 4.5 mm. *Calyx* 5-lobed, green, ciliate; outer calyx 3, ovate-lanceolate, c. 2 mm; inner calyx 2, petaloid, falcate, c. 4.5 mm. *Corolla* 3-lobed, connate at base, yellowish or white with pink; keel c. 4 mm. *Stamens* 8; anthers narrowly ovoid. *Ovary* compressed-orbicular, c. 1 mm in diam., ciliate; *style* curved; *stigma* in hook. *Fruit* a capsule, globose, narrowly winged, ciliate. *Seeds* black, ovoid.

Flowering & Fruiting: April – November

Habitat: Grasslands, shrub forests on slopes of hills; 500 – 1100 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11446, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Cambodia, China, Indonesia, Laos, Malaysia, New Guinea, Philippines, Thailand, Vietnam

Threat status: Not evaluated

P. longifolia Poir., Encycl. 5: 501. 1804; Chen *et al.* in Fl. China 11: 155. 2008. *Polygala discolour* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 199. 1825. *Polygala leptalea* DC., Prodr. 1: 325. 1824; Kanjilal *et al.*, Fl. Assam 1 (1): 98. 1934.

Vernacular Name: Not known

Herbs annual. *Stems* winged or ridged, sparsely pubescent. *Leaves* sessile; *leaf blade* papery; basal leaves dense, ovate, 5 – 10 × c. 5 mm; upper leaves sparse, elliptic-lanceolate; subterminal leaves linear-lanceolate, 2 – 2.5 × 0.2 – 0.5 cm, green, glabrescent, cuneate at base, margin entire, acuminate at apex. *Inflorescence* in racemes, terminal, densely flowered; *bracteoles* 3, caducous, pubescent, c. 2 mm. *Calyx* 5, persistent; outer calyx 3; inner calyx 2, petaloid, obovate, unguiculate at base, rounded at apex. *Corolla* 3, connate at base, pink or purplish. *Stamens* 8; *anthers* yellow, ovoid. *Ovary* ovoid, c. 0.5 mm in diam.; *style* curved, hooklike; *stigma* mammilliform. *Fruit* a capsule, oblong.

Flowering & Fruiting: August – November

Habitat: Forest margins, grasslands on slopes of hills; 1100 – 1400 m.

Specimen Examined: Included after Kanjilal *et al.* 1934.

Distribution: India, Cambodia, China, Indonesia, Kashmir, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Australia

Note: This plant is widely used by the rural communities of Nepal to prepare yeast cake known as “Marcha”.

Threat status: Not evaluated

Xanthophyllum Roxb.

X. flavescens Roxb., Pl. Coromandel 3: 82. 1820; Kanjilal *et al.*, Fl. Assam 1 (1): 99. 1934; Chen *et al.* in Fl. China 11: 140. 2008.

Vernacular Name: Not known

Trees. *Petiole* c. 1 cm, adaxially sulcate; *leaf blade* greenish, lanceolate or oblong-lanceolate, 10 – 24 × 2.5 – 6.5 cm, both surfaces glabrous, cuneate at base, margin sometimes undulate, acuminate at apex. *Inflorescence* in racemes or panicles, terminal or axillary; *peduncles* usually compressed, c. 9 mm; *pedicels* c. 6 mm; *bracteoles* triangular-subulate, c. 1 mm, densely yellow tomentose. *Flowers* usually subopposite. *Calyx:* outer 2 elliptic – ovate, c. 2.5 × 1.8 – 2.3 mm, both surfaces tomentose; inner 3 obovate-elliptic, c. 3.5 × 2.3 mm, both surfaces pubescent. *Corolla* white, 6 – 7 mm, keel abaxially tomentose. *Stamens* 8, 5 – 7 mm; filaments villous; *anthers* c. 0.8 mm. *Disk* annular. *Ovary* subglobose, c. 1.5 mm in diam.; *style* c. 6 mm, villous; *stigma* slightly lobed. *Fruit* a drupe green when young.

Flowering & Fruiting: March – July

Habitat: damp dense forests; 500 – 2000 m.

Specimen Examined: India, Assam, Cachar dist., Sonai Reserve, 04.12.1914, U. Kanjilal 36585 (CAL); Included after Kanjilal *et al.* 1934; also included after Dutt *et al.* 1974, D. 283.

Distribution: India, Cambodia, Laos, Myanmar, Thailand

Note: The bark is used in the treatment of colic. Parts of the plant are used in beverages. The leaves are exploited as manure for rice fields. The tree is sometimes cultivated as a

fence in India
(Website: <http://tropical.theferns.info/viewtropical.php?id=Xanthophyllum+flavescens>).
Threat status: Not evaluated

42. ROSACEAE Juss.

- 1a. Stamens 20 – 30, in 2 whorls.....*Prunus*
1b. Stamens numerous, sometimes few.....*Rubus*

Prunus L.

P. ceylanica Miq., Fl. Ned. India i. 366. 1855. *Polydontia ceylanica* Wight Ill 1. 203. 1840. *Pygeum acuminatum* Coleb in Trans. Linn. Soc. London 12: 360. t. 18. 1818; Fl. Brit. India 2: 318. 1879; Kanjilal *et al.*, Fl. Assam 2: 185. 1938. *Pygeum gardneri* Hook. f., Fl. Brit. India 2: 321. 1879.

Vernacular Name: Ceylon Cherry (E)

Evergreen tree, to 15 m tall. *Leaves* coriaceous, ovate, elliptic or oblong, 5 – 15 × 3 – 7 cm, glabrous, glossy, acute to shortly acuminate to caudate at base, margin entire; *petiole* 1.5 – 3 cm long, stout. *Inflorescence* axillary, racemes, solitary, puberulous. *Flower* yellowish-green; *calyx tube* urceolate, 3mm, 5 lobed, 2 mm; *corolla* 5-lobed, ovate, white, pubescent; 12 mm long. *Stamenc.* 20; *filaments* 4 mm long. *Carpel* solitary. *Fruit* a drupe, glabrous, bilobed.

Flowering & Fruiting: July – February

Habitat: moist shady hills, along streams; above 450 m

Specimen Examined: Included after Kanjilal *et al.* 1938.

Distribution: India, Bangladesh, Nepal, Laos, Myanmar, South Vietnam, Sri Lanka, Thailand

Threat status: Endangered B1+2c ver 2.3

Rubus L.

- 1a. Ovary pubescent*R. ellipticus*
1b. Ovary glabrous.....*R. rosifolius*

R. ellipticus Sm. in Rees, Cycl. 30. n. 16. 1815; Kanjilal *et al.*, Fl. Assam 2: 196. 1938; Lingdi & Boufford in Fl. China 9: 212. 2003.

Vernacular Name: Yellow Himalayan Raspberry (E), Jotelupoka (A)

Shrubs. *Leaves* imparipinnate, 3-foliolate; *petiole* 2 – 6 cm; *stipules* linear, 7 – 11 mm, pubescent; *leaflets blades* elliptic or obovate, 4 – 8 × 3 – 6 cm, rounded at base, margin unevenly minute, sharply serrate, acute at apex, abruptly pointed, shallowly cordate or subtruncate. *Inflorescences* terminal, racemes, 2 – 4 cm; *bracts* linear, 5 – 9 mm, pubescent. *Pedicel* 4 – 6 mm. *Flowers* 1 – 1.5 cm in diam. *Calyx* abaxially pubescent,

erect, ovate, 4 – 5 × 2 – 3 mm, acute and abruptly pointed at apex. *Corolla* white or pink, spatulate, longer than calyx. *Stamens* numerous, shorter than corolla. *Ovary* pubescent; *styles* glabrous. *Fruit* golden yellow, subglobose, c. 1 cm in diam.

Flowering & Fruiting: March – May

Habitat: Slopes, montane valleys, sparse forests, thickets, roadsides; 300 – 2000 m.

Specimen Examined: Included after Kanjilal *et al.* 1938.

Distribution: India, Bhutan, China, Laos, Myanmar, Nepal, Pakistan, Philippines, Sikkim, Sri Lanka, Thailand, Vietnam

Note: The plant is astringent and febrifuge. A decoction of the root, combined with *Girardinia diversifolia* root and the bark of *Lagerstroemia parviflora*, is used in the treatment of fevers. The juice of the root is used in the treatment of fevers, gastric troubles, diarrhoea and dysentery. A purple to dull blue dye is obtained from the fruit (Manandhar and Manandhar, 2002).

Threat status: Not evaluated

R. rosifolius Sm., Pl. Ic. Ined. iii. t. 60. 1791; Kanjilal *et al.*, Fl. Assam 2: 200. 1938; Lingdi & Boufford in Fl. China 9: 227. 2003.

Vernacular Name: Rose-leaf Bramble (E)

Shrubs, erect or climbing, 2 – 3 m tall. *Leaves* imparipinnate; petiole 2 – 3 cm; *stipules* linear or lanceolate, 0.8 – 1.2 cm × 1.5 – 3.5 mm; *leaflet blades* ovate or ovate-elliptic to lanceolate, 4 – 7 × 1.5 – 5 cm, both surfaces pilose, rounded at base, margin serrate, acuminate at apex. *Inflorescences* terminal or in leaf axils, 1- or 2-flowered; *bracts* linear or lanceolate, 5 – 9 mm, puberulous. *Pedicel* 2 – 3.5 cm. *Flowers* 2 – 5 cm in diam. *Calyx* erect before anthesis, reflexed after anthesis, triangular – lanceolate or ovate – lanceolate, 0.8 – 1.2 cm × 4 – 6 mm. *Corolla* white, oblong, 0.8 – 1.5 × 0.8 – 1.2 cm, clawed at base, obtuse at apex. *Stamens* many, shorter than corolla. *Pistils* to 2 mm; *ovary* glabrous; *styles* glabrous. *Fruit* red, ovoid-globose or narrowly obovoid to oblong, glabrous.

Flowering & Fruiting: March – July

Habitat: Mixed forests, grassy slopes, roadsides, landslides. Low to medium elevations

Specimen Examined: Included after Kanjilal *et al.* 1938.

Distribution: India, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam; Africa, Australia

Note: Fruits edible. Fruits can be made into jams, pies and preserves. Leaves are used in traditional medicine and are made into tea for the treatment of painful menstruation, childbirth, flu and morning sickness (Website: <http://www.cabi.org/isc/datasheet/118972>).

Threat status: Not evaluated

43. RHAMNACEAE Juss.

- 1a. Styles 2-fid.....2
1b. Styles 2, 3 or 4-fid.....3

- 2a. Flowers polygamous, cymose racemes or cymose panicles; fruit a capsule.....*Gouania*
 2b. Flowers few in fascicles or in shortly pedunculate cymes or cymose panicles; fruit indehiscent samara.....*Ventilago*
 3a. Ovary superior.....4
 3b. Ovary semi-inferior.....*Hovenia*
 4a. Petals spatulate, apex 2-lobed to deeply emarginate.....*Sageretia*
 4b. Petals clawed, obovate or spatulate, rarely absent.....*Ziziphus*

Gouania Jacq.

G. leptostachya DC., Prodr. 2: 40. 1825; Kanjilal *et al.*, Fl. Assam 1 (2): 286. 1934; Chen & Schirarend in Fl. China 12: 163. 2007.

Vernacular Name: Batvaasi (B)

Shrubs, climber. *Leaves* alternate; *stipules* lanceolate and caducous; *petiole* 1 – 2.5 cm, pilose; *leaf blade* green, ovate or ovate-oblong, 5 – 9 × 2.5 – 5 cm, cordate at base, margin crenate-serrate, acuminate at apex. *Inflorescence* solitary or in fascicles and cymes, axillary cymose racemes, and terminal cymose panicles, upto 30 cm, pilose. *Flowers* polygamous, 5-merous. *Pedicel* c. 1 mm. *Calyx* ovate-triangular. *Corolla* white, obovate, hooded. *Disk* distinctly pentagonous. *Styles* short, 3-fid. *Fruit* a capsule, 9 – 10 mm, 3-winged.

Flowering & Fruiting: August – December

Habitat: Forests; low to middle elevations.

Specimen Examined: Included after Kanjilal *et al.* 1934.

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

Note: The pulped stems, roots and leaves are used to treat skin complaints. A decoction of the bark is used as a hair wash (Uphof, 1959).

Threat status: Not evaluated

Hovenia Thunb.

H. dulcis Thunb., Nov. Gen. Pl. 1: 8. 1781; Kanjilal *et al.*, Fl. Assam 1 (2): 282. 1934; Chen & Schirarend in Fl. China 12: 118. 2007.

Vernacular Name: Japanese Raisin Tree (E), Chetia-bola (A)

Trees, rarely *shrubs*. *Petiole* 2 – 4.5 cm, glabrous; *leaf blade* ovate, broadly oblong or elliptic-ovate, 7 – 17 × 4 – 11 cm, papery, both surfaces glabrous or abaxially pilose on major veins, truncate, rarely cordate or subrounded at base, margin serrate, acuminate at apex. *Inflorescence* terminal, asymmetrical cymose panicles. *Flowers* yellow-green, 6 – 8 mm in diam. *Calyx* ovate-triangular, 2.2 – 2.5 × 1.6 – 2 mm, glabrous. *Corolla* obovate-spatulate, 2.4 – 2.6 × 1.8 – 2.1 mm. *Ovary* globose; style shortly 3-fid, 2 – 2.2 mm, glabrous. *Fruit* a nut, black at maturity, subglobose, glabrous, 3-seeded.

Flowering & Fruiting: May – October

Habitat: Secondary forests, also cultivated in gardens; 200 – 1400 m.

Specimen Examined: Included after Kanjilal *et al.* 1934.

Distribution: India, China, Japan, Korea, Thailand

Note: The fruit is antispasmodic, febrifuge, laxative and diuretic. The seeds are diuretic and are used in the treatment of alcohol overdose (Duke and Ayensu, 1985).

Threat status: Not evaluated

Sageretia Brongn.

S. filiformis G. Don, Gen. Hist. 2: 29. 1832. *Rhamnus filiformis* Roth, Nov. Sp. 153. 1821. *Sageretia oppositifolia* Brongn. in Ann. Nat. Sci. Ser. 1. (10). 360. 1827; Lawson in Hook. f., Fl. Brit. Ind. 1: 641. 1882; Kanjilal *et al.*, Fl. Assam 1 (2): 284. 1934.

Vernacular Name: Not known

Shrub or *small tree* with spiny branches. *Leaves* 4 – 10 × 1.5 – 4 cm, ovate lanceolate, acute or acuminate at apex, margin serrate, rounded or subcordate base. *Petiole* 0.5 – 1 mm long. *Inflorescence* a branched raceme. *Flowers* sessile, 2 mm in diam., greenish yellow; *calyx* lobes excluding tube, c. 1 mm long; *corolla* less than 1 mm long; *stamens* c. 1 mm long. *Disc* deeply cup shaped. *Fruit* c. 5 mm long, obovoid, edible.

Flowering & Fruiting: June – August

Habitat: open forest

Specimen Examined: Included after Kanjilal *et al.* 1934; also included after Dutt *et al.* 1974, D. 139.

Distribution: India, Nepal, subtropical Himalayas, Concan and Java.

Note: Fruit edible (Website: <http://biodiversity.bt/species/show/6180>).

Threat status: Not evaluated

Ventilago Gaertn.

V. denticulata Willd., Neue Schriften Ges. Naturf. Freunde Berlin iii. 417. 1801. *Ventilago calyculata* Tulasne, Ann. Sci. Nat., Bot., sér. 4. 8: 124. 1857; Kanjilal *et al.*, Fl. Assam 1 (2): 277. 1934.

Vernacular Name: Not known

Shrubs scandent. *Petiole* 5 – 8 mm; *leaf blade* ovate to elliptic, 5 – 13 × 3 – 6 cm, broadly cuneate or subrounded at base, lower margin entire, upper margin remotely serrate, acuminate at apex. *Flowers* numerous, in cymes, terminal or axillary, 10 – 30 cm; rachis, calyx and pedicels pubescent. *Pedicel* very short, c. 1 mm. *Calyx* ovate-triangular. *Corolla* spatulate, c. as long as stamens. *Disk* thick, fleshy, 5-lobed, ferruginous. *Ovary* globose, pilose; *styles* deeply 2-cleft. *Fruit* a drupe, yellow-green, 4.5 – 6 cm, puberulent.

Flowering & Fruiting: October – April

Habitat: Forests; middle elevations

Specimen Examined: Included after Dutt *et al.* 1974, D. 274.

Distribution: India, Bhutan, China, Nepal, Thailand, Vietnam

Note: Whole plant is medicinally useful.

Threat status: Not evaluated

Ziziphus Mill.

Leaves ovate-elliptic or elliptic-oblong, 3 – 7 × 1.5 – 4 cm, papery.....*Z. jujuba*

Leaves ovate-orbicular, broadly elliptic, denticulate, 5 – 12.5 × 4 – 6 cm.....*Z. rugosa*

Z. jujuba Mill., Gard. Dict., ed. 8. n. 1. 1768; Kanjilal *et al.*, Fl. Assam 1 (2): 279. 1934; Chen & Schirarend in Fl. China 12: 120. 2007.

Vernacular Name: Bogori (A)

Trees small, rarely *shrubs*, deciduous. *Leaf blade* ovate-elliptic or elliptic-oblong, 3 – 7 × 1.5 – 4 cm, papery, faintly asymmetric, subrounded at base, margin crenate-serrate, obtuse or rounded, rarely acute at apex. *Flowers* yellow-green, bisexual, 5-merous, glabrous, solitary or axillary cymes. *Pedicel* 2 – 3 mm. *Calyx* ovate-triangular, adaxially keeled. *Corolla* obovate, c. as long as stamens, clawed at base. *Disk* fleshy, 5-lobed. *Ovary* basally slightly immersed in disk; *style* 2-cleft to half. *Fruit* a drupe, red at maturity, oblong or narrowly ovoid.

Flowering & Fruiting: May – October

Habitat: Mountains, hills, plains, also widely cultivated; below 1700 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11706 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, cultivated in Africa, Asia, Europe, and North and South America

Note: Fruits are edible (local use).

Threat status: Least Concern ver 3.1

Z. rugosa Lam., Encycl. 3 (1): 319. 1789; Kanjilal *et al.*, Fl. Assam 1 (2): 281. 1934; Chen & Schirarend in Fl. China 12: 123. 2007.

Vernacular Name: Suran (H), Bon-boroi (Sylh.)

Small *tree* or straggling *shrub*, upto 6m with stipular spines. *Leaves* 5 – 12.5 × 4 – 6 cm, ovate-orbicular, broadly elliptic, denticulate, oblique at base, acute at the apex, *petiole* 0.8 – 1.5 cm long, densely hairy. *Inflorescence* pedunculate cymes, densely pubescent. *Pedicel* to 4 mm long. *Calyx* puberulous inside, 1.5 – 2 mm long, lobes ovate, acute. *Corolla* absent. *Disk* 5-lobed; *styles* 2, connate below the middle. *Fruit* a drupe, 1.3 cm, globose, white, glabrous.

Flowering & Fruiting: November – January

Habitat: Common, in hills; dry slopes of above 1000 m.

*Specimen Examined:*India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalain Range, 26.11.2014, A. Bora & D. Bhattacharyya 11705, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Sri Lanka and Myanmar

Note: The flowers with an equal quantity of the petioles of the betel leaf and half as much lime are given in 4 grain pills twice a day for menorrhagia (Website: <http://www.mpbd.info/plants/zizyphus-rugosa.php>).

Threat status: Not evaluated

44. ULMACEAE Mirbel

1a. Ovary sessile, basally with perigynous pubescence.....*Trema*

1b. Ovary absent or inconspicuous*Aphananthe*

Aphananthe Planch.

A. cuspidata (Blume) Planch., Prodr. 17: 209. 1873; Fu *et al.* in Fl. China 5: 12. 2004. *Girroniera reticulata* Thwaites, Enum. Pl. Zeyl. 268. 1861; Kanjilal *et al.*, Fl Assam 4: 229. 1940.

Vernacular Name: Not known

Trees, to 15 – 20 m tall. *Stipules* lanceolate, abaxially pubescent. *Petiole* 7 – 12 mm, slender, glabrous; *leaf blade* ovate or oblong-lanceolate, 5 – 15 × 2 – 7 cm, rounded to broadly cuneate at base, usually entire but occasionally inconspicuously serrate at margin, caudate-acuminate at apex. *Male flowers:* in pairs or in 3-7 cm cymes. *Tepals* 5, obovate-oblong. Anthers glabrous. *Female flowers:* solitary. *Perianth* 5-lobed; *tepals* narrowly ovate, c. 2 mm. *Drupes* ovoid, glabrous.

Flowering & Fruiting: March – December

Habitat: slopes on hills; 100 – 900 m

*Specimen Examined:*Included after Kanjilal *et al.* 1940.

Distribution: India, Bhutan, China, Indonesia, Malaysia, Myanmar, Sikkim, Sri Lanka, Thailand, Vietnam

*Note:*It is taken internally with lemon juice as a purifier of blood, for relieving itches and other cutaneous eruptions. The bark is depurative. (website: <http://tropical.theferns.info/viewtropical.php?id=Aphananthe+cuspidata>).

Threat status: Not Evaluated

Trema Lour.

T. orientalis Blume, Mus. Bot. 2 (1 – 8): 62. 1856. *Celtis commersonii* Brongn., Voy. Monde, Phan. 215. 1834. *Celtis discolor* Brongn., Voy. Monde, Phan. 215, t. 47, fig. B. 1834.

*Vernacular Name:*Gunpowder tree (E), Jiban (B)

Dioecious *trees*, to 15 m high; *branchlets* scabrous to adpressed pubescent. *Leaves* simple, alternate; *stipules* lateral, cauducous; *petiole* 5 – 10 mm, tomentose; *lamina* 7.5 – 15 × 2.5 – 6 cm, ovate-lanceolate, ovate or oblong-lanceolate, obliquely cordate at base, acuminate at apex, serrulate at margin, scabrid above, tomentose beneath, chartaceous, 3 – 5-ribbed from base, prominent. *Flowers* unisexual, 3 – 4 mm across, greenish, in axillary fascicles or cymes; *male flowers*: usually sessile; tepals 4 or 5, equal, 2 mm long, ciliate; stamens 5; pistillode oblong; *female flowers*: tepals unequal, ciliate; ovary superior, sessile, 1-celled, ovate; style bifid, villous; stigma plumose. *Fruit* a drupe, 4 × 3 mm, globose, black; *seed* globose.

Flowering & Fruiting: April – December

Habitat: moist forests, dry scrub of open slopes; 400 – 1900 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11528, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia, Japan, Malaysia, Myanmar, Nepal, Sikkim, Sri Lanka, Thailand, Vietnam; Australia, Pacific Islands

Note: Both bark and leaf decoctions are used as a gargle, inhalation, drink, lotion, bath or vapour bath for coughs, sore throat, asthma, bronchitis, gonorrhoea, yellow fever, toothache (website: <http://tropical.theferns.info/viewtropical.php?id=Trema%20orientalis>).

Threat status: Not Evaluated

45. CANNABACEAE Martinov

Cannabis L.

C. sativa L., Sp. Pl. 1027. 1753; Hook. f., Fl. Brit. India 5: 487. 1888; Kanjilal *et al.*, Fl. Assam 4: 278. 1940; Deb, Fl. Tripura 1: 207. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 317. 2003.

Vernacular Name: Bhang (A)

Slender aromatic *herb*. *Leaves* alternate; upper ones often 1 – 3 and lower ones 5 – 11 foliolate; *leaflets* 5 – 14 × 0.2 – 1.5 cm, serrate, acuminate, sessile, pubescent, narrowly lanceolate; *stipules* lateral. *Flowers* white, small. *Male flowers* in axillary penicled cymes, tepals ciliate. *Fruit* compressed, crustaceous nut.

Flowering & Fruiting: April – December

Habitat: along the roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidaha, 03.03.2012, A. Bora & D. Bhattacharyya 11324, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Africa, America, Malaysia and Myanmar

Note: In India, historical medical literature has some of the earliest accounts of its medicinal utilization. It was used in combination with henbane as an anesthetic for surgery. They also used cannabis preparations externally as antiseptics and analgesics

(Website: <https://www.planetherbs.com/specific-herbs/topical-uses-for-cannabis-sativa-1.html>).

Threat status: Not Evaluated

46. MORACEAE Gaudich.

- 1a. Trees, evergreen or deciduous.....*Artocarpus*
- 1b. Trees, shrubs, climbers, woody climbers, stranglers or sometimes woody epiphytes.....2
- 2a. Fruit a achene.....3
- 2b. Fruit a drupe.....*Streblus*
- 3a. Inflorescences a fig (syconium), axillary or on specialized cauliflorous branches.....*Ficus*
- 3b. Inflorescences axillary, spicate to capitate, solitary or dichotomously branched cymes.....4
- 4a. Stamen 4.....*Morus*
- 4b. Stamen 2 – 4.....*Poikilospermum*

Artocarpus J.R.Forst. & G.Forst.

- 1a. Plant deciduous, bracts present.....2
- 1b. Plant evergreen.....3
- 2a. Fruit a drupe, ellipsoid, c. 10 × 6 mm.....*A. chama*
- 2b. Fruit a syncarp, cylindrical to globose, c. 20 – 35 × 10 – 15 cm.....*A. integer*
- 3a. Fruits oblong, tubercled or verrucose.....*A. heterophyllus*
- 3b. Fruits nearly round or irregular, velvety, with sweet sour pulp.....*A. lacucha*

A. heterophyllus Lam., Encycl. Meth. 3: 210. 1789; Deb, Fl Tripura 1: 209. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 318. 2003. *A. integrifolia* auct. non Linn. f. 1782; King in Hook. f., Fl. Brit. India 5: 541. 1988; Kanjilal *et al.*, Fl. Assam 4: 268. 1940.

Vernacular Name: Kathal (A)

Large evergreen *tree* with dense crown; young shoots with stiff hairs. *Leaves* 5 – 18 × 4 – 9 cm, elliptic or obovate, coriaceous, base cuneate, dark-green above, pale and rough beneath, stipules large, caducous. *Flowers* in cylindrical axillary and terminal heads, enclosed in large leathery deciduous stipitate sheaths. *Perianth* 2-lobed. *Stigma* spatulate in femal heads. *Fruits* oblong, tubercled or verrucose.

Flowering & Fruiting: March – August

Habitat: Common, along roadside and foothills

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11570, Frt. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Malaysia

Note: Eaten as fruit and vegetable.

Threat status: Not Evaluated

A. chama Buch.–Ham. in Mem. Wern. Soc. 5: 331. 1826. *Artocarpus chaplasha* Roxb., Fl. India ed. 1832 3: 525 1832; Kanjilal *et al.*, Fl. Assam 4: 267. 1940.

Vernacular Name: Cham (A)

Trees, deciduous. *Stipules* present. *Leaves* spirally arranged; *petiole* 1.5 – 4.5 cm, densely pubescent; *leaf blade* elliptic, oblong or ovate, 13 – 37 × 6 – 21 cm, broadly cuneate to rounded at base, margin entire or crenate, acute to shortly acuminate at apex. *Inflorescences* axillary, solitary. *Male inflorescences* ellipsoid or clavate, 1.2 – 2.3 × 1 – 1.8 cm; *bracts* many; *pedicel* c. 2 mm, shortly pubescent. *Female inflorescences* globose to ellipsoid; bracts present. *Male flowers:* *calyx* 2 – 3-lobed, c. 5 mm, margin ciliate; *filaments* short; anthers ellipsoid. *Fruit* a drupe, ellipsoid, c. 10 × 6 mm.

Flowering & Fruiting: March – Rainy season

Habitat: forest, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11764, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Bangladesh, Bhutan, India, Laos, Malaysia, Myanmar, Sikkim, Thailand

Note: The wood is used to manufacture carriage wheels, tea boxes, packing cases etc. It is also used in construction, joinery, turnery, sculpture. When making furniture, it can give better results than Teak (Chnacerel, 1920).

Threat status: Not Evaluated

A. integer (Thunb.) Merr., *Interpr. Herb. Amboin.* 190 1917; Kanjilal *et al.*, Fl. Assam 4: 268. 1940. *Artocarpus integrifolius* L.f., *Suppl. Pl.* 412. 1782.

Vernacular Name: Kathal (A, B)

Small to medium sized *tree*. Twigs, leaves and buds with long strong hairs. *Stipules* ovate. *Leaves* leathery, obovate to elliptic, c. 5 – 25 × 2.5 – 12 cm, cuneate to rounded at base, margin entire, acuminate at apex. *Inflorescence* solitary, axillary, cauliflorous. *Male heads* cylindrical, 3 – 5.5 × 1 cm, whitish-yellow. *Female heads* with filiform styles, exserted. *Fruit* a syncarp, cylindrical to globose, c. 20 – 35 × 10 – 15 cm.

Flowering & Fruiting: February – September

Habitat: wet hillsides; 500 – 1300 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 18.05.2013, A. Bora & D. Bhattacharyya 11765, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Myanmar, Thailand, Peninsular Malaysia, Sumatra, Java, Borneo, Celebes, Moluccas, New Guinea

Note: Fruit is eaten raw or cooked. Young leaves are cooked and used as a vegetable (Facciola, 1998).

Threat status: Not Evaluated

A. lacucha Buch.-Ham. in Mem. Wern. Soc. 5: 333. 1826. *Artocarpus lakoocha* Roxb., *Fl. India ed. 1832* 3: 524 1832; Kanjilal *et al.*, *Fl. Assam* 4: 268. 1940.

Vernacular Name: Monkey Jack (E), Bohot (A), Dewa (B)

Deciduous tree, 10 – 15 m tall. *Branchlets* densely covered with velvety hairs. *Stipules* ovate, 4 – 5 cm long. *Leaves* elliptic; *petiole* 2 – 3 cm, densely covered with bristles. *Leaflets* 25 – 30 × 15 – 20 cm, wedge-shaped at base, rounded at apex, margin entire or with small teeth. *Flowers* tiny, yellowish, fused. *Fruits* nearly round or irregular, velvety, with sweet sour pulp.

Flowering & Fruiting: February – Rainy season

Habitat: forest, foothills

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11766, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout the Indian Subcontinent and Southeast Asia

Note: The sap and juice of the bark is applied externally to boils, pimples, cuts and wounds. The root is astringent and is also used as a purgative. The macerated bark is used as a poultice for treating skin ailments. The bark is used to treat headache (Website: <http://tropical.theferns.info/viewtropical.php?id=Artocarpus+lacucha>).

Threat status: *Threat status:* Not Evaluated

Ficus L.

1a. Trees, shrubs or epiphytes	2
1b. Trees.....	5
2a. Trees or shrubs.....	3
2b. Usually epiphytic r trees, stamen 1.....	<i>Ficus rumphii</i>
3a. Shrubs; stamens 2 or 3.....	<i>Ficus abelii</i>
3b. Shrubs or small trees; stamen 1 or 2 – 3.....	4
4a. Leaves alternate.....	<i>Ficus hirta</i>
4b. Leaves opposite.....	<i>Ficus hispida</i>
5a. Aerial roots form prop roots.....	<i>Ficus benghalensis</i>
5b. Roots not as above.....	6
6a. Leaves broadly ovate.....	7
6b. Leaves ovate-elliptic, ovate-lanceolate or oblong-lanceolate.....	8
7a. Leaves alternate, broadly ovate, coriaceous, undulate, apex acuminate forming a long tail, cordate or rounded at base.....	<i>Ficus religiosa</i>
7b. Leaves alternate, broad, ovate, membranous, 12 × 15 cm, cordate at base and toothed at margin.....	<i>Ficus palmata</i>

8a. Fig paired or solitary.....	9
8b. Fig not as above, on main branches, reddish orange when mature, globose.....	<i>Ficus fistulosa</i>
9a. Stamen 1.....	10
9b. Stamen 1 or 2.....	11
10a. Leaves ovate-elliptic; figs paired.....	<i>Ficus benjamina</i>
10b. Leaves elliptic, oblong or obovate-lanceolate; figs paired or solitary.....	<i>Ficus nervosa</i>
11a. Stamens 2; stipules 1.5 – 2 cm.....	<i>Ficus racemosa</i>
11b. Stamen 1 or 2; Stipule 2 – 3.5 cm.....	12
12a. Petiole 1.5 – 3 cm.....	<i>Ficus prostrata</i>
12b. petiole 5 – 10 mm.....	<i>Ficus semicordata</i>

F. abelii Miq. in Ann. Mus. Bot. Lugduno-Batavi iii. 281. 1867. *Ficus schinzii* H.Lév. & Vaniot in Repert. Spec. Nov. Regni Veg. 8: 550. 1910.

Vernacular Name: Not known

Shrubs, scandent. Stipules lanceolate, c. 4 mm, sparsely pubescent. Petiole 4 – 10 mm, pubescent; leaf blade narrowly elliptic to oblanceolate, 4 – 9 × 1 – 2 cm, papery, cuneate at base, entire at margin, shortly acuminate to acute at apex. Figs axillary on normal leafy shoots, solitary, brown red when mature, pear-shaped, 1.5 – 2 cm in diam., densely covered with short stiff hairs, attenuated into a stalk at base, apical pore navel-like; peduncle 7 – 10 mm; involucre bracts hairy. Male flowers: scattered, subsessile; calyx 3-lobed, shorter than stamens; stamens 2 or 3, unequal; anthers longer than filaments. Gall flowers: together with male flowers; calyx lobes connate, apically 3- or 4-lobed; ovary globose, with sparse small tubercles; style lateral, short. Female flowers: without calyx; style subapical, long; style linear. Achenes reniform.

Flowering & Fruiting: May – July

Habitat: Lithophytic

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalain Range 16.02.2012, H. A. Barbhuiya 85106, 85107 (ASSAM).

Distribution: India, China, NE Bangladesh, Myanmar, Nepal, N Thailand, Vietnam

Threat status: Not Evaluated

F. benghalensis L., Sp. Pl. 1059. 1753; King in Hook. f., Fl. Brit. India 5: 499. 1888; Kanjilal *et al.*, Fl. Assam 4: 240. 1940; Deb, Fl. Tripura 1:211. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 134. 2003.

Vernacular Name: Bat (B)

Evergreen tree, branches spreading. Aerial roots form prop roots. Leaves alternate, c. 10 – 18.5 × 6 – 12 cm, elliptic-ovate, obtuse, coriaceous. Receptacles globose, axillary, sessile, red when ripe. 3 basal bract. Tepals 3, lanceolate.

Flowering & Fruiting: April – November

Habitat: Common, along road side

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11570, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Bangladesh.

Note: The tree is sacred to Hindus and Buddhists in India and is frequently planted around temples. Being a majestic ornamental tree it is also planted in parks and along streets in the tropics. In temperate climates it is grown as a houseplant. Traditionally the milky sap is applied externally for treating pains and bruises, and is a remedy for toothache. Fibre from the bark is used for making paper and ropes. Fruits can be eaten fresh or dried, and the young leaves and shoots are also eaten as famine food (Website: <http://www.kew.org/science-conservation/plants-fungi/ficus-benghalensis-banyan>).

Threat status: Not Evaluated

F. benjamina L., Mant. 129. 1767; King in Hook. f., Fl. Brit. India 5: 508. 1888; Kanjilal *et al.*, Fl. Assam 4: 143. 1940; Deb, Fl. Tripura 1: 212. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 134. 2003.

Vernacular Name: Jari gach (A)

Large tree, branches spreading, drooping. *Leaves* ovate-elliptic, acuminate, entire; *stipules* lanceolate. *Receptacle* globose or ovoid, paired. *Male flower* shortly pedicellate, *stamen* 1; *female flower* sessile.

Flowering & Fruiting: October – April

Habitat: Occasionally, along road side

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11571, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, China, Malaysia, North Australia.

Note: The bark of the root, the root itself, and the leaves are boiled in oil and applied on wounds and bruises. The pounded leaves and bark are applied as a poultice in the treatment of rheumatic headaches (Website: <http://tropical.theferns.info/viewtropical.php?id=Ficus+benjamina>).

Threat status: Not Evaluated

F. fistulosa Reinw. ex Blume, Bijdr. Fl. Ned. India 9: 470. 1825; Kanjilal *et al.*, Fl. Assam 4: 255. 1940; Wu *et al.* in Fl. China 5: 50. 2003.

Vernacular Name: Mon-dimoru (A)

Small trees; dioecious. *Stipules* 1 – 2 cm. *Leaves* alternate; *petiole* 1.5 – 4 cm; *leaf blade* obovate to oblong, 10 – 20 × 4 – 8 cm, papery, abaxially sparsely pubescent, adaxially glabrous, obliquely cuneate to rounded at base, margin entire or undulate, mucronate at

apex. *Figs* on main branches, reddish orange when mature, globose, 1.5 – 2 × 1.5 – 2.2 cm. *Male flowers*: few, near apical pore; *calyx* lobes 3 – 4; *stamen* 1; filament short. *Gall flowers*: pedicellate; *calyx* lobes very short or absent; *ovary* obovate, smooth; *stigma* enlarged. *Female flowers*: *perianth* tubular; *style* persistent, long, clavate. *Achenes* obliquely cubic.

Flowering: April – July

Habitat: forests, along streams; 200 – 600 m

Specimens Examined: Included after Kanjilal *et al.* 1940.

Distribution: NE India, Bangladesh, China, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam

Note: Young leaves eaten as salad. Mature leaves are used as a narcotic, being smoked with opium. The root is boiled and the infusion is taken for 3 days as a diaphoretic (Website: <http://tropical.theferns.info/viewtropical.php?id=Ficus+fistulosa>)

Threat status: Not Evaluated

F. hirta Vahl., Enum. Pl. 2: 201. 1805; Kanjilal *et al.*, Fl. Assam 4: 255. 1940; Wu *et al.* in Fl. China 5: 60. 2003.

Vernacular Name: Not known

Shrubs or small trees. *Stipules* red, 1 – 3 cm, pubescent. *Leaves* alternate; *petiole* 1 – 8 cm, hirsute; *leaf blade* simple or palmately 3 – 5-lobed, 8 – 25 cm, glabrous or hirsute, cuneate, rounded or shallowly cordate at base, margin entire, acute to acuminate at apex. *Figs* axillary on normal leafy shoots, paired, globose, 1 – 3 cm in diam.; *involucral bracts* caducous or persistent. *Male flowers*: pedicellate or sessile; *calyx* 4-lobed, red, lanceolate; *stamens* 2 or 3; *anthers* ellipsoid. *Gall flowers*: *calyx* 4-lobed; *ovary* ovoid-globose, smooth; *style* short; *stigma* funnellform. *Female flowers*: sessile or pedicellate; *calyx* 4-lobed; *style* persistent; *stigma* clavate. *Achenes* ellipsoid-globose.

Flowering & Fruiting: November – Hot season

Habitat: forests, forest margins. Low elevations.

Specimens Examined: India, Assam, NC Hills dist., Haflong, 01.08.1908, W. G. Craib 428066 (CAL).

Distribution: India, Bhutan, China, Indonesia, Myanmar, Nepal, Sikkim, Thailand, Vietnam.

Note: A decoction of the stem bark is used in the treatment of fevers. The milky latex of the plant is applied to wounds (Manandhar and Manandhar 2002).

Threat status: Not Evaluated

F. hispida L. f., Suppl. Pl. 442. 1782; Kanjilal *et al.*, Fl. Assam 4: 252. 1940; Wu *et al.* in Fl. China 5: 49. 2003.

Vernacular Name: Not known

Shrubs or small *trees*; dioecious. *Stipules* usually 4, ovate-lanceolate. *Leaves* opposite; *petiole* 1 – 4 cm; *leaf blade* ovate, obovate-oblong, 10 – 25 × 5 – 10 cm, hairy on both surface, rounded to cuneate at base, margin entire or bluntly toothed, acute to mucronate at apex. *Figs* axillary on normal leafy shoots, sometimes on leafless branchlets or branchlets from main branches, solitary or paired, yellow or red when mature, with short scattered hairs, pedunculate; *involucre bracts* present; *lateral bracts* sometimes present. *Male flowers*: many, near apical pore; *calyx lobes* 3, thinly membranous; *stamen* 1. *Gall flowers*: *calyx* absent; *style* subapical, short, thick. *Female flowers*: *calyx lobes* absent; *style* lateral, with hairs.

Flowering: June – July

Habitat: Along streams, plains; 700 – 1500 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11618; SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11517, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Sikkim, Sri Lanka, Thailand, Vietnam; Australia

Note: The juice of the root is used in the treatment of fevers. The bark is antiperiodic, emetic and tonic. The juice of the fig is used in the treatment of liver problems (Manandhar and Manandhar 2002).

Threat status: Not Evaluated

F. nervosa Roth, Syst. Veg., ed. 15 bis 1: 513. 1817; Kanjilal *et al.*, Fl. Assam 4: 245. 1940; Wu *et al.* in Fl. China 5: 46. 2003.

Vernacular Name: Khari-pati-dimaru (A)

Trees. *Petiole* 1 – 2 cm; *leaf blade* elliptic, oblong, or obovate-lanceolate, 6 – 15 × 2.5 – 5 cm, leathery, glabrous, rounded to cuneate at base, margin entire and revolute, obtuse and mucronate at apex. *Figs* axillary on normal leafy stem, paired or solitary, globose, 1 – 1.2 cm in diam.; *involucral bracts* ovate, pubescent. Male, gall, and female flowers within same fig. *Male flowers*: *calyx* 2-lobed, unequal in size; *stamen* 1. *Gall flowers*: pedicellate or sessile; *calyx* 3-lobed, elongated, acuminate at apex; *style* lateral; *stigma* clavate.

Flowering & Fruiting: January – Hot season

Habitat: Forests in mountains; 400 – 1600 m.

Specimens Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, Bhutan, China, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Threat status: Not Evaluated

F. palmata Forssk., Fl. Aegypt.-Arab. 179. 1775. *Ficus forskalaei* Vahl, Enum. Pl. ii. 196. 1805. *Ficus malabarica* Miq. in London J. Bot. 7: 457. 1848.

Vernacular Name: Wild fig/Punjab Fig (E), Anjiri (H)

Deciduous, moderate-sized *tree*, 6 – 10 m in height. *Young branches* velvety. *Bark* smooth, dull, ash gray. *Leaves* alternate, broad, ovate, membranous, 12 × 15 cm, cordate at base and toothed at margin. *Flowers* unisexual, greenish white, very small; the fleshy receptacle forms a hollow cavity, with an apical opening, guarded by scales, and the flowers borne on the inner walls of the cavity; both the *male* and *female flowers* present within the same receptacle; the *male flowers* generally develop at the apical pore, whereas the *female flowers* develop towards the base of the receptacle; the *calyx* and *corolla* modified into scales; *ovary* ovoid, smooth, short style; *receptacle* axillary, globose. Fruit syconoid, globose. Seeds, numerous.

Flowering & Fruiting: June – September

Habitat: Occasionally found in forests, along the banks of streams; 600 – 1,800 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11423; Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11482, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Temperate Asia to NE India, Northeast Africa, through Arabia, Nepal and Pakistan.

Note: The fruit is demulcent, emollient, laxative and poultice. It is used as a part of the diet in the treatment of constipation and diseases of the lungs and bladder (Chopra *et al.* 1986).

Threat status: Not Evaluated

F. prostrata (Miq.) Buch.-Ham. ex Miq., Ann. Mus. Bot. Lugduno-Batavi 3: 297. 1867; Kanjilal *et al.*, Fl. Assam 4: 254. 1940; Wu *et al.* in Fl. China 5: 64. 2003. *Covellia prostrata* Wall. ex Miq. in London J. Bot. 7: 465. 1848.

Vernacular Name: Not known

Small *trees*. *Stipules* lanceolate, *c.* 2 cm. *Leaves* alternate; *petiole* 1.5 – 3 cm; *leaf blade* obovate-lanceolate to oblong, 8 – 11 cm, cuneate to slightly obtuse at base, margin entire, acuminate at apex. *Figs* on pendulous, leafless branchlets, solitary; *peduncle* 8 – 10 mm; *involucral bracts* ovate, irregularly acuminate at apex. *Male flowers*: calyx 3 – 4-lobed, linear; *stamen* 1 or 2; *pistillode* ovoid to rhombic, *stigma* linear. *Achenes* obliquely ovoid.

Flowering & Fruiting: January – August

Habitat: dense forests; 1200 – 1500 m

Specimens Examined: Included after Kanjilal *et al.* 1940.

Distribution: NE India, Bangladesh, China, Sikkim, Vietnam

Threat status: Not Evaluated

F. racemosa L., Sp. Pl. 2: 1060. 1753; Wu *et al.* in Fl. China 5: 47. 2003. *Ficus glomerata* Roxb., Pl. Coromandel ii. 13. t. 123. 1799; Kanjilal *et al.*, Fl. Assam 4: 264. 1940.

Vernacular Name: Dumur (B)

Trees; monoecious. Branchlets, young leaf blades and figs with hairs. *Stipules* 1.5 – 2 cm, pubescent. *Leaves* alternate; *petiole* 2 – 3 cm; *leaf blade* elliptic-obovate, elliptic, 10 – 14 × 3 – 4.5 cm, leathery, cuneate to obtuse at base, margin entire, acuminate to obtuse at apex. *Figs* tumorlike, paired, reddish orange when mature, pear-shaped; *peduncle* 1 cm; *involucral bracts* triangular-ovate. Male, gall, and female flowers within same fig. *Male flowers*: near apical pore, sessile; *calyx* 3 – 4-lobed; *stamens* 2. *Gall and female flowers*: pedicellate; *calyx lobes* linear, 3 – 4-toothed; *style* lateral; *stigma* clavate.

Flowering & Fruiting: February – September

Habitat: Moist areas; 100 – 1700 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11767, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia, Myanmar, Nepal, New Guinea, Pakistan, Sri Lanka, Thailand, Vietnam; Australia

Note: The leaves are used in the treatment of diarrhoea. The bark is used in the treatment of haematuria, menorrhagia, and haemoptysis. The fruit is used in the treatment of haematuria, menorrhagia, and haemoptysis (Maiden, 1889).

Threat status: Not Evaluated

F. religiosa L., Sp. Pl. 1059. 1753; King in Hook. f., Fl. Brit. India 5: 513. 1888; Kanjilal *et al.*, Fl. Assam 4: 246. 1940; Deb, Fl. Tripura 1: 218. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 323. 2003.

Vernacular Name: Anhat gach (A)

Deciduous *tree*, *branches* spreading. *Leaves* alternate, broadly ovate, coriaceous, undulate, apex acuminate forming a long tail, cordate or rounded at base. *Receptacles* subglobose, axillary, sessile, dark purple when ripe; *basal bract* 3. *Male tepals* 2, ovate; *female tepals* 3 – 4.

Flowering & Fruiting: April – September

Habitat: Common, along road side, forest margins

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11572, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Bangladesh, China, North Thailand, Vietnam

Note: The leaves and twigs are alterative, antidote, aphrodisiac, astringent, antigonorrhoeal and laxative. It is used as an antidote against bites of venomous animals, and for the treatment of haemoptysis and fistula. Fresh sap from the leaves is used to cure diarrhoea, cholera and for wound healing (Website: <http://tropical.theferns.info/viewtropical.php?id=Ficus+religiosa>).

Threat status: Not Evaluated

F. rumphii Blume, Bijdr. Fl. Ned. India 9: 437. 1825; Kanjilal *et al.*, Fl. Assam 4: 246. 1940; Wu *et al.* in Fl. China 5: 42. 2003.

Vernacular Name: Pakhri-bor (A)

Trees, usually epiphytic. *Stipules* caducous, 1.5 – 2.5 cm, scar conspicuous. *Petiole* 6 – 8 cm, glabrous; *leaf blade* cordate to ovate-cordate, 6 – 13 × 6 – 11 cm, leathery, glabrous, cordate to broadly cuneate at base, acuminate at apex. *Figs* axillary on leafy branchlets, paired or in small clusters on leafless older branchlets, globose, 1 – 1.5 cm in diam., sessile; involucre bracts small. Male, gall, and female flowers within same fig. *Male flowers*: few; *calyx* 3-lobed, spatulate; *stamen* 1. *Gall and asexual flowers*: *calyx* 3-lobed, lanceolate. *Female flowers*: ovary white, ovoid; *style* persistent, long; *stigma* clavate. *Achenes* thin; *style* long; *stigma* clavate.

Ripe Fruiting: May – June

Habitat: along trails; 600 – 700 m.

Specimens Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, Bhutan, China, Indonesia, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam

Note: The latex and fruits are emetic and anthelmintic, and used to treat itch. The latex is given internally as a vermifuge and for the relief of asthma (Website: <http://tropical.theferns.info/viewtropical.php?id=Ficus+rumphii>).

Threat status: Not Evaluated

F. semicordata Buch.-Ham. ex Sm., Cycl. 14: Ficus n. 71. 1810; Wu *et al.* in Fl. China 5: 63. 2003.

Vernacular Name: Not known

Trees, spreading and umbrellalike. *Stipules* red, 2 – 3.5 cm, subglabrous. *Leaves* distichous; *petiole* 5 – 10 mm, covered with stiff hairs; *leaf blade* oblong-lanceolate, 18 – 28 × 9 – 11 cm, papery, abaxially and adaxially covered with hairs, obliquely cordate or auriculate at base, margin toothed or entire, acuminate at apex. *Figs* on pendulous, leafless branchlets, solitary, reddish purple when mature, globose, 1 – 1.5 cm in diam., hairy; *bracts* pubescent. *Male flowers*: near apical pore; *calyx* 3-lobed, red, oblanceolate, longer than stamens; *stamens* 1 or 2; *filaments* short; *anthers* white. *Gall flowers*: *calyx* 4 – 5-lobed, linear-lanceolate; *style* short. *Female flowers*: *calyx* 4 – 5-lobed; *ovary* ovoid-ellipsoid; *style* long; *stigma* shallowly 2-lobed. *Achenes* ovoid.

Flowering & Fruiting: May – October

Habitat: forest margins, valleys, along trails; 600 – 1900 m

Specimen Examined: Included after Borah *et al.* 2016.

Distribution: India, Bhutan, China, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam.

Note: The juice of the roots is applied to treat headaches, and is also recommended for fevers and menstrual disorders. The immature fruit is used to treat constipation. A paste of the fruit is applied to the forehead to relieve headaches (Manandhar and Manandhar 2002).

Threat status: Not Evaluated

Morus L.

M. macroua Miq., Pl. Jungh. 1: 42. 1851; Wu *et al.* in Fl. China 5: 25. 2003.

Vernacular Name: Bola (A)

Trees; dioecious. *Stipules* small. *Petiole* 2 – 4 cm; *leaf blade* ovate to broadly ovate, 5 – 15 × 5 – 9 cm, rounded, cordate or truncate at base, margin serrate, acuminate at apex. *Male inflorescence* axillary catkins, paired, 4 – 8 cm. *Female inflorescences* cylindrical, 6 – 12 cm. *Male flowers:* calyx lobes ovate, adaxially pubescent; *anther* globose. *Female flowers:* calyx lobes pubescent; *ovary* ovoid, compressed, pubescent; *style* absent; *stigma* 2-fid, papillate. *Syncarp.* 6 – 12 cm; *achenes* ovoid.

Flowering & Fruiting: March – May

Habitat: mountain forests, tropical forests; 1000 – 1300 m

Specimen Examined: Included after Borah *et al.* 2016.

Distribution: India, Bhutan, China, Malaysia, Myanmar, Sikkim, Thailand

Note: The juice of the bark is applied to cuts and wounds (Website: <http://tropical.theferns.info/viewtropical.php?id=Morus+macroua>).

Threat status: Not Evaluated

Poikilospermum Zipp. ex Miq.

P. suaveolens (Blume) Merr. in Contr. Arnold Arbor. 8: 47. 1934; Deb, Fl. Tripura 1: 221. 1981. *Conocephalus suaveolens* Blume, Bijdr. Fl. Ned. India 484. 1825; Hook.f., Fl. Brit. India 5: 545. 1888; Kanjilal *et al.*, Fl. Assam 4: 272. 1940.

Vernacular Name: Jog-kag, kamlata (B)

Large *liana*. *Leaflet* broadly ovate, elliptic, *c.* 10 – 35 × 7 – 23 cm, rounded or cordate at the base, acute at the apex. *Male flower:* inflorescences dichotomously branched; *bracts* present. *Flowers* sessile, *c.* 1.5 – 2 mm; *perianth* 4-lobed; *stamens* 4. *Female flower:* inflorescences dichotomously branched; *bracts* present; *pedicel* 3 – 7 mm; *stigma* shortly ligulate. *Achene* oblong, verrucose.

Flowering & Fruiting: April – June

Habitat: moist places, near stream

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11478, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Borneo, China, Indonesia, Malaysia, Philippines, Thailand, Vietnam

Note: Young cooked leaves are eaten as vegetable (Website: <http://www.stuartxchange.com/Hanopol.html>).

Threat status: Not Evaluated

Streblus Lour.

S. indicus (Bureau) Corner in Gard. Bull. Singapore 19: 226. 1962; Wu *et al.* in Fl. China 5: 29. 2003. *Pseudostreblus indicus* Bureau in Candolle, Prodr. 17: 220. 1873; Kanjilal *et al.*, Fl. Assam 4: 276. 1940.

Vernacular Name: Dudh-chapa (Cach.)

Trees; monoecious or dioecious. *Stipules* small, caducous. *Petiole* 1 – 1.5 cm; *leaf blade* elliptic-lanceolate, 7 – 15 × 2.5 – 4 cm, leathery, glabrous, cuneate at base, margin entire, obtuse to caudate at apex. *Inflorescences* with 1 apical female flower and many basal male flowers. *Male inflorescences* axillary, solitary or paired, scorpioid; *bracts* 3, triangular, connate at the base. *Female inflorescences* 1-flowered; *peduncle* 1 – 1.5 cm. *Male flowers*: pedicel *c.* 6 mm, pubescent; *calyx* 5-lobed, imbricate, narrowly elliptic, *c.* 4 mm; *filaments* flat; *pistillode* small. *Female flowers*: *calyx lobes* orbicular, *c.* 1 cm, enclosing ovary; *ovary* globose; *style* 2-fid, densely pubescent. *Drupes* globose, *c.* 1 cm in diam.

Flowering & Fruiting: October – Cold season

Habitat: mountain slopes, moist shaded areas; 600 – 1400 m

Specimens Examined: Included after Kanjilal *et al.* 1940.

Distribution: NE India, China, Thailand

Note: Fruits are edible. Wood is good timber with close grained, light yellow color and takes very good polish (Website: <http://indiabiodiversity.org/species/show/261340>).

Threat status: Not Evaluated

47. URTICACEAE Juss.

- 1a. Herbs or subshrubs, rarely shrubs.....*Pilea*
- 1b. Trees or shrubs.....2
- 2a. Leaves alternate or opposite*Boehmeria*
- 2b. Leaves alternate.....3
- 3a. Inflorescences solitary, cymose-panicles or racemes*Dendrocnide*
- 3b. Inflorescences axillary, small, densely capitate clusters of unisexualflowers.....*Oreocnide*

Boehmeria Jacq.

B. nivea (L.) Gaudich., Voyage Autour du Monde sur les Corvettes de S.M. l'Uranie et la Physicienne. Botanique. 12. 499. 1830; Chen *et al.* in Fl. China 5: 166. 2003. *Boehmeria candicans* Hassk., Cat. Hort. Bot. Bogor. (Hasskarl) 79. 1844.

Vernacular Name: Chinese grass (E)

Subshrubs or *shrubs*; branchlets, and petioles densely hirsute. Monoecious. *Leaves* alternate; *stipules* lanceolate, free or connate and 2-cleft, 7 – 11 mm; *petiole* 2.5 – 10 cm;

leaf blade often orbicular or broadly ovate, sometimes ovate or elliptic-ovate, 5 – 15 × 3.5 – 13 cm, rounded, cordate or cuneate at base, margin dentate from base, cuspidate or acuminate at apex. Glomerules unisexual. *Male glomerules* few-flowered, 2 – 4 mm in diam.; *female glomerules* many-flowered, 2 – 3 mm in diam. *Male flowers* 4-merous, sessile; perianth lobes connate to middle, *c.* 1.5 mm, pubescent. *Female flowers* rhomboid-ellipsoidal, 0.6 – 0.8 mm; stigma *c.* 1 mm. *Achenes* subovoid.

Flowering & Fruiting: May – November

Habitat: Forest margins, moist places along streams, roadsides; 200 – 1700 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11484, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Japan, Korea, Laos, Nepal, Sikkim, Thailand, Vietnam

Note: Antiphlogistic, demulcent, diuretic, febrifuge, haemostatic and vulnerary. Used to prevent miscarriages and promote the drainage of pus (Stuart, 1911).

Threat status: Not Evaluated

Dendrocnide Miq.

D. sinuata (Blume) Chew in Gard. Bull. Singapore 21: 206. 1965. *Dendrocnide pulus* (Steud.) Chew in Gard. Bull. Singapore 21: 205. 1965. *Laportea crenulata* Gaudich., Voy. Uranie, Bot. 498. 1830.

Vernacular Name: Sorat Pat (A)

Shrubs or small trees. Stipules caducous, *c.* 1.5 – 2.5 cm, puberulent abaxially; petiole 2 – 10 cm; leaf blade elliptic, oblong- or obovate-lanceolate, 10 – 45 × 5 – 20 cm, cuneate, rounded, or deeply cordate at base, entire, sinuate to irregularly denticulate at margin, acute to long acuminate at apex. Male inflorescences long paniculate, 5 – 10 cm; hairs present; female inflorescences in distal axils, 10 – 20 cm. Male flowers subsessile; perianth 4-lobed, ovate, pubescent; stamens 4; rudimentary ovary obovoid. Female flowers: pedicels often fleshy; perianth 4-lobed, unequal, 1 – 1.5 mm. Ovary *c.* 1.5 mm; stigma ligulate, *c.* 2 mm. fruit a achene.

Flowering & Fruiting: September – April

Habitat: On the stream bank, mixed forests; 300 – 800 m

Specimens examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, 15 No. Hill, 11.11.2011, H. A. Barbhuiya 84918 (ASSAM).

Distribution: India, China, Malaysia, Myanmar, Sikkim, Sri Lanka, Thailand

Note: A decoction of the roots, combined with the leaves of a *Schizostachyum* species, is drunk as a remedy for swollen limbs. The leaves are applied externally as a treatment against scabies (Website:

<http://tropical.theferns.info/viewtropical.php?id=Dendrocnide+sinuata>).

Threat status: Not Evaluated

Oreocnide Miq.

O. integrifolia (Gaudich.) Miq. in Ann. Mus. Bot. Lugduno-Batavi 4: 306. 1869; Chen *et al.* in Fl. China 5: 182. 2003. *Oreocnide integrifolia* (Gaudich.) Miq. subsp. *subglabra* C. J. Chen in Acta Phytotax. Sin. 21 (4): 473. 1983. *Villebrunea integrifolia* Gaudich., Bot. Voy. Bonite t. 91. 1847.

Vernacular Name: Wild Rhea (E), Ban rhea, Bon rhea (A)

Small *trees* or *shrubs* 5 – 20 m tall; *branchlets* reddish brown. *Stipules* linear, 1 – 2 cm; *petiole* 1 – 9 cm; *leaf blade* elliptic, oblong-lanceolate or oblanceolate, 8 – 33 × 3.5 – 12 cm, papery, rounded or obtuse at base, margin denticulate to middle, entire apically, caudate-acuminate at apex. *Inflorescences* in axils of fallen leaves or on older branches. *Male flowers:* perianth lobes 4, oblong, connate 1/2 of length, *c.* 1.2 mm; rudimentary ovary subclavate. *Female flowers* *c.* 1 mm. Achene conic, *c.* 1.5 mm, 3- or 4-ribbed, surrounded by a fleshy discoid cupule at base.

Flowering & Fruiting: March – September

Habitat: Hilly forests; 200 – 1400 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11609; Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11387, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Laos, Myanmar, Sikkim, Thailand, Vietnam

Note: A brown fibre is obtained from the stems (Uphof, 1959).

Threat status: Not Evaluated

Pilea Lindl.

P. glaberrima (Blume) Blume, Mus. Bot. 2 (1 – 8): 54. 1856; Chen *et al.* in Fl. China 5: 105. 2003. *Pilea smilacifolia* Wedd. in Ann. Sci. Nat., Bot. sér. 4, 1: 186. 1854. *Pilea goglado* Wedd. in Ann. Sci. Nat., Bot. sér. 4, 1: 186. 1854.

Vernacular Name: Hairless Clearweed (E)

Herbs perennial, glabrous, dioecious, rarely monoecious. *Stems* gray green, erect. *Stipules* triangular, connate at base, *c.* 2 mm, papery; *petiole* unequal in length, 1.5 – 5 cm; *leaf blade* ovate, elliptic, oblong- or elliptic-lanceolate, 6 – 15 × 2.5 – 7 cm, herbaceous, 3-veined, *lateral veins* many, rounded, obtuse or cuneate at base, shallowly serrate or shallowly crenate at margin, acuminate at apex. *Inflorescences* solitary, male a paniculate cyme, usually shorter than subtending petiole; female ones much shorter. *Male flowers* sessile; perianth lobes 4; stamens 4; rudimentary ovary small, subulate. *Female flowers* subsessile; perianth lobes connate at base, unequal, abaxial lobe cymbiform, longer, subapically corniculate; staminodes 3, inconspicuous, scale-like, oblong. *Achene* brownish red, ovoid, *c.* 1 mm, compressed.

Flowering & Fruiting: May – November

Habitat: Shaded wet places by streams; 500 – 1300 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11610; SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11519, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bhutan, China, Indonesia, Myanmar, Nepal, Sikkim

Threat status: Not Evaluated

48. FAGACEAE Dumort.

- 1a. Stamens 4 – 7 or fewer.....*Quercus*
1b. Stamen 8 – 12.....2
2a. Nuts 1-3 per cupule.....*Castanopsis*
2b. Nut 1 per cupule.....*Lithocarpus*

Castanopsis (D. Don) Spach

C. hystrix Miq., Ann. Mus. Bot. Lugduno-Batavi 1 (4): 119. 1863; Kanjial *et al.*, Fl. Assam 4: 322. 1940; Huang *et al.* in Fl. China 4: 322. 1999.

Vernacular Name: Kata-singra (Sylth.)

Trees. Petiolec. 1 cm; *leaf blade* lanceolate to obovate-elliptic, 4 – 9 × 1.5 – 4 cm, papery, sharply acute to rounded at base, mucronate to caudate at apex. *Female inflorescence* solitary in leaf axil. *Infructescencec.* 15 cm. *Fruit* a cupule, globose, splitting into 4 segments.

Flowering & Fruiting: April – November

Habitat: evergreen forests; near sea level to 1600 m

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: NE India, Bhutan, Cambodia, China, Laos, Myanmar, Nepal, Sikkim, Vietnam.

Note: Wood is hard and used for construction, fencing, fuel etc. (Website: <http://www.naturalmedicinalherbs.net/herbs/c/castanopsis-hystrix.php>)

Threat status: Not evaluated

Lithocarpus Blume

L. fenestratus Rehder, J. Arnold Arbor. i. 126. 1919; Huang *et al.* in Fl. China 4: 360. 1999. *Quercus fenestrata* Roxburgh, Fl. India ed. 1832, 3: 633. 1832.

Vernacular Name: Kuhi (A)

Trees. Petiole 5 – 10 mm; *leaf blade* lanceolate or ovate-elliptic, 5 – 22 × 2 – 7 cm, cuneate at base, margin entire, acute to acuminate at apex. *Male inflorescences* in a panicle. *Female inflorescences c.* 25 cm. *Infructescences* upto 18 cm; cupules in clusters of c. 3. *Fruit* a cupule, depressed globose.

Flowering & Fruiting: August – December

Habitat: evergreen forests; below 1700 m

Specimens Examined: India, Assam, NC Hills dist., Haflong, 05.08.1908, W. G. Craib 440141 (CAL).

Distribution: NE India, Bhutan, China, Laos, NE Myanmar, Sikkim, N Thailand, NE Vietnam

Note: Nuts provide orange dye. The bark and acorns are reported to be used for dyeing in Manipur.

Threat status: Not evaluated

Quercus L.

Q. semiserrata Roxb., Fl. India ed. 3: 641. 1832; Kanjial *et al.*, Fl. Assam 4: 308. 1940.

Vernacular Name: Romrota (Cach.)

Large tree. *Leaves* oblong-lanceolate or oblanceolate, acute to acuminate at apex, serrate or sub-serrate at margin, acute or acuminate at base; *leaflets* c. 12.5 – 17.5 × 3 – 7.5 cm; *petiole* c. 1.2 – 2.5 cm. *Male inflorescence* axillary, solitary, pendulous spikes or fascicled. *Female inflorescence* axillary spikes, solitary; *style* long, bifid; *stigma* sub-capitate. *Fruit* a capsule.

Flowering & Fruiting: November – March

Habitat: Occasionally, forest

Specimen Examined: Included after Kanjial *et al.* 1940.

Distribution: NE India, China, Myanmar, Thailand, Bangladesh; 400 – 1500 m

Note: The wood is hard and durable. It is used for cart wheel pins, tools and general construction (Gardener, 2000).

Threat status: Not evaluated

49. MYRICACEAE Rich. ex Kunth

Myrica L.

M. farquhariana Wall., Tent. Fl. Nepal. 2: 60. 1826; Kanjial *et al.*, Fl. Assam 4: 302. 1940. *Myrica esculenta* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 56. 1825. *Myrica integrifolia* Roxb. in Wall. Tent. Fl. Nepal. Illustr. 60. 1826.

Vernacular Name: Nagatenga (A), Kaiphal, Satsarila (B)

A medium to large dioecious tree, 12 – 15 metres high; the male and the female trees have almost similar appearance. *Leaves* almost crowded towards the end of branches, lanceolate, 9.2 cm × 3.2 cm; lower surface, pale green; upper surface, dark green. *Pistillate flowers* very small, sessile, solitary and bracteate; *calyx* and *corolla* either absent or not visible. *Inflorescence* a catkin, 4.2 cm long, axillary; only a thread-like style visible with the unaided eye. Each staminate flower has about 12 *stamens*, filament very short. *Fruit* a globose.

Flowering & Fruiting: February – May

Habitat: Sub-temperate regions; 1300 – 1800 m

*Specimen Examined:*Included after Sajem *et al.* 2008.

Distribution: India, Himalaya (Kashmir to Bhutan), Burma, east to W. & S. China and south to Malaysia

Note: The bark is antirheumatic, astringent, carminative and stimulant. The juice of the bark is used internally to treat catarrh and headaches. It is also used to treat rheumatism. A decoction of the bark forms a gelatinous mass which is used internally to treat fevers, asthma and diarrhoea, whilst it is also applied externally to sprains. The juice of the bark is applied to cuts, wounds and body aches. The bark of the stem or root is kept pressed between the teeth to treat dental caries (Manandhar and Manandhar, 2002).

Threat status: Near threatened (NT) in the district (Sajem *et al.*, 2008).

50. JUGLANDACEAE A. Richard ex Kunth

Engelhardtia Lesch. ex Blume

E. spicata Blume, Bijdr. 528 1826; Kanjilal *et al.*, Fl. Assam 4: 299. 1940.

Gyrocarpus pendulus Blanco, Fl. Filip., ed. 2. 55. 1845.

Pterilema aceriflorum Reinw., Syll. Pl. Nov. ii. 13. 1828.

Vernacular Name: Lal-amiri, Lewa (A)

Tree to 30 m, trunk often buttressed, bark smooth, gray. *Leaves* oblanceolate, c. 10 cm long, c. 3 cm wide, undulate, membranous. *Leaflets* 6 – 10, c. 15 cm long, c. 6 cm wide, rachis to 30 cm. Male and female flowers on the same tree. *Male inflorescence* a spike, c. 8 cm. *Female inflorescence* long hanging spikes, *bracts* present. Fruits in long clusters, dense; *fruit* a nut, globular with 3-lobed papery wing to 5 cm long.

Flowering & Fruiting: November – April

Habitat: primary forest; 1400 m

*Specimen Examined:*Included after Kanjilal *et al.* 1940.

Distribution: India, Myanmar, Philippines, rare in Malaya, E Java, E Himalayas to Malaysia

Note: The bark is a source of tannins. The wood is not durable. It is used for light, indoor construction (Website:

<http://tropical.theferns.info/viewtropical.php?id=Engelhardtia+spicata>).

Threat status: Lower Risk/least concern ver 2.3

51. BETULACEAE Gray

Betula L.

B. alnoides Buch.-Ham., Prodr. Fl. Nepal. 58. 1825; Kanjilal *et al.*, Fl. Assam 4: 328. 1940.

Vernacular Name: Bojpotra (Cach.)

Trees up to 30 m tall. *Petiole* long, densely villous; *leaves* lanceolate, ovate-lanceolate, or ovate-elliptic, *c.* 4 – 12 × 2.5 – 5.5 cm, papery, abaxially sparsely villous along veins, adaxially glabrous, base cuneate or subrounded, margin irregularly serrate, apex acuminate or caudate-acuminate. *Female* inflorescences in raceme, pendulous, narrowly cylindrical; *peduncle* 2 – 3 mm; bracts *c.* 3 mm, densely pubescent. *Nutlet* obovate.

Flowering & Fruiting: October – May

Habitat: Subtropical forests

Specimens Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, Bhutan, China, Myanmar, Nepal, Thailand, Vietnam.

Note: The species is a good timber species; the wood is hard and coarse and can be used for furniture and cabinet work and for household utensil making. The bark is used as a medicine, applied in cases of dislocated bones and as a snake antidote when mixed with hot butter. The bark is thin and papery so can be used as a substitute for paper. The aromatic oils can be used in the leather industry and the leaves are lopped for fodder (Shaw *et al.*, 2014).

Threat status: Least Concern ver 3.1

52. CUCURBITACEAE Juss.

1a. Herbs.....	2
1b. Woody climbers.....	<i>Hodgsonia</i>
2a. Tendrils simple, glabrous.....	<i>Solena</i>
2b. Tendrils 2 – 5-fid.....	3
3a. Stamen 3.....	4
3b. Stamen 2 or 3 or 5.....	6
4a. Plants usually monoecious.....	<i>Benincasa</i>
4b. Plants dioecious or rarely monoecious.....	5
5a. Fruit ovoid or oblong, baccate.....	<i>Coccinia</i>
5b. Fruit globose, ovoid or fusiform, fleshy.....	<i>Trichosanthes</i>
6a. Tendrils unbranched or 2-fid; stamens (2 or)3(or 5).....	<i>Momordica</i>
6b. Tendrils simple or 2-fid; stamens 5.....	<i>Thladiantha</i>

Benincasa Savi

B. hispida Cogn., Monogr. Phan. 3: 513. 1881. *Benincasa cerifera* Savi in Bibliot. Ital. ix. 158. 1818. *Cucurbita pruriens* Seem. in J. Bot. 2: 50. 1864.

Vernacular Name: Komora (A)

Scandent or creeping *herb*. *Stem* villous. *Leaf blade* reniform, 5 – 7 lobed, 15 – 25 cm broad, both side pubescent, cordate at the base, acute at the apex, dentate at the margin. *Flowers* unisexual. *Male flower*: flower densely hispid; *pedicel* 5 – 12 cm long; *bract* present; *calyx* 5-lobed, 8 – 12 mm long; *corolla* 5-lobed, yellow, lobes *c.* 3 – 6 × 2.5 – 4 cm; *stamen* *c.* 5 mm long. *Female flower*: *pedicel* less than 5 cm, pubescent; *calyx* and

corolla same as male flower; *ovary* ovoid to cylindrical, 2 – 4 cm, pubescent; *stylec.* 2 – 3 mm. *Fruit* large, oblong.

Flowering & Fruiting: June – November

Habitat: cultivated domestically

Specimen Examined: Included after Rout *et al.* 2012.

Distribution: cultivated in India, cultivated through out tropics mainly in Asia

Note: The fruit is used as vegetable. Young leaves and flower buds are steamed and eaten as a vegetable, or are added as a flavouring to soups (Facciola, 1990).

Threat status: Not Evaluated

Coccinia Wight & Arn.

C. grandis (L.) Voigt, Suburb. Cak. 59. 1845; Deb, Fl. Tripura 1: 254. 1981; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitara Wildlife Sanctuary 162. 2003. *Coccinia cordifolia* (L.) Cong. In DC. Mon. Phan. 3. 529. 1881. *Cephalandra indica* Naud. in Ann. Sci. Nat. Ser. 5: 16.1886; Kanjilal *et al.*, Fl. Assam 2: 329. 1938.

Vernacular Name: Scarlet-fruited ivy gourd (E), Kanturi (H), Jangali kundaru (A)

Climbing *herb* with tendrils. *Leaves* lobed. *Flowers* dioecious, solitary. *Male flower: calyx* 5-lobed, tubular, campanulate. *Corolla* 5-lobed, adaxially tomentose. *Stamen* 5. *Female flower: calyx* and *corolla* same as male flower. *Staminodes* 3. *Ovary* inferior, *stigma* 3. *Fruit* elliptic.

Flowering & Fruiting: April – August

Habitat: common, road side

Specimen Examined: Included after Dutt *et al.* 1974, D. 24.

Distribution: India, America, China, Myanmar, Tropical Africa

Note: Young leaves and long slender stem tops are cooked and eaten as a herb or added to soups. The juice of the roots and leaves is considered to be a useful treatment for diabetes. The juice of the stem is dripped into the eyes to treat cataracts (Manandhar and Manandhar 2002).

Threat status: Not Evaluated

Hodgsonia Hook.f. & Thomson

H. macrocarpa (Blume) Cong., Monogr. Phan. 3: 349. 1881. *Trichosanthes macrocarpa* Blume, Bijdr. Fl. Ned. Ind. 15: 935. 1826.

Vernacular Name: Chinese Lardfruit, Pork Fat Nut (E)

Large *climber*. *Leaves* simple, 3 lobed, oblong, *c.* 25 – 35 × 30 – 45 cm. *Flowers* unisexual. *Male flower:* flower tomentose; *calyx c.* 10 *c.* 9 cm long; *corolla c.* 5 cm, yellowish white, fimbriate. *Female flower:* same as male flower, *peduncle c.* 4 – 6 cm long. *Fruit* brown, tomentose. *Seeds* white, ellipsoid.

Flowering & Fruiting: March – December

Habitat: Occasionally, forest hill

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra 08.08.2011, H. A. *Barbhuiya* 85157, Fl. (ASSAM).

Distribution: India, Bangladesh, Nepal

Note: Seeds are washed, roasted and eaten. Rich in oil, it has a pleasant taste. A decoction of the leaves is drunk as a treatment for fevers. The leaves are also used to cure ulceration of the nose (Website: <http://tropical.theferns.info/viewtropical.php?id=Hodgsonia+macrocarpa>).

Threat status: Not Evaluated

Momordica L.

1a. Herbaceous climber, pubescent, with tendrils.....*M. charantia*

1b. Herbaceous climber with simple tendrils.....*M. dioica*

M. charantia L., Sp. Pl. 1009. 1753; Clarke in Hook. f., Fl. Brit. India 2: 616. 1879; Kanjilal *et al.*, Fl. Assam 2: 330. 1938; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 165. 2003.

Vernacular Name: Tita kerala (A)

Herbaceous climber, pubescent with tendrils. Leaves reniform, deeply lobed. Flowers unisexual, yellow; Inflorescence solitary in both male and female flowers. Calyx campanulate, 5-lobed. Corolla 5-lobed, obovate or obtuse. Stamen 3 in male flower. Ovary fusiform in female flower. Fruits oblong, tapering to both ends, many ribbed.

Flowering & Fruiting: March – October

Habitat: Forest margin, cultivated

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Balacherra, 08.03.2014, A. Bora & D. Bhattacharyya 11744 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Malaysia, Tropical Africa

Note: Scientific studies show that fresh juice of bitter melon can lower blood sugar values. Fruit juice can also prevent jaundice and piles. Fresh leaf juice is effective for cholera (Kumar & Bhowmik, 2010).

Threat status: Not Evaluated

M. dioica Roxb. ex Willd, Sp. Pl. 4 (1): 605. 1805; in Hook. f., Fl. Brit. India 2: 617. 1879; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 165. 2003.

Vernacular Name: Bhaat kerala (A)

Herbaceous climber with simple tendrils. Leaves ovate, cordate at the base, acute at the apex, margin entire or denticulate. Flowers unisexual, yellow. Male flower: flowers solitary; bracts present, long; calyx linear to lanceolate, tomentose; corolla 2 cm long; 5-

lobed, oblong or obtuse. *Female flower*: solitary, ebracteate, *calyx* and *corolla* same as male flower. *Fruit* ellipsoid or ovoid.

Flowering & Fruiting: June – October

Habitat: roadside, forest margin

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, near Balacherra 24.09.2013, A. Bora & D. Bhattacharyya 11745 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, China, Myanmar, Sri Lanka

Note: The roots of female plants are larger than those of the male and are preferred for medicinal uses. They are applied in bleeding piles and urinary complaints. The root paste is applied over the body as a sedative in fever (Website: <http://tropical.theferns.info/viewtropical.php?id=Momordica+dioica>)

Threat status: Not Evaluated

Solena Lour.

S. amplexicaulis (Lam.) Gandhi, Fl. Hassan District. 179. 1976. *Melothria heterophylla* (Lour.) Cong. in DC. Monogr. Phan. 3: 628. 1881; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 164. 2003. *Solena heterophylla* Lour., Fl. Cochinch. 1: 514. 1790; Clarke in Hook. f., Fl. Brit. India 2: 625. 1879.

Vernacular Name: Creeping Cucumber (E), Kudri (B)

Climbing herb with *tendrils*. *Leaves* polymorphous. *Flower* dioecious, white. *Male flower*: axillary corymbos; *calyx* 5 toothed, campanulate, tube globrous; *corolla* 5 lobed, puberulose; *Stamen* 3. *Female flower*: solitary, *calyx* and *corolla* same as male flower; *style* cylindrical. *Fruit* a berry, oblong.

Flowering & Fruiting: April – October

Habitat: Common

Specimen Examined: Included after Dutt *et al.* 1974, D. 103.

Distribution: India, Bangladesh, China, Japan, Malaysia

Note: Root is stimulant and purgative. Leaf has anti-inflammatory properties as regards rashes. It helps maintain a healthy skin and is an important ingredient of skin conditioning lotions (Web: <http://traditional-healthycare.blogspot.in/2007/07/explore-medicinal-plant-wealth-of-van.html>).

Threat status: Not Evaluated

Thladiantha Bunge

T. cordifolia Cogn., Monogr. Phan. 3: 424. 1881; Lu & Jeffrey in Fl. China 19: 22. 2011. *Thladiantha calcarata* C. B. Clarke in J. Linn. Soc., Bot. 15: 126. 1876. *Luffa cordifolia* Blume, Bijdr. Fl. Ned. Ind. 15: 929. 1826.

Vernacular Name: Himalayan Goldencreeper (E)

Vines, climbing, herbaceous, pubescent. *Petiole* slender, 4 – 10cm; *leaf blade* ovate-cordate, 8 – 15 × 6 – 11 cm, cordate at base, irregularly dentate at margin, acuminate at apex. *Tendrils* simple, pubescent or glabrescent. *Male flowers*: 3 to several in dense short raceme; *peduncle* robust, 4 – 15 cm, pubescent; *bracts* imbricate, 1.5 – 2 cm; *pedicels* slender, c. 5 mm; *calyx* tube campanulate, 5 – 6 mm, 5-partite; segments linear, c. 10 × 1 mm; *corolla* segments ovate or elliptic, c. 17 × 7 mm, shortly acuminate or acute at apex; *filaments* c. 4 mm; rudimentary ovary semiglobose. *Female flowers* solitary; *calyx* and *corolla* as in male flowers; *ovary* oblong; *styles* 3-fid; *stigmas* enlarged, 2-lobed. *Fruit* oblong. *Seeds* broadly ovate.

Flowering & Fruiting: May – November

Habitat: Streamsides, forests; 800 – 2600 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11488, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia, Laos, Myanmar, Nepal, Thailand, Vietnam.

Note: Paste of fresh leaves of both plants is applied to the affected areas for rapid healing of cuts and wounds (Rahman *et al.*, 2007).

Threat status: Not Evaluated

Trichosanthes L.

T. cordata Roxb., Fl. India, ed. 3: 703. 1832. *Involucraria cordata* M.Roem., Fam. Nat. Syn. Monogr. 2: 97. 1846.

Vernacular Name: Not Known

Climber. *Leaf blade* ovate-cordate, 8 – 20 × 7 – 21 cm, papery, both surface sparsely hairy, minutely denticulate at the margin, acute to acuminate at the apex. Flower dioecious. *Male flower*: flower raceme; *bracts* present; *calyx tube* cylindrical; *corolla* 5-lobed, fimbriate; *stamen* 3. *Female flower*: flower solitary; *ovary* oblong; *calyx* and *corolla* same as male flower. *Fruit* globose, red.

Flowering & Fruiting: July – August

Habitat: Occasionally

Specimen Examined: India, Assam, Cachar dist., Jatinga, September 1903, Shaik Mokim 56 (CAL); Included after Dutt *et al.* 1974, D. 233.

Distribution: India, Bhutan, China, Laos, Malaysia, Myanmar, Nepal, Singapore.

Threat status: Not Evaluated

53. DATISCACEAE Dumort.

Tetrameles R.Br.

T. nudiflora R.Br., Pl. Jav. Rar. 79. t. 17. 1838; Wang & Turland Fl. China 13: 151. 2007.

Vernacular Name: Bhelu (A), Chundul (B)

Trees 25 – 45 m tall. *Petiole* terete, 3 – 7 cm; *leaf blade* cordate-ovate or suborbicular, 10 – 26 × 9 – 20 cm, margin serrate, acute or acuminate at apex. *Male spikes* 10 – 20 cm; peduncles yellowish pubescent; *bracts* spatulate, c. 1 mm. *Female spikes* 8 – 20 cm; *peduncle* pubescent. *Male flowers:* pedicel c. 1 mm or very short; calyx 1.5 – 2 mm, lobes oblong, margin entire or 1 or 2 – dentate, apex obtuse; filaments terete, 1 – 3 mm; anthers subglobose, c. 0.5 mm. *Female flowers:* pedicel absent or very short; calyx slightly 4 – angled, puberulous, tube fusiform, 2.5 – 3.5 mm; styles 1 – 2.5 mm; stigmas erect or reflexed, obovate. *Capsule* globose – urceolate. *Seeds* slightly compressed.

Flowering & Fruiting: March – May

Habitat: slopes of mountains; 500 – 700 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11779, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (including Andaman Islands), Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Sri Lanka, Thailand, Vietnam; Australia (Queensland).

Note: Second quality wood.

Threat status: Lower Risk/least concern ver 2.3

54. BEGONIACEAE C.Agardh

Begonia L.

- 1a. Succulent herbs.....*B. roxburghii*
1b. Plants not as above.....2
2a. Stems short, up to 10 cm.....*B. annulata*
2b. Herbs, 20 – 90 cm tall.....*B. palmata*

B. annulata K. Koch in Berl. Gartenz. i. 76. 1837. *Begonia barbata* Wall., Numer. List n. 3679, A & B, partim. 1831.

Stems short, up to 10 cm, stipules lanceolate. *Leaves* ovate, 5 – 11 × 3 – 8 cm, acuminate at apex, obliquely cordate at base, margin coarsely serrate-lobed (rarely subentire), pubescent on both surfaces, often variegated above; *petioles* 3 – 11 cm, spreading brown pubescent; *stipules* 13 × 5 mm, brown. *Cymes* few-flowered; peduncles 5 – 10 cm. *Perianth* segments obovate, up to 2 × 1.5 cm, white tinged pink, pubescent externally. *Stamens* forming a globose mass 5 mm diameter. *Styles* convoluted. *Capsules* (immature) pubescent; one wing much longer than others, crested.

Flowering & Fruiting: May – August

Habitat: Moist rocky places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2012, A. Bora & D. Bhattacharyya 11353, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan

Threat status: Not Evaluated

B. palmata D. Don, Prodr. Fl. Nepal. 223. 1825. *Begonia laciniata* Roxb., Fl. India ed. 1832 3: 649 1832.

Vernacular Name: Not known

Herbs, 20 – 90 cm tall. *Rhizomes* elongate. *Stem* erect, tomentose. *Leaves* basal; *stipules* caducous, ovate, c. 2.8 × 1.8 cm, margin ciliate, cuspidate at the apex; *petiole* c. 5 – 40 mm, brown villous or tomentose; oblique at the base, slightly cordate, margin shallowly denticulate. *Inflorescences* pubescent; *bracts* caducous, ovate. *Male flowers:* pedicel 1 – 2 cm; tepals 4, white-pink, outer 2 obovate to orbicular, c. 1 – 2.6 × 0.8 – 2.4 cm, abaxially tomentose, inner 2 oblanceolate to scarcely obovate, c. 0.8 – 2.4 cm × 5 – 9 mm; stamens 100 – 200. *Female flowers:* pedicel 1 – 2 cm; *tepals* 5 – 7, unequal, oblanceolate to orbicular, largest c. 0.8 – 2.4 × 0.8 – 2.2 cm, abaxially pubescent, smallest c. 0.8 – 2.1 cm × 4 – 9 mm; ovary brown tomentose, 2-loculed; *styles* fused at base; *stigmas* 2-cleft. *Capsule* c. 15 × 8 mm, unequally 3-winged.

Flowering & Fruiting: June – November

Habitat: moist places, slopes of hills, near streams

Specimens Examined: Included after Dutt *et al.*, 1974, D. 234.

Distribution: NE India, Bangladesh, Bhutan, China, Laos, Myanmar, Nepal, Thailand, Vietnam

Note: The roots are antiphlogistic and astringent. They stimulate blood circulation. A decoction is used in the treatment of haematemesis, amenorrhoea and traumatic stagnant blood collection.

Threat status: Not Evaluated

B. roxburghii (Miq.) A. DC., Prodr. 15 (1): 398. 1864; Clarke in Hook. f., Fl. Brit. India 2: 635. 1879; Kanjilal *et al.*, Fl. Assam 2: 333. 1938; Deb, Fl. Tripura 1: 269. 1981; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 167. 2003. *Begonia malabarica* Roxb. Fl. India 3: 648. 1832, non Lam.

Vernacular Name: Dieng Jajew (Khasi)

Succulent *herbs*. *Leaves* large, 15 – 22.8 cm, broadly ovate, toothed, acuminate at the apex; *petiole* short, stipule present. *Inflorescence* axillary, dichotomously branched cymes. *Flowers* monoecious; *calyx* large, 2-lobed in both *male* and *female* flowers; *corolla* pinkish red, 2-lobed in both male and female flowers. *Stamens* many, monadelphous. *Ovary* 4-celled. *Capsule* succulent, ellipsoid.

Flowering & Fruiting: June – September

Habitat: Ocassionally, moist and shady hilly slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, near Kalain Range, 16.02.2012, H. A. Barbhuiya 85044 (ASSAM).

Distribution: India (Arunachal Pradesh, Assam, Manipur, W. Bengal), Native to Tropical Asia, Bangladesh, Myanmar, Nepal

Note: Rootstock is given in fecal discharge in bile dysentery. Chakma use stem extract against abnormal conditions of the tongue in children. It is also given for the treatment of jaundice.

Threat status: Not Evaluated

55. CELASTRACEAE R.Br.

- 1a. Woody climbers.....*Reissantia*
- 1b. Trees or shrubs.....2
- 2a. Stipules present.....3
- 2b. Stipules absent.....*Microtropis*
- 3a. Leaves opposite.....*Euonymus*
- 3b. Leaves alternate.....4
- 4a. Evergreen trees with buttressed trunks, glabrous.....*Bhesa*
- 4b. Scandent to twining shrubs, deciduous or evergreen, glabrous or pubescent.....*Celastrus*

Bhesa Buch.-Ham. ex Arn.

B. robusta (Roxb.) Ding Hou, Blumea, Suppl. 4: 152. 1958. *Bhesa moja* Buch.-Ham. in Edinb. Phil. Journ. xvi. 315. 1834. *Celastrus robustus* Roxb., Fl. India 2: 395. 1824. *Kurrimia robusta* (Roxb.) Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 39 (2): 73, in obs. 1870.

Vernacular Name: Not known

Trees. Leaves alternate; *petiole* 2 – 3 cm; *leaf blade* oblong-elliptic, 11 – 20 × 3.5 – 6 cm, rounded at base, margin entire, acuminate or acute at apex. *Inflorescence* cymes, many flowered. *Flowers* small, yellowish green; *calyx* linear-lanceolate, c. 1.5 mm; *corolla* obovate or oblong-lanceolate, c. 2 mm. *Ovary* compressed globose; *styles* 2; *stigma* small. *Fruit* a capsule, narrow and long ovoid.

Flowering & Fruiting: Not seen

Habitat: Mixed forests; upto 900 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 434.

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

Note: Timber is used for house building and beams (Website: http://www.asianplant.net/Centropalacaceae/Bhesa_robusta.htm).

Threat status: Lower Risk/least concern ver 2.3

Celastrus L.

C. monospermus Roxb., Fl. India 2: 394. 1824; Laws. in Hook.f., Fl. Brit. India 1: 618. 1875; Kanjial *et al.*, Fl. Assam 1 (2): 269. 1936; Deb, Fl. Tripura 1: 394. 1981.

Vernacular Name: Not known

Twining shrubs. Leaf blade broadly rectangular-elliptic to obovate-elliptic, 5 – 17 × 3 – 7 cm, cuneate at base, acuminate or acute at apex. Flowers yellowish green or whitish. Male flowers: calyx *c.* 1 mm; corolla rectangular-elliptic, *c.* 2.5 × 1.8 mm; stamens 5. Female flowers: styles 3-lobed; staminodes *c.* 1 mm. Fruit a capsule broadly elliptic, rarely globose.

Flowering & Fruiting: March – October

Habitat: Dense forests, slopes

Specimen Examined: Included after Dutt *et al.* 1974, D. 248.

Distribution: India, Bhutan, China, Myanmar, Pakistan, Vietnam

Note: It contains triterpenes which exhibits diverse activities in skin diseases, rheumatism, and leukemia (Wang, 2014).

Threat status: Not Evaluated

Euonymus L.

E. vagans Wall. in Roxburgh, Fl. India 2: 412. 1824. *Euonymus jinfoshanensis* Z. M. Gu in Acta Phytotax. Sin. 31 (2): 176. 1993. *Euonymus jinggangshanensis* M. X. Nie in Bull. Bot. Res., Harbin 10 (4): 25. 1990.

Vernacular Name: Not known

Evergreen shrubs. *Petiole* 5 mm; *leaf blade* ovate-elliptic or rounded-ovate, 4 – 5 × 2.5 – 3.5 cm, rounded or cuneate at the base, rounded at apex. *Flowers* 4-merous; *calyx* semi-rounded; *corolla* greenish or whitish. *Capsule* brown or red-brown. *Aril* red.

Flowering & Fruiting: May – November

Habitat: Mixed forests

Specimen Examined: Included after Dutt *et al.* 1974, D. 217.

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

Threat status: Not Evaluated

Microtropis Wall.

M. discolor (Wall.) Wall., Numer. List n. 4337. 1831. *Cassine discolor* Wallich in Roxburgh, Fl. India 2: 378. 1824.

Vernacular Name: Red-flowered Malayan Spindle tree (E)

Small trees or shrubs. *Leaf blade* oblong, lanceolate to ovate-elliptic, 7.5 – 19 × 2.5 – 8 cm, thickly papery or leathery, cuneate at the base, caudate at the apex. *Inflorescence* axillary cymes. *Flowers* 5-merous; *calyx* imbricate, margin toothed; *corolla* fleshy,

rectangular, 2.5 – 3.5 × 1.5 – 2.5 mm. *Filament* 1.5 – 2.5 mm; anther rectangular. *Ovary* elliptic-ovate; *style* absent; *stigma* 4-lobed. *Fruit* a capsule, elliptic.

Flowering & Fruiting: September – March

Habitat: Evergreen forests

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 306.

Distribution: India, Bhutan, China, Malaysia (peninsular), Myanmar, Thailand (peninsular), Vietnam

Threat status: Not Evaluated

Reissantia N.Hallé

R. indica (Willd.) N.Halle in Bull. Mus. Natl. Hist. Nat. ser. 2, 30: 466. 1958. *Hippocratea indica* Willd., Sp. Pl., ed. 4. 1 (1): 193. 1797.

Vernacular Name: Not known

Woody *climbers*. *Leaves* opposite, c. 12 × 7 cm, obovate, obtusely acute, attenuate at base; nerves 4 or 5 pairs; *petiole* c. 1 cm long. *Inflorescence* axillary, drooping panicles, pedicellate. *Calyx* 5-lobed, ovate, acute, glabrous; *corolla* 5-lobed, c. 3 × 1 mm, oblong, curved, glabrous. *Stamens* 3, filaments short, curved. *Ovary* 3-celled; *ovules* 2 – 10 in each cell. *Fruit* a samara, winged.

Flowering & Fruiting: April – September

Habitat: semi-evergreen and moist deciduous forests

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 501.

Distribution: India, Africa, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam

Note: Root bark is used for the treatment of respiratory troubles. Leaves are scorched and given to women during confinement. Powdered leaves and roots are applied to sores and wounds (Website: <http://www.healthylifelive.org/reissantia-indica/>).

Threat status: Not Evaluated

56. CONNARACEAE R.Br.

- 1a. Carpel 1.....*Connarus*
1b. Carpels 5, free.....*Rourea*

Connarus L.

C. paniculatus Roxb., Fl. India, ed. 1832. 3: 139. 1832.

Vernacular Name: Not known

Lianas or scandent *shrubs*. *Leaves* odd-pinnate; *leaf blade* oblong-elliptic or lanceolate, 6 – 20 × 3 – 7.5 cm, leathery, glabrous, subcuneate at the base, entire at the margin, acute at the apex. *Inflorescences* terminal or axillary, paniculate; *bracts* present. *Calyx* 5 lobed, lanceolate-ovate, c. 3 mm, abaxially tomentose. *Corolla* 5 lobed, whitish yellow, oblong, 5

– 7 mm. *Stamens* c. 10, fertile. *Carpel* 1, densely pubescent. *Fruit* bright red, woody, glabrous.

Flowering & Fruiting: October – May

Habitat: Sparse or dense forests

Specimens Examined: India, Assam, Cachar dist., Mokhoe hill jungle, 16.05.1989, J. C. Prazé 100828, Frt. (CAL).

Distribution: India, Cambodia, China, Laos, Malaysia, Thailand, Vietnam

Threat status: Not Evaluated

Rourea Aubl.

R. caudata Planch., *Linnaea* 23: 419. 1850.

Vernacular Name: Not known

Lianas or climbing *shrubs*. *Leaves* odd-pinnate; *leaf blade* oblong-anceolate, 2.5 – 10 × 0.8 – 3.5 cm, subpapery, glabrous on both surfaces, cuneate at the base, entire at the margin, caudate at the apex. *Inflorescences* axillary, paniculate 3.5 – 6 cm. *Calyx* ovate, 2 – 2.5 × 1.5 – 2 mm, glabrous. *Corolla* yellow, oblanceolate or spatulate, 5 – 6 × 2 – 3 mm, glabrous. *Stamens* c. 10, alternately longer and shorter. *Carpels* 5, free. *Follicle* dark brown when dry.

Flowering & Fruiting: Not seen

Habitat: open mountain forests

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 457.

Distribution: India, China

Threat status: Not Evaluated

Note: Poultice of warm leaves is used for tender skin inflammation in babies; root juice stops excess menstrual bleeding; leaf decoction is used for washing sores and its powder for healing. (Yusuf *et al.* 2009).

57. OXALIDACEAE R.Br.

Averrhoa L.

A. carambola L., *Sp. Pl.* 1: 428. 1753; Kanjilal *et al.*, *Fl. Assam* 1 (1): 192. 1934; Liu & Watson in *Fl. China* 11: 1. 2008.

Vernacular Name: Starfruit (E), Kordoi (A), Kamaranga (B)

Herbs, 3 – 12 m tall, densely branched. *Leaves* 7 – 25 cm; *petiole* 2 – 8 cm; *leaflets* 5 – 13; *leaflet blades* ovate to elliptic, 3 – 8 × 1.5 – 4.5 cm, abaxially pubescent to nearly glabrous, obliquely rounded at base, acute to acuminate at apex. *Inflorescences* axillary or rameal, panicles or cymes. *Flowers* many, small. *Calyx* narrowly elliptic, 3 – 5 mm, base thinly pubescent. *Corolla* white with purple markings, 6 – 9 × 3 – 4 mm. *Smaller stamens* sterile, occasionally 1 or 2 fertile. *Ovary* pubescent. *Berry* yellow to yellow-brown, oblong, 7 – 13 × 5 – 8 cm, very fleshy. *Seeds* numerous.

Flowering & Fruiting: April – December

Habitat: roadsides and secondary open forests; below 1000 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, way to Bandarkhal, 12.12.2013, A. Bora & D. Bhattacharyya 11715, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Native to tropical SE Asia

Note: Different parts of the plant *Averrhoa carambola* L. is used for the treatment of various disease/disorder (s) by ethnic communities from North Maharashtra and Sonowal Kachari tribes of Dibrugarh, Assam (Mazumder and Choudhury, 2013).

Threat status: Not Evaluated

Oxalis L.

- 1a. Flower yellow.....*O. corniculata*
1b. Corolla white.....2
2a. Leaf blades obcordate, 0.5 – 2 × 0.8 – 3 cm, deeply emarginated at apex.....*O. acetosella*
2b. leaf blades obtriangular, 1 – 2.5 × 1.5 – 3.5 cm, broadly emarginate to subtruncate at apex.....*O. griffithii*

O. acetosella L., Sp. Pl. 1: 433. 1753; Liu & Watson in Fl. China 11: 5. 2008.

Vernacular Name: Wood-sorrel (E)

Perennial *herbs*, 8 – 15 cm tall. *Rhizome* creeping under-ground. *Petiole* 3 – 15 cm; *leaf blades* obcordate, 0.5 – 2 × 0.8 – 3 cm, deeply emarginated at apex. *Flowers* solitary, nodding; *bracts* lanceolate, c. 3 mm, apex covered with trichomes. *Calyx* ovate-lanceolate, persistent. *Corolla* white, pinkish veined, obovate, 1.5 – 2.2 cm, retuse to deeply emarginated at apex. *Fruit* a capsule, angular-ovoid, 3 – 4 mm. *Seeds* light brown, ovoid.

Flowering & Fruiting: July – September

Habitat: Forests, shady places; 800 – 3700 m.

Specimens Examined: Included after Dutt *et al.* 1974, D. 42.

Distribution: India, China, Japan, Korea, Mongolia, Nepal, Pakistan, Russia; Europe

Note: The fresh or dried leaves are anodyne, antiscorbutic, astringent, diuretic, emmenagogue, expectorant, febrifuge, irritant and stomachic. A decoction is used in the treatment of fevers, both to quench the thirst and allay the fever. When used internally, some caution is advised due to the oxalic acid content of the leaves (Grieve, 1976).

Threat status: Not Evaluated

O. corniculata L., Sp. Pl. 435. 1753; Edgew. & Hook. f., Fl. Brit. India 1: 436. 1874; Deb, Fl. Tripura 2: 306. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 260. 2003.

Vernacular Name: Tengechi tenga (A)

Herbs small, *stem* creeping, *rooting* at nodes, with erect branches. *Leaves* stipulate, palmately 3 foliolate; *petiole* slender, pubescent; *leaflets* 3, obcordate, acute at base, ciliate at margin. *Flower* yellow, in axillary umbeliform inflorescence. *Corolla* 5, yellow, oblanceolate, emarginated at the apex. *Stamen* 10; ovary linear-oblong, 5 lobed, styles 5, distinct. *Capsule* subcylindrical, hairy.

Flowering & Fruiting: June – December

Habitat: Common, moist places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11308, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Through warmer parts of the world

Note: Leaves are eaten raw or cooked. Added to salads, cooked as a potherb with other milder flavoured greens or used to give a sour flavour to other foods. Raw flowers a nice acid flavour and a pleasant addition to the salad bowl (Website: http://practicalplants.org/wiki/Oxalis_corniculata)

Threat status: Not Evaluated

O. griffithii Edgew. & Hook.f., Fl. Brit. India 1 (2): 436. 1874; Liu & Watson in Fl. China 11: 5. 2008.

Vernacular Name: African wood sorrel (E)

Perennial *herbs*, 7 – 25 cm tall, pubescent. *Rhizome* creeping underground; *scales* strigose. *Leaves* basal; *petiole* 6 – 20 cm, pubescent; *leaf blades* obtriangular, 1 – 2.5 × 1.5 – 3.5 cm, abaxially pubescent, adaxially glabrous, broadly emarginate to subtruncate at apex. *Flowers* solitary, nodding; *peduncle* 4 – 15 cm; *bracts* lanceolate, 2.5 – 4 mm. *Calyx* lanceolate, 5 – 7 mm, persistent. *Corolla* white, narrowly obovate, 1.2 – 2 cm, retuse to deeply emarginated at apex. *Fruit* a capsule, oblong, 5 – 13 × 5 – 6 mm. *Seeds* ovoid.

Flowering & Fruiting: March – October

Habitat: Mixed deciduous or coniferous forests, moist and dry shady places; 800 – 3400 m.

Specimens Examined: Included after Dutt *et al.* 1974, D.108.

Distribution: India, Bhutan, China, Japan, Kashmir, Korea, N Myanmar, Nepal, Philippines

Threat status: Not Evaluated

58. ELAEOCARPACEAE Juss. ex DC.

- 1a. Stamens numerous; capsule globose or ovoid.....*Sloanea*
1b. Stamens 8 to numerous; Fruit a drupe.....*Elaeocarpus*

Sloanea L.

S. sterculiaceae Rehder & E.H.Wilson var. **assamica** (Benth.) Coode, Kew Bull. 38 (3): 387 – 388. 1983. *Echinocarpus assamicus* Benth., J. Proc. Linn. Soc., Bot. 5 (Suppl. 2): 72. 1861; Kanjilal *et al.*, Fl. Assam 1 (1): 182. 1934.

Vernacular Name: Joba-hingori, Bandor-kakoi (A)

Tree. Leaves *c.* 10 – 35 × 5 – 15 cm, elliptic or oblanceolate, broadly acuminate at the tip, rounded to cordate at the base, serrate at the margin, abaxially glabrous except for tufts of hairs in vein axils. Flowers creamy white, no leaves during the flowering time. Calyx 4-lobed, *c.* 1 × 0.5 cm, tomentose outside. Corolla 4-lobed, suborbicular, densely pubescent. Stamens many, hairy. Ovary pubescent, 4-celled, ovoid. Fruit a capsule, hispid.

Flowering & Fruiting: October – April

Habitat: Forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 18.05.2013, A. Bora & D. Bhattacharyya 11768, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India (Assam), Bhutan, China

Threat status: Not Evaluated

Elaeocarpus L.

- 1a. Leaves are ovate-elliptic, varying from 6.5 – 12 × 3 – 8 cm.....*E. floribundus*
1b. Leaf blade oblong or elliptic, 9 – 18 × 3 – 8 cm.....2
2a. Stamens 15.....*E. lanceifolius*
2b. Stamens many, pubescent.....*E. petiolatus*

E. floribundus Blume, Bijdr. Fl. Ned. India 3: 120. 1825; Kanjilal *et al.*, Fl. Assam 1 (1): 173. 1934. *Elaeocarpus floribundus* var. *tahanensis* (M.R.Hend.) Ng, Tree Fl. Malaya 4: 88. 1989. *Elaeocarpus lobbianus* Turcz. in Bull. Soc. Imp. Naturalistes Moscou xxxi. I. 235. 1858.

Vernacular Name: Jalphai (A), Belphai (B)

Moderate sized *tree*. Leaves are ovate-elliptic, leathery, varying from 6.5 – 12 × 3 – 8 cm, acuminate or acute at the apex, and toothed at the margin. *Inflorescence* axillary racemes, 2.5 – 12 cm long. *Flowers* 5-merous, white, 0.5 cm long, white. *Calyx* 5-lobed. *Corolla* 5-lobed, white, divided into frilly fragment. *Fruit* drupe, 2 – 5 cm long.

Flowering & Fruiting: May – December

Habitat: Roadside, sometimes cultivated

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11748, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Myanmar, Thailand, Cambodia, Laos, Vietnam, Malaysia, Indonesia, Philippines

Note: An infusion of the bark and leaves is drunk as a tonic. The bark and leaves are used in a poultice to treat ulcers (Website: <http://tropical.theferns.info/viewtropical.php?id=Elaeocarpus+floribundus>).

Threat status: Not Evaluated

E. lanceifolius Roxb., Hort. Bengal. 42; Fl. Ind. ii. 598.1832; Y. Tang & C. Phengklai in Fl. China 12: 224. 2007. *Elaeocarpus serrulatus* Benth. in Hooker's J. Bot. Kew Gard. Misc. 3: 263. 1851.

Vernacular Name: Not known

Trees. Leaf blade oblong, elliptic, 9 – 15 × 3 – 4.5 cm, leathery, glabrous, cuneate at the base, crenate at the margin, caudate-acuminate at the apex. *Inflorescence* raceme, c. 7 – 10 cm. *Flowers* bisexual. *Calyx* 5-lobed, lanceolate. *Corolla* 5-lobed, faintly shorter than calyx, margin pubescent. *Stamens* 15. *Ovary* pubescent, 2 to 3 loculed. *Fruit* a drupe, ovoid.

Flowering & Fruiting: June – September

Habitat: Forest, Open places; 1000 – 1800 metres

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11504, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

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

Note: The fully ripe fruit is edible (Manandhar and Manandhar, 2002). Wood is soft and used in construction, tea boxes etc (Gamble, 1972).

Threat status: Not Evaluated.

E. petiolatus (Jacq.) Wall., Numer. List 2673. 1831; Y. Tang & C. Phengklai in Fl. China 12: 223. 2007. *Elaeocarpus integer* Wall. ex Mull. Berol., Annot. *Elaeocarp.* 14. 1849; Kanjilal *et al.*, Fl. Assam 1 (1): 181. 1934.

Vernacular Name: Cheng-bichhal (Sylh.)

Trees. Leaf blade oblong or elliptic, 9 – 18 × 4 – 8 cm, leathery, glabrous, acute, rounded or obtuse at the base, faintly crenate to entire at the margin, acuminate or acute at the apex. *Inflorescence* axillary racemes, 6 – 12 cm. *Calyx* 5-lobed, lanceolate, 6 – 7 mm, tomentose at the abaxial side. *Corolla* as long as calyx, oblong, abaxially pubescent. *Stamens* many, pubescent; awned. *Ovary* 2-loculed; style glabrous. *Fruit* a drupe, ellipsoid.

Flowering & Fruiting: August – December

Habitat: tropical forest

Specimen Examined: Included after Kanjilal *et al.* 1934.

Distribution: India, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam

Note: Wood is suitable for purposes such as shuttering, boxes, crates, wooden pallets, match splints, veneer and plywood (Wong, 2002).

Threat status: Not Evaluated

59. RHIZOPHORACEAE Pers.

Carallia Roxb.

C. brachiata Merr. in Philipp. J. Sci. 15: 249. 1920; Thouars *et al.* in Fl. China 13: 298. 2007. *Carallia integerrima* DC., Prodr. 3: 33. 1828. *Carallia lucida* Roxb., Pl. Coast Corom. iii. 8 et t. 211. 1811; Kanjilal *et al.*, Fl. Assam 2: 241. 1938. *Diatoma brachiata* Loureiro, Fl. Cochinch. 1: 296. 1790.

Vernacular Name: Daini jamu (A), kierpa (B)

Trees upto 10 m tall. *Petiolec.* 1 cm; *leaf blade* elliptic, obovate, oblanceolate, 5 – 15 × 2 – 10 cm, papery to thinly leathery, cuneate at base, margin entire, serrate or denticulate, acute to shortly acuminate at apex. *Inflorescences* 1 – 6 cm, often resinous. *Flowers* shortly pedicellate or sessile; *bracteoles* 2 or 3. *Calyx lobes* 6 or 7, deltoid, 3 – 4 mm. *Corolla* white, suborbiculate, c. 1.5 mm in diam. *Stamensc.* 2 mm. *Ovary* bulbous, c. 2 mm; *style* 2 mm; *stigma* discoid, apically 4 – 8 – lobed. *Fruit* pink to red globose, glossy.

Flowering & Fruiting: Winter – Summer

Habitat: Common, hilly slopes, thickets, swamps; near sea level to 900 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, 27.08.2012, H. A. Barbhuiya 85958 (ASSAM); also included after Kanjilal *et al.* 1938.

Distribution: India, S Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; N Australia, Madagascar, E Nepal, New Guinea, Pacific islands

Note: The juice from the macerated leaves is used in the treatment of fevers. The pulverized bark is rubbed on the body in the treatment of smallpox. The leaves and bark are used in local medicine to treat septic poisoning and itch (Website: <http://tropical.theferns.info/viewtropical.php?id=Carallia+brachiata>).

Threat status: Not evaluated

60. EUPHORBIACEAE Juss.

- 1a. Mostly herbs, shrubs or trees; stamen 1.....*Euphorbia*
- 1b. Trees, shrubs or woody climber.....2
- 2a. Leaves alternate, opposite, rarely subopposite, verticillate or spirally arranged.....3
- 2b. Leaves alternate.....6
- 3a. Filaments free.....4
- 3b. Filaments connate at base.....5
- 4a. Stamens 10 – 20.....*Croton*

4b. stamens 15 – 250.....	<i>Mallotus</i>
5a. Leaf blade palmately compound, usually 3-foliolate.....	<i>Hevea</i>
5b. Leaf blade simple, margin often entire.....	<i>Actephila</i>
6a. Leafblade undivided or palmetely lobed.....	7
6b. Leafblade simple.....	9
7a. Leaf blade undivided or lobed.....	8
7b. leaf blade palmately lobed; male flower calyx 3 – 5-lobed; stamens very many.....	<i>Ricinus</i>
8a. Male flowers calyx 2 – 4, valvate.....	<i>Macaranga</i>
8b. Male flowers calyx 5, imbricate.....	<i>Jatropha</i>
9a. Plant monoecious.....	10
9b. Plant dioecious or monoecious.....	12
10a. Stamen 2.....	<i>Balakata</i>
10b. Stamen 3 or 5.....	11
11a. Inflorescences few to many flowers grouped into axile glomerules.....	<i>Bridelia</i>
11b. Inflorescences axillary, male flowers in few-flowered clusters in proximal axils, sometimes in small bracteate racemes, female flowers solitary in distal axils.....	<i>Breynia</i>
12a. Styles 2 – 4; sepals 3 – 5(8).....	13
12b. Style not as above.....	14
13a. Stamens 2 or 3, rarely 5 or 8; filaments free, as long as or longer than sepals.....	<i>Aporosa</i>
13b. Stamens (1-)3-5(-7); filaments longer than sepals.....	<i>Antidesma</i>
14a. Sepals 4 or 4 – 8.....	15
14b. Sepals not as above.....	16
15a. Styles 3; sepals 4 – 8.....	<i>Chaetocarpus</i>
15b. Styles 2 – 6; sepals 4.....	<i>Margaritaria</i>
16a. Monoecious, rarely dioecious.....	17
16b. Dioecious, rarely monoecious.....	<i>Bischofia</i>
17a. Stamens 3 – 8.....	<i>Glochidion</i>
17b. Stamens 2 – 6.....	<i>Phyllanthus</i>

Actephila Blume

A. excelsa Müll.Arg. in *Linnaea* 32: 78. 1863; Li *et al.* in *Fl. China* 11: 169. 2008.
Actephila dolichantha Croizat in *J. Arnold Arbor.* xxiii. 30. 1942.
Anomospermum excelsum Dalzell in *Hooker's J. Bot. Kew Gard. Misc.* 3: 228. 1851.

Vernacular Name: Not known

Shrubs. Leaves alternate, rarely subopposite; stipules *c.* 2 mm, puberulent; petiole 6 – 30 mm, sparsely pubescent; leaf blade oblong-lanceolate, 8 – 20 × 3 – 3.5 cm, abaxially pubescent to glabrous, adaxially glabrous, cuneate to obtuse at the base, long acuminate at

the apex. Inflorescences with several male and/or 1 female flowers. Male flowers: pedicel to 2 mm; calyx 5-lobed, oblong, *c.* 2.5 × 1 mm; corolla spatulate, *c.* 2 × 1 mm, greenish; disk 5-lobed; stamens 5, *c.* 2 mm. Female flowers: pedicels 4 – 7 cm, lower part delicate, apically slightly thickened; calyx 5-lobed, elliptic or oblong, 2 – 3 mm; corolla 5-lobed, obovate or spatulate, *c.* 1.5 × 1 mm; ovary ovate, glabrous; styles 3, bifid. Fruit a capsule.

Flowering & Fruiting: February – October

Habitat: Sparsely forested slopes; 100 – 1500 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, near Kalaincherra, 08.10.2011, *H. A. Barbhuiya* 85191 (ASSAM).

Distribution: India, China, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam

Note: The dried leaves are used to make a pleasant tasting tea. The mucilaginous leaves have no special aroma and contain no alkaloids (Website: <http://tropical.ferns.info/viewtropical.php?id=Actephila+excelsa>).

Threat status: Not evaluated

Antidesma Burm. ex L.

- 1a. Trees.....*A. ghaesembilla*
- 1b. Trees or shrubs or undershrub.....2
- 2a. Stamens 3 – 5.....*A. bunius*
- 2b. Stamens 4 – 5.....*A. velutinsum*

A. bunius Spreng., Syst. Veg. ed. 16. 1: 826. 1824; Kanjilal *et al.*, Fl. Assam 4: 166. 1940; Li *et al.* in Fl. China 11: 209. 2008.

Vernacular Name: Bignay, Chinese laurel, Blackcurrant tree (E)

Trees or shrubs. *Stipules* present, 4 – 6 × 2 mm, caducous; *leaf blade* oblong or elliptic, 10 – 23 × 3 – 10 cm, leathery, acute to rounded at the base, acute to rounded at the apex. *Inflorescences* axillary or terminal. *Flower* dioecious. *Male flowers:* *calyx* 1 mm, cup-shaped, 3 – 5 lobed, margin fimbriate, obtuse at the apex; *disk* annular; *stamens* 3 – 5, 2 – 3 mm; *rudimentary ovary* present. *Female flowers:* *calyx* 3-lobed; *disk* glabrous; *ovary* glabrous or pilose; *stigmas* 3 – 4. *Drupes* ellipsoid, compressed.

Flowering & Fruiting: March – November

Habitat: open places and secondary forests

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India (including Andaman and Nicobar Islands), China, Indonesia, Laos, Myanmar, Nepal, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, Vietnam; NE Australia (including Christmas Island), Pacific islands (Hawaii, Tahiti).

Note: The fruit can be eaten raw or cooked and used in jellies, preserves etc. When fully ripe, the thin but tough-skinned fruit is juicy and slightly sweet. Young leaves can be eaten raw in salads or steamed and used as a side dish with rice (Facciola, 1998).

Threat status: Not Evaluated

A. ghaesebilla Gaertn., *Fruct. Sem. Pl. 1: 189* 1788; B. Li *et al.* in *Fl. China* 11: 209. 2008.

Vernacular Name: Black Currant Tree (E), Heloch, Mikhan-tenga (A)

Trees. *Stipules* filiform; petiole pubescent. *Leaf blade* oblong-obovate, 3 – 7 × 3 – 5 cm, papery to lightly leathery, rounded to cordate at the base, rounded at the apex. *Inflorescences* axillary and terminal. *Male flowers:* *calyx* 5-lobed, free, 0.5 – 1 mm, deltoid; *disk* consisting of 4 – 7 lobes, tomentose; *stamens* 5, 2 – 2.5 mm; *rudimentary ovary* present. *Female flower:* *calyx* same as in male flower; *ovary* pubescent; *stigmas* 2 – 5. *Fruit* a drupe, ellipsoid, compressed.

Flowering & Fruiting: March – January

Habitat: Sparse forests, mixed dry forests; upto 1200 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11303, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (including Nicobar Islands), Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Australia.

Note: The fully ripe fruit can be eaten raw, cooked or made into jams and jellies. Young shoots have a sour flavour and are cooked and used as a vegetable (Facciola, 1998).

Threat status: Not Evaluated

A. velutinosum Blume, *Bijdr. Fl. Ned. Ind.* 17: 1125. 1825.
Antidesma attenuatum Wall., *Numer. List n.* 7286. 1832.
Antidesma roxburghii Wall., *Numer. List n.* 7283. 1832; Tul. in *Ann. Sc. Nat. Ser. III.* xv. 234. 1851.

Vernacular Name: Not known

Shrub or undershrub, branches villous. Leaves simple, alternate, 15 – 25 cm long, subsessile, obovate-oblong, oblong or lanceolate at the apex, attenuate to rounded at the base, entire at margin. Flowers minute, grouped in terminal and axillary compact spikes, c. 10 – 15 cm long spikes, sometimes subpanicked. Stamens 4 – 5, 2 – 3 mm long. Ovary subglobose or ovoid, c. 1.2 mm in diam., tomentose or villous. Fruit a fleshy drupe, small, ovoid or ellipsoid, subcompressed.

Flowering & Fruiting: April – October

Habitat: On hill slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, near Kalaincherra, 27.08.2012, H. A. Barbhuiya 85954, Frt. (ASSAM).

Distribution: India, Cambodia, Malaysia Peninsular, Myanmar, Thailand and Laos

Note: Roots and leaves with clove, black pepper and fruits of Piper longum are made in to pills, which are given for post-natal indigestion and irregular menstruation by the Marma

tribe; the pills are administered thrice daily for two weeks (Website: <http://www.mpbd.info/plants/antidesma-roxburghii.php>).

Threat status: Not Evaluated

Aporosa Blume

A. octandra (Buch.-Ham. ex D.Don) A.R.Vickery, Enum. Fl. Pl. Nepal 3: 193. 1982. *Aporosa oblonga* Müll.Arg., *Linnaea* 32: 78 1863. *Myrica octandra* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 56. 1825. *Alnus dioica* Roxb., Fl. Ind., ed. Carey 3: 580. 1832. *Scepa villosa* Lindl., Nat. Syst. Bot., ed. 2: 441. 1836.

Vernacular Name: Bara-heloch (A), Kokra (B)

Small tree. *Leaves:* 8.5 – 15 cm long, elliptic-oblong, entire at the margin, rounded or acute at the base. *Flowers* dioecious. *Male flower:* axillary spikes, solitary, upto 6.2 cm long. *Female flower:* very short spikes, pubescent; *bracts* present; *ovary* glabrous, *stigma* cleft. *Fruit* a capsule, ellipsoid

Flowering & Fruiting: January – December

Habitat: Hill slope, mixed forests; upto 1200 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11607, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Pakistan, Nepal, Bhutan, Bangladesh, Myanmar, China, Laos, Cambodia, Vietnam, Thailand, Java, Sumatra, Borneo and Sulawesi

Note: The plant yields fodder. Timber used for construction of houses. Bark yields a red dye. A decoction of leaves used to dye clothes black in NE. India. The fruits are edible (Website: <http://efloraindia.nic.in/efloraindia/taxonList.action?id=573&type=4>).

Threat status: Not Evaluated

Balakata Esser

B. baccata (Roxb.) Esser, Blumea 44 (1): 155. 1999; Li *et al.* in Fl. China 11: 248. 2008. *Sapium baccatum* Roxb., Fl. India ed. 3: 694. 1832.

Vernacular Name: Bella (B), Seleng (A)

Trees. Stipules: 1.5 mm, caducous; *leaf blade* ovate, rarely elliptic, 8 – 22 × 4 – 11 cm, acute to obtuse at base, entire at margins, acuminate at apex. *Inflorescences* in terminal whorls and in leaf axils, male at upper portion, female at base. *Male flowers:* *bracts* broadly ovate; *bracteoles* linear; *calyx* 2-lobed, lobes 0.5 – 1 mm, serrulate; *stamens* with filaments 0.4 – 0.6 mm; *anthers* globose. *Female flowers:* *calyx* lobes c. 1 mm, ovate; *ovary* ovate, 2-celled; *style* almost free. *Fruits* baccate.

Flowering: April – May

Habitat: Hilly slopes, streamsides

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, near Kalaincherra, 10.09.2010, H. A. Barbhuiya 85871 (ASSAM).

Distribution: India, Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam

Note: The fruits are mealy and sweet. They are sometimes used for flavouring. Sapwood is cream to white in colour, soft, with a sour to sweet smell. It is not very durable. The wood is used as timber (Website: <http://tropical.theferns.info/viewtropical.php?id=Balakata+baccata>).

Threat status: Not Evaluated

Bischofia Blume

B. javanica Blume, Bijdr. Fl. Ned. India 17: 1168. 1826; Li *et al.* in Fl. China 11: 217. 2008.

VernacularName: Urim (A)

Trees; branchlets glabrous. *Leaves* palmately 3 – 5 foliolate; *stipules* lanceolate, c. 8 mm; petiole 8 – 20 cm. Leaflet blades ovate-elliptic, obovate, 7 – 15 × 4 – 8 cm, papery, sparsely tomentose on nerves, cuneate to obtuse at the base, margins toothed, caudate-acuminate at the apex. *Plants* dioecious. *Inflorescence* axillary, paniculate. *Male flowers:* calyx semiorbicular, abaxially pubescent; *filaments* short; *pistillode* small, pubescent. *Female flowers:* calyx oblong-ovate; *ovary* smooth, glabrous; *styles* 3 or 4, linear, entire. *Fruits* globose or subglobose.

Flowering & Fruiting: April – October

Habitat: Evergreen forests, woodlands

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11461, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Pacific Islands.

Note: The fresh bark is used to treat aching stomachs. The sap of the bark, mixed with lime, is used to treat sore feet. The crushed leaves are rubbed onto an aching stomach (Anonymous, 2009).

Threat status: Not Evaluated

Breynia J.R.Forst. & G.Forst.

B. retusa (Dennst.) Alston in Ann. Roy. Bot. Gard. (Peradeniya) 11: 204. 1929; Li & Esser in Fl. China 11: 208. 2008. *Breynia patens* (Roxb.) Rolfe in J. Bot. 20: 359. 1882; Hook. f., Fl. Brit. India 5: 329. 1887; Kanjilal *et al.*, Fl. Assam 4: 174. 1940. *Breynia angustifolia* Hook.f., Fl. Brit. India 5 (14): 330. 1887. *Breynia hyposauropus* Croizat in J. Arnold Arbor. xxi. 493.1940.

Vernacular Name: Chhitki, Silpati (B)

Erect *shrubs* 0.5 – 3.5 m tall, glabrous throughout; *branches* slender. *Stipules* small; *petiole* 1 – 2.5 mm; *leaf blade* elliptic to slightly obovate, 1.5 – 3 × 0.7 – 1.5 cm, papery,

obtuse to rounded at base, rounded to subacute at apex. *Flowers* solitary or rarely 2, axillary clusters. *Male flowers*: pedicels slender, c. 1.5 mm; calyx campanulate to turbinate, 6-lobed; sepals rounded to oblong; stamens 3, c. 2 mm. *Female flowers*: solitary; pedicels 0.5 – 1.5 mm; calyx campanulate, 6-lobed, c. 1.5 – 3 mm high; sepals ovate-oblong; ovary globose; style present, very stout; stigmas c. 0.5 mm. *Capsules* globose, exocarp fleshy. *Seeds* yellow to red.

Flowering & Fruiting: March – September

Habitat: Common, roadside, open forests; 300 – 1500 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11521, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Laos, Malaysia (peninsular), Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Note: The plant is astringent to the bowels; useful in inflammations and diseases of the blood. The juice of the stem is used in conjunctivitis (Website: <http://webcache.googleusercontent.com/search?q=cache:http://www.mpbd.info/plants/breynia-retusa.php>).

Threat status: Not Evaluated

Bridelia Willd.

- 1a. Trees.....*B. retusa*
1b. Scandent shrub or Shrub.....2
2a. Leaves c. 4 – 15 × 1.5 – 8 cm.....*B. stipularis*
2b. Leaves c. 3.5 – 7 × 1 – 2.5 cm.....*B. monoica*

B. monoica (Lour.) Merr. In Phillip. J. Soc. Bot. 13: 142. 1918; P.J.Bora & Y.Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 229. 2003. *Bridelia tomentosa* Blume, Bijdr. 597. 1827; Hook. f., Fl. Brit. India 5: 271. 1887; Kanjilal *et al.*, Fl. Assam 4: 146. 1940.

Vernacular Name: Hekoti gach (A)

Shrub. Leaves c. 3.5 – 7 × 1 – 2.5 cm, elliptic, oblong-lanceolate, acute at the apex, cuneate at the base, margin entire. *Inflorescence* in cluster, axillary. *Flowers* greenish yellow; *corolla* ovate or suborbicular. *Fruit* a drupe, globose.

Flowering & Fruiting: September – January

Habitat: Occasionally, waste lands; upto 1000 m

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India (Andaman, North-east India), Bangladesh, China, Malaya, North America, Phillipines

Note: The bark is astringent. It is used in the treatment of colic. The leaves are used in the treatment of colic (Website: <http://tropical.theferns.info/viewtropical.php?id=Bridelia+tomentosa>).

Threat status: Not Evaluated

B. retusa A.Juss., Euphorb. Gen. 27, t. 7. 1824; Kanjilal *et al.*, Fl. Assam 4: 143. 1940; Li *et al.* in Fl. China 11: 175. 2008. *Clutia retusa* L., Sp. Pl. 2: 1042. 1753.

Vernacular Name: Spinous Kino Tree (E), Kunhir (A)

Trees. *Stipules* present, *c.* 2 mm, caducous; *leaf blade* obovate or elliptic, 8 – 25 × 4 – 13 cm, papery, obtuse or rounded at the base, rounded or truncate at the apex. *Inflorescences* many flowered, terminal or axillary, spikes or panicles; *bracts* small, 1.5 – 3 mm. *Male flower:* small, yellow-green to reddish brown; *calyx* ovate-triangular, *c.* 2 × 1 mm; *corolla* obovate to spatulate, 1 – 1.5 mm, 3 – 5 lobed; *disk* cup-shaped; *anthers* ovoid; *rudimentary ovary* terete. *Female flowers:* *calyx* same as in male; *corolla* spatulate; *disk* pulvinate and urceolate; *ovary* globose to ovoid; *styles* 2, bifid. *Fruit* a drupe, ovoid or globose.

Flowering & Fruiting: April – January

Habitat: Deciduous forest

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, Bhutan, Cambodia, China, Indonesia (Sumatra), Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Note: The plant is pungent, bitter, heating; useful in lumbago and hemiplegia. The bark is good for the removal of urinary concretions. It is also used as a liniment with gigelly oil in rheumatism

(Website: <http://webcache.googleusercontent.com/search?q=cache:http://www.mpbd.info/plants/bridelia-retusa.php>).

Threat status: Not Evaluated

B. stipularis (L.) Blume, Bijdr. 597. 1826; Hook. f., Fl. Brit. India 5: 270. 1887; Kanjilal *et al.*, Fl. Assam 4: 147. 1940; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 299. 2003.

Vernacular Name: Shagoli lota (A)

Scandent *shrub.* *Stipules* present. *Leaves* 4 – 15 × 1.5 – 8 cm, elliptic-oblong, subacute or rounded at the basynoe, abaxially pubescent. *Inflorescence* axillary clusters or spikes; *bract* present. *Flowers* unisexual, greenish yellow, *c.* 0.5 cm long. *Calyx* acute, ovate-triangular. *Corolla* spatulate, *c.* 2 mm, 3-dentate. *Stamens* 5. *Ovary* 2-celled, *style* 2, *stigma* 2-lobed. *Fruit* a drupe, oblong.

Flowering & Fruiting: December – March

Habitat: Common

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11438; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11492, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, China, Malaysia, Myanmar, Nepal, Phillipines, Thailand

Note: Plant is used in pleurisy and exudation. Bark decoction is given to children for cough, fever and asthma and as gargle for sores in mouth. Fresh tender leaves are used for the treatment of jaundice; emulsion for anaemia due to pregnancy. Leaf powder and warm leaf poultice are applied to white spots in the skin (Website: <http://webcache.googleusercontent.com/search?q=cache:http://www.mpbd.info/plants/bridelia-stipularis.php&num=1&strip=1&vwsrc=0>).

Threat status: Not Evaluated

Chaetocarpus Thwaites

C. castanocarpus Thwaites, Enum. Pl. Zeyl. 275. 1861; Kanjilal *et al.*, Fl. Assam 4: 201. 1940; Li *et al.* in Fl. China 11: 279. 2008. *Clutia retusa* L., Sp. Pl. 2: 1042. 1753. *Adelia castanocarpa* Roxburgh, Fl. India, ed. 1832, 3: 848. 1832.

Vernacular Name: Bulkokra (B)

Trees. *Stipules* small, caducous; *petiole* 5 – 8 mm. *Leaf blade* ovate-lanceolate or elliptic, 7 – 15 × 3 – 5 cm, cuneate or obtuse at the base, entire at the margin, acuminate at the apex. *Flowers* axillary sessile cyme, monoecious; *bracts* ovate. *Male flowers:* *calyx* 4-lobed, oblong, 2 – 3 mm, margins tomentose; *stamens* 8; *anthers* c. 1 mm; *pistillode* 3-fid. *Female flowers:* *calyx* same as male flower; *disk* urceolate, margin undulate; *ovary* c. 2.5 mm, compactly pubescent; *styles* 3, c. 3 mm, bifid; *stigmas* densely pubescent. *Fruit* a capsule, subglobose.

Flowering & Fruiting: November – March

Habitat: Slopes of the hills

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam

Note: The wood is said to be light red, moderately hard, close-grained, dense and durable. It is used as a non-construction timber, for building purposes and for sampans and columns (Website: <http://tropical.theferns.info/viewtropical.php?id=Chaetocarpus+castanocarpus>).

Threat status: Not Evaluated

Croton L.

- 1a. Scandent shrubs.....*C. caudatus*
- 1b. Trees.....2
- 2a. Petiole 2.5 – 6 cm; styles bifid.....*C. tiglium*
- 2b. Petioles 1.5 – 6 cm; styles 3, 2-partite.....*C. joufra*

C. tiglium L., Sp. Pl. 2: 1004. 1753; Hook.f., Fl. Brit. India 5: 393. 1887; Kanjilal *et al.*, Fl. Assam 4: 194. 1940; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 302. 2003; Li & Esser in Fl. China 11: 259. 2008.

Vernacular Name: Not known

Tree. Stipules subulate, 1.5 – 4 mm; petiole 2.5 – 6 cm; leaf blade ovate-elliptic or ovate-lanceolate, 5 – 15 × 2 – 7 cm, cuneate or rounded at the base, serrulate at the margins, acute or acuminate at the apex; bracts subulate. *Male flowers:* bud thinly hairy or glabrescent. *Female flowers:* calyx oblong to lanceolate, c. 2.5 mm; ovary densely pubescent; styles bifid. *Fruit* a capsule ellipsoidal or subglobose.

Flowering & Fruiting: January – September

Habitat: Montane sparse forests

Specimens Examined: India, Assam, Cachar dist., Lakhipur on Barak valley, 16.08.1903, A. T. Gage 411107 (CAL).

Distribution: India, China, Myanmar, Sri Lanka

Threat status: Not Evaluated

C. caudatus Geiseler, *Croton. Monogr.* 73. 1807; Hook.f., *Fl. Brit. India* 5: 389. 1887; Kanjilal *et al.*, *Fl. Assam* 4: 194. 1940; P. J. Bora & Y. Kumar, *Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary* 301. 2003; Li & Esser in *Fl. China* 11: 262. 2008.

Vernacular Name: Not known

Scandent shrubs, 2-3 m tall; branches subglabrous. Petiole 0.5 – 1.5 cm, apex with 2 discoid glands; leaf blade ovate, 4 – 6 × 3.5 – 4.5 cm, papery, broadly cuneate to rounded at base, obscurely serrulate at margins, acute, sometimes caudate-acuminate at apex. *Inflorescence* terminal, 8 – 16 cm; bracts linear, c. 2 mm, hairy. *Male flowers:* sepals ovate, c. 2.5 mm, hairy; petals oblong, as long as sepals, margins woolly; stamens c. 20; filament bases densely woolly. *Female flowers:* sepals ovate, c. 3 mm, densely hairy outside; petals oblong, smaller than sepals; ovary densely hispid; styles bifid, linear. *Fruits* globose, densely hispid.

Flowering & Fruiting: May – October

Habitat: Sparse hilly forests; 500 – 600 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11332, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Brunei, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Thailand, Singapore, Sri Lanka, Vietnam; N. Australi.

Note: A decoction of the root causes purging and so is administered as a treatment for constipation; and, since purging may help fevers and colds, it is used to treat them also (Uphof, 1959).

Threat status: Not Evaluated

C. joufra Roxb., *Hort. Bengal.* 104; *Fl. Ind.* iii. 685. 1832. *Oxydectes joufra* Kuntze, *Revis. Gen. Pl.* 2: 612. 1891.

Vernacular Name: Not known

Medium sized trees. Petioles 1.5 – 6 cm; leaf blade oblong, elliptic or ovate-lanceolate, 10 – 25 × 2.5 – 8 cm, leathery, obtuse at base, entire or repand-serrate at margin, acuminate at apex. Inflorescence terminal, 10 – 25 cm, stellate-scaly. Male flowers: calyx 5-lobed, ovate-triangular, *c.* 2 mm, stellate-scaly; corolla 5-lobed, ovate-triangular, *c.* 2 mm, puberulent; stamens 11 or 12; filaments villous. Female flowers: pedicels shorter; calyx 5-lobed, triangular, *c.* 2.5 mm; corolla reduced; disk annular; ovary ovoid; styles 3, 2-partite. Capsules ovoid-ellipsoid or oblong.

Flowering & Fruiting: Almost throughout year

Habitat: On hill slopes; below 1000 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, 08.05.2011, *H. A. Barbhuiya* 85919, 85920 (ASSAM).

Distribution: India, Bangladesh, Bhutan, China, Myanmar, Vietnam

Threat status: Not Evaluated

Euphorbia L.

1a. Capsule depressed globose, minute, hairy.....*E. hirta*

1b. Capsule hairy Capsule 3-angular-ovoid; obtusely keeled.....*E. thymifolia*

E. hirta L., Sp. Pl. 454.1753; Kanjilal *et al.*, Fl Assam 4: 141. 1940; Deb, Fl. Tripura 1: 332. 1981; P. J. Bora & Y.Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 302. 2003.

Vernacular Name: Gakhiroti bon (A)

Procumbent annuals *herb*, hispid with long and crispy hairs. *Leaves* opposite, *c.* 1 – 3 × 0.8 – 1.2 cm, elliptic or ovate-oblong, sub-obtuse, serrulate, hairy; base obliquely cordate, shortly petiolate. *Cyathia* axillary or terminal in capitate cymes. *Involucres* campanulate; lobes 5, ciliated. *Capsule* minute, hairy, depressed globose, 3 lobed; *seeds* reddish brown.

Flowering & Fruiting: Almost throughout year

Habitat: Common, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, *A. Bora & D. Bhattacharyya* 11340, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Hotter part of India, tropical and subtropical region.

Note: This plant is known for its benefits in relieving female disorders. Other ailments like cough, coryza, respiratory ailments, asthma and bronchitis are also relieved with the help of this plant. It has been also used for relieving worm infestations usually seen in children, jaundice, gonorrhoea, pimples, tumors and digestive problems (Website: <http://www.alwaysayurveda.com/euphorbia-hirta/>).

Threat status: Not Evaluated

E. thymifolia L., Sp. Pl. 454. 1753; Hook. f., Fl. Brit. India 5: 252. 1888; Kanjilal *et al.*, Fl. Assam 4: 141. 1940; Deb, Fl. Tripura 1:334. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 303. 2003.

Vernacular Name: Choti dudhi (H), Raktakerui, Shwet-keruee (B)

Annual *herb*, spreading branches. *Leaves* very small, opposite, petiolate, obliquely oblong, crenulated, sub-cordate at the base, glabrous above, pubescent below. *Involucres* small, axillary, solitary, campanulate with short stalk. *Capsule* erect, obtusely keeled, hairy. *Seeds* minute.

Flowering & Fruiting: Almost throughout year

Habitat: Common weed

Specimen Examined: India, Assam, NC Hills dist., Haflong, 27.08.1908, W. G. Craib 397679, 476792, Fl. (CAL).

Distribution: Pantropic

Note: The plant is beneficial in diarrhea and painful bleeding of piles. The paste of the plant cures skin diseases and parasitic infections. If used internally, its extract promotes conception. It is aphrodisiac and possesses age sustaining properties (Website: <http://www.ecosensorium.org/2009/08/chhoti-duddhi-euphorbia-thymifolia-linn.html>)

Threat status: Not Evaluated

Glochidion J.R.Forst. & G.Forst.

- 1a. Trees.....2
- 1b. Shrubs or medium sized tree.....4
- 2a. Stamens 6.....*G. zeylanicum* var. *arborescens*
- 2b. Stamens 3.....3
- 3a. Ovary densely pubescent.....*G. lanceolarium*
- 3b. ovary glabrous.....*G. sphaerogynum*
- 4a. Leaf blade oblong, elliptic-ovate or ovate-lanceolate, 7 – 10 × 2.5 – 4 cm.....*G. khasicum*
- 4b. Leaf blade oblong or elliptic, 5 – 13 × 2.5 – 4 cm.....*G. thomsonii*

G. khasicum Hook.f., Fl. Brit. India 5 (14): 324. 1887; Kanjilal *et al.*, Fl. Assam 4: 187. 1940; Li *et al.* in Fl. China 11: 202. 2008. *Phyllanthus khasicus* Müll. Arg., Flora 48: 389. 1865.

Vernacular Name: Not known

Shrubs or medium sized *tree*, 1 – 6 m tall, monoecious, glabrous; *branchlets* angular. *Stipules* 2.5 mm; *petiole* 4 – 6 mm, stout; *leaf blade* oblong, elliptic-ovate or ovate-lanceolate, 7 – 10 × 2.5 – 4 cm, leathery, acute at base; *lateral veins* 5 or 6 pairs. *Male flowers* in few-flowered axillary clusters; *pedicels* short; *sepals* 6, oblanceolate, unequal, 3 – 3.5 mm; *stamens* 3, connate. *Female flowers* sessile; *sepals* 6, ovate-oblong, unequal,

3.5 – 4 mm; *ovary* globose; *style* column elongate, unequally 3-toothed at apex. *Fruit* a capsule, depressed globose. *Seeds* hemispheric.

Flowering & Fruiting: June – November

Habitat: Open forests, valley; 900 – 1300 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11434, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Thailand

Threat status: Not Evaluated

G. lanceolarium Voigt, Hort. Suburb. Calcutt. 153. 1845; Li & Gilbert in Fl. China 11: 195. 2008. *Bradleia lanceolaria* Roxb., Fl. Ind., ed. 1832, 3: 697. 1832.

Vernacular Name: Not known

Evergreen *shrubs* or *trees*, usually 1 – 3 m tall, monoecious, glabrous except for hairy ovary and capsule. *Stipules* triangular-lanceolate, 2.5 – 3 mm; *petiole* 3 – 5 mm; *leaf blade* elliptic or oblong-lanceolate, 6 – 16 × 2.5 – 6 cm, leathery, acute or broadly cuneate at base; *lateral veins* 5 – 7 pairs. *Flowers* in axillary clusters. *Male flowers*: pedicels 8 – 10 mm; *calyx* 6, obovate-oblong, c. 3 mm, yellow; *stamens* 5 or 6. *Female flowers*: pedicels 2 – 4 mm; *Calyx* 6, biseriate, outer larger than inner, outer ones ovate, inner narrowly ovate, 2.5 – 3 mm; *ovary* globose, 6 – 8-locular, densely pubescent; *styles* connate into an ovoid column, less than 1 mm. *Capsules* subglobose.

Flowering & Fruiting: April – February (next year)

Habitat: Open forests or thicket; 500 – 1200 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11480, 11497, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Cambodia, China, Laos, Thailand, Vietnam

Note: The plant (part not specified) is used in the treatment of anaemia, dysentery and uterine prolapse (Duke and Ayensu, 1985).

Threat status: Not evaluated

G. sphaerogynum Kurz, Prelim. Rep. Forest Pegu App. A. p. cv.; App. B. 77. 1875; Kanjilal *et al.*, Fl. Assam 4: 188. 1940; Li *et al.* in Fl. China 11: 195. 2008. *Phyllanthus sphaerogynus* Muller Argoviensis, Flora 48: 375. 1865.

Vernacular Name: Not known

Trees. *Stipules* 2 – 3 mm; *petiole* 5 – 8 mm; *leaf blade* ovate-lanceolate or oblong-lanceolate, 7 – 10 × 1.5 – 3.5 cm, papery. *Inflorescence* in axillary clusters. *Flowers* monoecious. *Male flowers*: pedicels c. 7 mm; *calyx* 5 – 6 lobed, obovate to elliptic, c. 2 mm, yellowish; *stamens* 3, connate. *Female flowers*: pedicels c. 3 mm; *calyx* 6-lobed, ovate, c. 1 mm; *ovary* ovoid, glabrous; *style* c. 2 mm wide. *Fruit* a capsule, globose.

Flowering & Fruiting: December – October

Habitat: Mixed forests

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, Bhutan, China, Myanmar, N Thailand, Vietnam

Note: The branches and leaves are used as medicine for the treatment of influenza, eczema, etc (Li & Gilbert 2008). The bark and wood are dried, chopped into pieces, heated and then applied as skin paints over affected spots (Website: <http://www.nationaalherbarium.nl/ThaiEuph/>).

Threat status: Not Evaluated

G. thomsonii Hook.f., Fl. Brit. India 5 (14): 318. 1887; Kanjilal *et al.*, Fl. Assam 4: 185. 1940; Li *et al.* in Fl. China 11: 195. 2008. *Phyllanthus thomsonii* Müller Argoviensis, Flora 48: 375. 1865.

Vernacular Name: Not known

Shrubs, monoecious. *Stipules* 3 mm; *petiole* 2 – 3 mm; *leaf blade* oblong or elliptic, 5 – 13 × 2.5 – 4 cm, leathery, obtuse at the base, acuminate to obtuse at the apex. *Inflorescence* axillary, in clusters. *Male flowers*: calyx 6-lobed, elliptic; stamens 3, connate. *Female flowers*: calyx 6-lobed, elliptic-ovate; ovary globose; stylec. 2 mm. *Fruit* a capsules, depressed globose.

Flowering & Fruiting: August – December

Habitat: roadside

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: NE India, China

Threat status: Not Evaluated

G. zeylanicum (Gaertn.) A.Juss. var. **arborescens** (Blume) Chakrab. & M.Gangop. in J. Econ. Taxon. Bot. 19(1): 228. 1995; Li *et al.* in Fl. China 11: 194. 2008. *Glochidion arborescens* Blume, *Bijdr.* 584 1826; Kanjilal *et al.*, Fl. Assam 4: 188. 1940.

Vernacular Name: Panimudi (A)

Trees. *Stipules* oblong; *petiole* 3 – 5 mm; *leaf blade* oblong, 5 – 15 × 3 – 7 cm, leathery, rounded to cordate at the base, acute or acuminate at the apex. *Inflorescence* supra-axillary cyme, *Flowers* pedunculate. *Male flowers*: calyx 6-lobed, oblong, c. 1 mm; *stamens* 6, connate at the base. *Female flowers*: ovary ovoid-globose, tomentose; *style* column conical, c. 0.5 mm; *stigma* 3 – 5-lobed. *Fruit* a capsules, globose.

Flowering & Fruiting: April – October

Habitat: Evergreen forest

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India (Assam), China, Indonesia, Malaysia, Thailand

Threat status: Not Evaluated

Hevea Aubl.

H. brasiliensis (Willd. ex A.Juss.) Müll.Arg., *Linnaea* 34: 204. 1865; Li *et al.* in *Fl. China* 11: 265. 2008. *Siphonia brasiliensis* Willdenow ex A. Jussieu, *Euphorb. Gen. t.* 12. 1824.

Vernacular Name: Rubber tree (E), Para rubber (B)

Trees with milky juice. *Petiole* 5 – 15 cm; *leaflets* 3, elliptic, 10 – 22 × 4 – 8 cm, glabrous, cuneate at the base, margin entire, acute to acuminate at the apex. *Inflorescence* in axillary panicles, pubescent. Male flowers: calyx ovate-lanceolate, *c.* 2 mm; stamens 10. *Female flowers:* calyx same as in male; *ovary* 2 – 6-locular; *stigmas* 3. *Fruit* a capsule, ellipsoid.

Flowering & Fruiting: May – September

Habitat: cultivated, forest edges and gaps

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: native to Brazil; widely introduced throughout the tropics

Note: The milky latex of *Hevea brasiliensis*, produced by a specialised secretory system in the phloem, is the raw material for natural rubber. The latex is a renewable resource that can be sustainably tapped without harming the tree. Rubber is water-resistant, durable and highly elastic. Natural rubber is used in thousands of ways, from bouncing balls, boots, balloons and latex gloves, to engineering and industrial applications. Natural rubber is more suitable than synthetic rubber for the tyres of aircraft and space shuttles. Felled plantation trees are used for timber-rubberwood, which has important uses in the furniture industry. The seeds contain oil that can be used in making paints and soaps (Website: <http://www.kew.org/science-conservation/plants-fungi/hevea-brasiliensis-rubber-tree>).

Threat status: Not Evaluated

Jatropha L.

J. curcas L., *Sp. Pl.* 1006. 1753; Hook. f., *Fl. Brit. India* 5: 383. 1887; Kanjilal *et al.*, *Fl. Assam* 4: 190. 1940; Deb, *Fl. Tripura* 1:339. 1981; P. J. Bora & Y. Kumar, *Florist. Diversity Assam* 303. 2003.

Vernacular Name: Bongali ara (A)

Shrub with watery latex. *Leaves* *c.* 5 – 15 × 5 – 11 cm, ovate, 3 – 5 lobed, acute at the apex, cordate at the base, *petiole* long. *Inflorescence* in paniced cyme. *Flowers* monoecious. *Male flower:* *Calyx.* 0.4 cm long, ovate, connate at the base; *corolla* *c.* 0.6 cm long, yellow, elliptic-ovate; *stamen* 10, in two series. *Female flower:* *calyx* and *corolla* same as male flower; *stigma* bifid; disk 5-lobed. *Fruit* a capsule, slightly lobed.

Flowering & Fruiting: May – November

Habitat: Common, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, 10.09.2010, *H. A. Barbhuiya* 85886 (ASSAM).

Distribution: Through out India, Pantropic

Note: In India, pounded leaves are applied near horses' eyes to repel flies. The oil has been used for illumination, soap, candles, adulteration of olive oil, and making Turkey red

oil. Bark used as a fish poison (Watt and Breyer-Brandwijk, 1962). Reported to be abortifacient, anodyne, antiseptic, cicatrizant, depurative, diuretic, emetic, hemostat, lactagogue, narcotic, purgative, rubefacient, styptic, vermifuge, and vulnerary, physic nut is a folk remedy for alopecia, anasarca, ascites, burns, carbuncles, convulsions, cough, dermatitis, diarrhea, dropsy, dysentery, dyspepsia, eczema, erysipelas, fever, gonorrhoea, hernia, incontinence, inflammation, jaundice, neuralgia, paralysis, parturition, pleurisy, pneumonia, rash, rheumatism, scabies, sciatica, sores, stomachache, syphilis, tetanus, thrush, tumors, ulcers, uterosis, whitlows, yaws, and yellow fever (Duke and Wain, 1981; List and Horhammer, 1969 – 1979).

Threat status: Not Evaluated

Macaranga Thouars

M. denticulata (Blume) Mull.Arg. in A. Candolle, Prodr. 15 (2): 1000. 1866; Kanjilal *et al.*, Fl. Assam 4: 218. 1940. *Mappa denticulata* Blume, Bijdr. 625. 1826.

Vernacular Name: Moralia (A), Jagura (B)

Small trees. *Stipules* lanceolate, caducous; *leaf blade* broadly ovate, 12 – 26 × 11 – 25 cm, abaxially pubescent, adaxially glabrescent, obtuse or subtruncate at the base, margin subentire, acuminate at the apex. *Male flowers:* *pedicel* 0.5 mm; *calyx* 2 – 3-lobed, c. 1 mm; *stamens* 9 – 16. *Female flower:* solitary; *calyx* cup-shaped, 2-lobed, c. 1.5 mm; *ovary* tomentose; *styles* 2 – 3, c. 1 mm. *Fruit* a capsule.

Flowering & Fruiting: April – October

Habitat: slopes, low hills

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11311; Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11450, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bhutan, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam

Note: A decoction of the leaves has been used to cleanse wounds (Website: <http://tropical.theferns.info/viewtropical.php?id=Macaranga+denticulata>).

Threat status: Not Evaluated

Mallotus Lour.

- 1a. Trees.....2
- 1b. Shrubs to trees.....3
- 2a. Leafblade ovate, 6 – 21 × 6.3 – 16.5 cm.....*M. nudiflorus*
- 2b. Leaf blade ovate-lanceolate, 5 – 20 × 3 – 6 cm.....*M. philippensis*
- 3a. Climbing shrubs.....*M. repandus*
- 3b. Shrubs.....4
- 4a. Calyx 3 – 4 lobed, ovate, 2 – 2.5 mm; c. 3 mm; c. 3 mm.....*M. paniculatus*
- 4b. Calyx 4-lobed, oblong, c. 2 mm; 3 – 4 mm.....*M. roxburghianus*

M. nudiflorus (L.) Kulju & Welzen in *Blumea* 52(1): 124. 2007.
Mallotus cardiophyllus Merr. in *Philipp. J. Sci., C* 7: 398. 1913.
Rottlera hoperiana Blume ex Müll.Arg., *Prodr.* 15 (2.2): 953.
1866. *Trewia nudiflora* L., *Sp. Pl.* 2: 1193. 1753.

Vernacular Name: False White Teak (E), bhelkol (A), pitali (B)

Large shrubs to trees up to 30 m high, dioecious, deciduous. Stipules triangular, early caducous. Leaves opposite to subopposite; petiole 1.8 – 12 cm long, often with a basal constriction when dry, glabrous to hairy; blade ovate, 6 – 21 × 6.3 – 16.5 cm, papery, cordate to obtuse at base, margin subentire, acute to acuminate at apex. Inflorescences axillary racemes, pendulous when staminate; staminate flowers many; Staminate inflorescences up to 30 cm long. Staminate flowers: buds ovoid to ellipsoid; pedicels 3.9 – 10 mm long; sepals 2 or 3 or 4, free, ovate to elliptic, 3.2 – 6 × 1.8 – 3.7 mm, light yellowish to light greenish. Pistillate inflorescences 1.5 – 10.5 cm long; bracts present. Pistillate flowers: pedicel 1.1 – 9 mm long; style 1.7 – 5.9 mm long; stigmas plumose inside, hairy outside. Fruits indehiscent, drupaceous, oblate to spheroid. Seeds surface smooth, brown to black.

Flowering & Fruiting: December – May

Habitat: open sites, usually near streams and rivers; up to 1200 m.

Specimen Examined: Included after Borah *et al.*, 2016.

Distribution: India, Nepal, Southeast Asia to Southern China, Malaya Peninsula, Sumatra, Borneo, Java, Philippines

Note: The plant is used to remove swellings, bile and phlegm. A decoction of the root is used to relieve flatulence. Applied externally, the root decoction is used to relieve gout and rheumatic afflictions (Chopa *et al.*, 1986).

Threat status: Not Evaluated

M. paniculatus Müll.Arg., *Linnaea* 34: 189. 1865; *Mallotus albus* Müll.Arg., *Linnaea* 34: 188. 1865; Kanjilal *et al.*, *Fl. Assam* 4: 213. 1940. *Croton paniculatus* Lam., *Encycl.* 2: 207. 1786.

Vernacular Name: Laru-bandha, Moralia (A)

Shrubs. Stipules small; leaf ovate, 1 – 3-lobed, 5 – 15 × 3 – 12 cm, cuneate at the base, acuminate at the apex. Inflorescences often branched, 10 – 25 cm, tomentose; bracts ovate. Male flowers: fascicled; calyx 3 – 4 lobed, ovate, 2 – 2.5 mm, puberulent; stamens many. Female flowers: calyx 4 – 5, oblong, 2 – 3 mm; ovary tomentose; styles 3, c. 3 mm. Fruit a capsule.

Flowering & Fruiting: July – December

Habitat: Mountain slopes

Specimen Examined: *Specimens Examined:* India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11769, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, Vietnam; NE Australia

Note: The roots are boiled and drunk after child birth. The leaves are used against fever. The indumentum of the young leaves is applied on the penis after circumcision (Website: <http://tropical.theferns.info/viewtropical.php?id=Mallotus+paniculatus>).

Threat status: Not Evaluated

M. philippensis (Lam.) Mull.Arg., *Linnaea* 34: 196. 1865; Li *et al.* in *Fl. China* 11: 226. 2008.

Vernacular Name: Monkey-face Tree (E), Kamala (H)

Shrubs or small *trees*. *Stipules* small; *petiole* 2 – 9 cm; *leaf blade* ovate-lanceolate, 5 – 20 × 3 – 6 cm, cuneate or obtuse at the base, acuminate at the apex. *Male inflorescences* unbranched. *Male flowers:* fascicled; *calyx* 3 – 4 lobed, oblong, *c.* 2 mm; *stamens* many. *Female inflorescences* 3 – 8 cm; *bracts c.* 1 mm. *Female flowers:* *calyx* 3 – 5 lobed, subovate, *c.* 3 mm, tomentose; *ovary* tomentose; *styles* 3. *Fruit* a capsule.

Flowering & Fruiting: March – August

Habitat: Mountain slopes, forest

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11425, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Laos, Malaysia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; N Australia

Note: A red dye is obtained from the fruit which is used for colouring textiles particularly silk and wool. According to Ayurveda, leaves are bitter, cooling and appetizer. Fruit is heating, Purgative, anthelmintic, vulnerary, detergent, maturant, carminative, alexiteric and useful in treatment of bronchitis, abdominal diseases, spleen enlargement etc. (Website: <https://hort.purdue.edu/newcrop/CropFactSheets/kamala.html>).

Threat status: Not Evaluated

M. repandus (Rottler) Mull. Arg., *Linnaea* 34: 197. 1865; Li *et al.* in *Fl. China* 11: 230. 2008. *Trewia nudiflora* L., *Sp. Pl.* 2: 1193. 1753.

Vernacular Name: Konibih, Dudloti (A)

Climbing *shrubs*. *Stipules c.* 1 mm; *leaflet* triangular-ovate or ovate, 3.5 – 10 × 2.5 – 7 cm, papery, broadly cuneate or peltate at base, entire at margin, acute or acuminate at apex; basal veins 3. *Male inflorescences* terminal, rarely axillary; *bracts* present. *Male flowers:* fascicled; *calyx* 3 – 4-lobed, oblong, *c.* 3 mm, tomentose; *stamens* numerous. *Female inflorescences* 5 – 8 cm; *bracts* present. *Female flowers:* *calyx* 4 – 5-lobed, lanceolate, 2 – 3 mm, tomentose; *ovary* 2 – 3-locular; *style* 3 – 5 mm, almost free. *Fruit* a capsule.

Flowering & Fruiting: March – September

Habitat: forest fringes, mountain valleys; below 100 – 1000 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 18.05.2013, A. Bora & D. Bhattacharyya 11770, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Australia, Pacific islands (New Caledonia)

Note: In folk medicine *Mallotus repandus* is used to treat muscle pain, itching, fever, rheumatic arthritis, snake bite, hepatitis, and liver cirrhosis (Hassan, 2014).

Threat status: Not Evaluated

M. roxburghianus Mull. Arg., *Linnaea* 34: 186. 1865; Kanjilal *et al.*, *Fl. Assam* 4: 214. 1940; Li *et al.* in *Fl. China* 11: 228. 2008.

Vernacular Name: Buri-tokon (A)

Shrubs. *Stipules* linear; *leaflet* orbicular-ovate, 8 – 20 × 7 – 18 cm, papery, rounded at base, margin denticulate, caudate to acuminate at apex. *Male inflorescences* terminal, pubescent; bracts *c.* 5 mm. *Male flowers:* fascicled; *calyx* 4-lobed, oblong, *c.* 2 mm, pubescent; *stamens* many. *Female inflorescences* tomentose. *Female flowers:* *calyx* urceolate, 6-lobed, lanceolate, *c.* 3 mm, pubescent; *ovary* tomentose; *style* 3 – 4 mm. *Fruit* a capsule, 3-locular, pilose.

Flowering & Fruiting: July – September

Habitat: Mountain slopes, forests

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: NE India, China

Note: It is used in the traditional medicine in North-Eastern India (Website: <http://www.ncbi.nlm.nih.gov/pubmed/17192023>).

Threat status: Not Evaluated

Margaritaria L.f.

M. indica (Dalziel) Airy Shaw in *Kew Bull.* 20 (3): 387. 1967; Li *et al.* in *Fl. China* 11: 180. 2008. *Prosorus indicus* Dalzell, *Hooker's J. Bot. Kew Gard. Misc.* 4: 346. 1852.

Vernacular Name: Jaglo, Gunamala (A), Bajardanti (H)

Large trees. *Stipules* *c.* 3 mm; *leaf blade* elliptic-ovate or oblong-lanceolate, acute or rounded at apex. *Male flowers* axillary clusters; *pedicels* 4 – 6 mm; *calyx* spreading; *disk* 0.6 – 1.5 mm wide, adnate at base of calyx; *stamens* free; *anthers* ellipsoid, 0.6 – 0.9 mm. *Female flowers* axillary; *calyx* ovate to oblong, 1.5 – 2 mm, entire; *disk* 1.8 – 2.8 mm wide; *ovary* 3 – 4 celled, ovoid; *styles* 3, bifid at the tip. *Fruit* a capsule, subglobose

Flowering & Fruiting: April – January

Habitat: Semi evergreen forest; upto 1200 m

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, China, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Australia

Note: Poisonous (Burkill, 1935). The wood has been reported to be very hard (Website: http://www.nationaalherbarium.nl/Euphorbs/specM/Margaritaria.htm#Margaritaria_indica)

Threat status: Not Evaluated

Phyllanthus L.

P. emblica L., Sp. Pl. 982 1753; Li *et al.* in Fl. China 11: 163. 2008. *Embllica officinalis* Gaerth., Fruct. Sem. Pl. 2: 122 1790.

Vernacular Name: Amlakhi (A)

Deciduous *trees*, monoecious. *Stipules* triangular-ovate; *petiole* 0.3 – 0.7 mm; *leaf blade* linear-oblong, 8 – 20 × 1.5 – 5 mm, papery to leathery, cordate or oblique at the base, revolute at the margin, truncate, rounded or obtuse at the apex. *Inflorescence* in fascicles. *Male flowers:* *calyx* 6-lobed, yellow, obovate or spatulate, 1.2 – 2.5 × 0.5 – 1 mm; *stamens* 3; anthers oblong, 0.5 – 0.9 mm. *Female flowers:* *calyx* 6-lobed, oblong or spatulate, 1.6 – 2.5 × 0.7 – 1.3 mm; *ovary* c. 1.5 mm, 3-celled; *styles* 3, connate at base, bifid. *Fruit* a drupe, globose.

Flowering & Fruiting: April – September

Habitat: Sparse forests

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 07.04.2013, A. Bora & D. Bhattacharyya 11749, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand; South America (cultivated)

Note: According to Ayurveda, Amla or Amla fruit is sour and astringent in taste, with sweet, bitter and pungent secondary tastes. Amla's qualities are light and dry, the post digestive effect is sweet and its energy is cooling (website: <http://www.indiatva.com/medicinal-uses-of-aamla-or-amla-or-the-indian-gooseberry>).

Threat status: Not Evaluated

Ricinus L.

R. communis L., Sp. Pl. 2: 1007. 1753; Li *et al.* in Fl. China 11: 248. 2008.

Vernacular Name: Era gach (A)

Erect *herbs*, plant often reddish or purplish. *Stipules* connate, 2 – 3 cm; *petiole* 20 – 40 cm; leaflet palmately 7 – 11 lobed, 30 – 50 × 30 – 50 cm, margin serrate. *Male flowers:* *pedicels* 5 – 17 mm; *calyx* 5 – 8 × 3 – 5 mm; *stamens* 7 – 8 mm. *Female flowers:* *pedicels* 5 – 10 mm; *calyx* c. 5 mm; *styles* 2 – 5 mm. *Fruit* a capsule, ellipsoid or ovoid.

Flowering & Fruiting: June – December

Habitat: in moist places, roadside, as epiphytes

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, on the way to Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11747, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, cultivated worldwide

Note: The seed oil is the most important product of castor. The medicinal use of the oil and of other parts of the plant is still common, especially as a purge (internally) and for various sores (externally). At present, the oil is produced mainly as basic material for industry, particularly as a lubricant. The presscake is poisonous and cannot be fed to animals. It is used as fertilizer or as fuel. The castor oil also has commercial value for making soap, margarine, lubricants, paints, inks, plastics, and linoleum. The crop is also regarded as a useful feedstock for biodiesel production (Okechukwu *et al.*, 2015; Razzazi *et al.*, 2015).

Threat status: Not Evaluated

61. MALPIGHIACEAE Juss.

- 1a. Styles 3, free.....*Aspidopterys*
1b. Style 1, rarely 2, filiform, at first circinate.....*Hiptage*

Aspidopterys A.Juss.

- 1a. Corolla elliptic, rounded at apex, *c.* 3 × 1.5 mm; stamen filaments *c.* 2 mm.....*A. glabriuscula*
1b. Corolla oblong, rounded at apex, 5 – 7 × 2 – 3 mm, glabrous, white. Stamen filaments 1.2 – 1.5 mm long*A. elliptica*

A. elliptica A.Juss. in Ann. Sci. Nat., Bot. sér. 2, 13: 266. 1840.
Aspidopterys macrocarpa Dop in Bull. Soc. Bot. France 55: 428. 1908.
Aspidopterys ovata Merr. & Rolfe in Philipp. J. Sci., C 3: 106. 1908.

Vernacular Name: Not known

Climbers; branches terete. *Leaves* ovate or ovate-elliptic, rounded or cordate at base, rounded and acuminate at apex, 10 – 15 × 6 – 8 cm, glabrous; *petioles* 1 - 2.5 cm long. *Panicles* 17 – 19 cm long, glabrous. *Floral buds* ovate-elliptic. *Calyx-lobes* oblong, rounded at apex, 2 – 3 × 1 – 1.5 mm, tomentose above. *Corolla* oblong, rounded at apex, 5 – 7 × 2 – 3 mm, glabrous, white. *Filaments* 1.2 – 1.5 mm long; *anthers* 1.5 – 2 × 1 mm. *Ovary* glabrous. *Samaras* suborbicular or orbicular.

Flowering & Fruiting: February – June

Habitat: evergreen or mixed evergreen forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, 15 No. Hill, 10.11.2011, H. A. Barbhuiya 84924, Frt. (ASSAM).

Distribution: India (Assam, Meghalaya and Andaman Islands), Indonesia, Malesia, Philippines, Vietnam.

Notes: The bark is said to be chewed with betel leaves in Khasi hills (Website: <http://efloraindia.nic.in/efloraindia/taxonList.action?id=2632&type=4>).

Threat status: Not evaluated

A. glabriuscula A. Juss., Ann. Sci. Nat., Bot. ser. 2, 13: 267. 1840.

Vernacular Name: Not known

Lianas. *Petioles* 6 – 10 mm, pubescent; *leaf blade* ovate, obovate, or elliptic, 6 – 11 × 4 – 6.5 cm, thinly papery, rounded or subcordate at base, shortly acuminate at apex.

Inflorescence terminal or axillary, in panicles, c. 15 cm; *pedicels* 2 – 2.5 mm, pubescent; *basal bracteoles* 2, lanceolate. *Calyx* elliptic, c. 1 mm, pubescent. *Corolla* elliptic, c. 3 × 1.5 mm, rounded at apex. *Stamen* filaments c. 2 mm. *Ovary* glabrous; *stigma* capitate. *Fruit* a samara, ovate-elliptic, 4.5 – 5 × 1.5 – 2.2 cm. *Seed* linear.

Flowering & Fruiting: August – November

Habitat: valley forests; 1500 – 2000 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 38.

Distribution: India (West Bengal, Arunachal Pradesh, Meghalaya, Nagaland, Darjeeling), China (Guangdong, Guangxi, Hainan, Yunnan), Vietnam, Bhutan, Myanmar [Burma] (Chin, Kachin, Shan)

Threat status: Not evaluated

Hiptage Gaertn.

H. benghalensis Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 43 (2): 136. 1874; Chen *et al.* in Fl. China 11: 136. 2008.

Vernacular Name: Not known

Lianas. *Petiole* 5 – 10 mm; *leaf blade* leathery, elliptic-oblong or ovate-lanceolate, 9 – 18 × 3 – 7 cm, broadly cuneate or rounded at base, acuminate at apex. *Inflorescence* in racemes, axillary or terminal, 5 – 10 cm, pubescent; *bracteoles* subulate-lanceolate. *Flowers* very aromatic. *Calyx* broadly elliptic or ovate, 5 – 6 mm, apex rounded, pubescent. *Corolla* white, base yellowish or pink, orbicular or broadly elliptic, 8 – 15 × 5 – 10 mm, pubescent, rounded at apex, clawed at base, margin fimbriate. *Stamens* variable, c. 3 – 12 mm; *anthers* elliptic, 1 – 2 mm. *Style* c. 12 mm, circinate. *Fruit* a samara, wings glabrous.

Flowering & Fruiting: February – May

Habitat: Riverbanks, field margins, roadsides; 200 – 1900 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 327.

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Nepal, Philippines, Thailand, Vietnam

Note: It is often used as an ornamental species. *H. benghalensis* is also occasionally cultivated for medicinal purposes (Bailey and Bailey, 1976) with the bark, leaves and flowers being aromatic, bitter, acrid, astringent, refrigerant, vulnerary, expectorant,

cardiotonic, anti-inflammatory and having insecticidal properties (Varier, 1994). The leaves are used in India to treat asthma and rheumatism.

Threat status: Not evaluated

62. DICHAPETALACEAE Baill.

Dichapetalum Thouars

D. gelonioides (Roxb.) Engl., Nat. Pflanzenfam. 3 (4): 348. 1896. *Chailletia gelonioides* (Roxb.) Hook.f., Fl. Brit. India 1 (3): 570. 1875. *Moacurra gelonioides* Roxburgh, Fl. India, ed. 1832, 2: 69. 1832.

Vernacular Name: Gelonium poison-leaf (E)

Small trees or shrubs. Leaf blade oblong-elliptic, 6 – 15 × 2 – 5 cm, Stipules present, cuneate at the base, margin entire, acuminate at the apex. Inflorescence axillary, cymes or single. Flowers unisexual, dioecious, white, thinly pilose. Calyx oblong, c. 2 mm, abaxially pubescent. Corolla spatulate, apex slightly lobed. Glands 0.25 – 0.75 mm, rounded to cordate. Ovary of female flower 2 – 3 locular, densely pubescent. Abortive ovary of male flower densely white lanose; style 1, deeply lobed. Fruit a drupe, pubescent.

Flowering & Fruiting: March – October

Habitat: Dense mountain forests; upto 1400 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 333.

Distribution: India, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam

Threat status: Not Evaluated

63. PASSIFLORACEAE Juss. ex Roussel

- 1a. Stamens 4 or 5(-8); filaments free, rarely connate.....*Passiflora*
1b. Stamens 5, connate at base.....*Turnera*

Passiflora L.

- 1a. Inflorescence solitary, opposite tendril.....*P. foetida*
1b. Inflorescence a cyme, one lateral branch transformed to a tendril.....*P. edulis*

P. foetida L., Sp. Pl. 2: 959. 1753; Kanjilal *et al.*, Fl. Assam 2: 322. 1938.

Vernacular Name: Jhumka lota (B)

Herbaceous lianas, foul smelling. Stem slender, pubescent. Stipules present; petiole 2 – 6 cm, pubescent; leaf blade oblong-ovate, 4.5 – 13 × 4 – 12 cm, membranous, ciliate, cordate at base, 3-lobed or unlobed, margin undulate, acute at apex. Inflorescence solitary, opposite tendril; bracts 3. Flowers white or light purple with white spots or lines. Calyx c. 1.5 cm, awned. Corolla c. 1.5 cm. Corona 3 – 5-seriate, filamentous; operculum 1 – 1.5

mm; *disk* cupular, 1 – 2 mm high; *androgynophore* 5 – 7 mm tall. *Stamens* coherent at base, flat; *anthers* oblong, c. 4 mm. *Ovary* stipitate, ellipsoid, c. 6 mm, glabrous; *styles* 3 or 4, 5 – 6 mm; *stigmas* capitate. *Fruit* a berry, orange-red, ovoid-globose, glabrous. *Seeds* many.

Flowering & Fruiting: July – May

Habitat: forest margins, roadsides; 100 – 1200 m.

Specimens Examined: Included after Dutt *et al.* 1974, *D.* 67.

Distribution: India, China, West Indies and N South America

Note: The fresh, whole plant is boiled and the liquid used as a children's anthelmintic, for intestinal nematodes and flatworms. A decoction of the dried plant is drunk to treat colds and chest coughs. It is also used in the treatment of tuberculosis, worms, and for coughs and colds (Website: <http://tropical.theferns.info/viewtropical.php?id=Passiflora+foetida>)

Threat status: Not Evaluated

P. edulis Sims, Bot. Mag. 45: t. 1989. 1818; Kanjilal *et al.*, Fl. Assam 2: 323. 1938; Wang *et al.* in Fl. China 13: 146. 2007.

Vernacular Name: Passion Flower, Purple granadilla (E)

Herbaceous *climbers*, woody at base. *Leaves* 6 – 13 × 8 – 13 cm, cuneate or cordate at base, deeply 3-lobed, margin glandular-serrate, glabrous. *Inflorescence* a cyme, one lateral branch transformed to a tendril; *bracts* green, 1 – 1.2 cm. *Pedicel* 4 – 4.5 cm. *Flowers* 4 – 7 cm in diam.; *hypanthium* 0.8 – 1 × 1 – 1.2 cm. *Calyx* green to light green, 2.5 – 4 × c. 1.5 cm, awn 2 – 4 mm. *Corolla* 2.5 – 3 cm × 8 mm. *Corona* in 4 or 5 series; outer 2 series ligulate, 2 – 2.5 cm, light green at base, middle purple, white at apex; inner 2 or 3 series filiform, 1 – 3 mm, green and purple; *operculum* recurved, 1 – 1.2 mm; *disk* c. 4 mm high; *androgynophore* 1 – 1.2 cm tall. *Filaments* 5 – 6 mm, flat; *anthers* light yellow-green, oblong, 5 – 6 mm. *Ovary* obovoid, c. 8 mm; *styles* flat; *stigma* reniform. *Fruit* purple, ovoid, glabrous.

Flowering & Fruiting: June – November

Habitat: Cultivated, forests in mountain valleys; 100 – 1900 m.

Specimen Examined: India, Assam, NC Hills dist., Barail Wildlife sanctuary, Haflong, 07.09.2013, A. Bora & D. Bhattacharyya 11714, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, South America

Note: *Passiflora edulis* is widely cultivated for its fruit (Website: [http://keys.lucidcentral.org/keys/v3/eafrinet/weeds/key/weeds/Media/Html/Passiflora_edulis_\(Passion_Fruit\).htm](http://keys.lucidcentral.org/keys/v3/eafrinet/weeds/key/weeds/Media/Html/Passiflora_edulis_(Passion_Fruit).htm)).

Threat status: Not Evaluated

Turnera L.

T. ulmifolia L., Sp. Pl. 1: 271. 1753. *Turnera alba* Liebm. in Ann. Sci. Nat., Bot. sér. 3, 9: 318. 1848.

Vernacular Name: Yellow Alder, Yellow Buttercups (E)

Perennial, dense, compact shrub, upto 76 cm of height. *Leaves* dark green, clustered toward the tips of the branches, lanceolate to oblong-lanceolate or narrowly elliptic, 4 – 13 × 2 – 3 cm, doubly serrate at margins, acute at apex, glabrous or pubescent. *Flowers* actinomorphic, solitarily in leaf axils, *bracts* 3. *Calyx* 5-lobed, united. *Corolla* 5-lobed free, yellow corolla. *Stamens* 5, connate at base. *Ovary* superior and many seeds. *Fruit* a capsule.

Flowering & Fruiting: November – March

Habitat: Moist places, riverbank

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11411, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Native to the West Indies and Mexico, Tropical and subtropical regions.

Note: The leaves are used for treating hair loss and thrush (website: <http://tropical.theferns.info/viewtropical.php?id=Turnera+ulmifolia>)

Threat status: Not Evaluated

64. SALICACEAE Mirb.

- 1a. Sepals 4 or 5 lobed.....2
- 1b. Sepals 4 – 7 or 3 – 5-lobed.....3
- 2a. Style 1, entire or distally 3-branched.....*Casearia*
- 2b. Styles 3 – 6, short, or nearly absent.....*Hydnocarpus*
- 3a. Petals absent.....*Flacourtia*
- 3b. Petals 5, united at base.....*Gynocardia*

Casearia Jacq.

- 1a. Shrub, branchlets pubescent*C. vareca*
- 1b. Trees.....2
- 2a. Stipules 5 – 10 mm; petiole 1 – 1.2 cm, glabrous.....*C. graveolens*
- 2b. Stipules minute, c. 1 mm; petiole 5 – 15 mm, pubescent.....*C. kurzii*

C. graveolens Dalzell, Hooker's J. Bot. Kew Gard. Misc. 4: 107. 1852; Yang & Zmarztyin Fl. China 13: 136. 2007.

Vernacular Name: Safed-Karai (H)

Trees, 10 – 15 m tall. *Stipules* 5 – 10 mm, papery, glabrous, early caducous; *petiole* 1 – 1.2 cm, glabrous; *leaf blade* broadly elliptic to elliptic-oblong, 6 – 15 × 4 – 8 cm, papery, rounded or broadly obtuse at base, margin shallowly serrate, crenate, broadly acute, obtuse or rounded at apex. *Flowers* few to many flowered axillary glomerules. *Pedicels* 3 – 6 mm; *bracts* ovate, c. 2 mm. *Calyx* 5, ovate to ovate-oblong, c. 4 mm, outside pubescent. *Stamens* 8; *filaments* sparsely pubescent, c. 1.5 mm; *anthers* oblong. *Disk lobes* oblong. *Ovary* ovoid; style short. *Capsule* orange-yellow when ripe.

Flowering & Fruiting: March – November

Habitat: forests; 500 – 1800 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 125.

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Laos, Myanmar, Nepal, Pakistan, Thailand, Vietnam

Note: Wood suitable for furniture and construction. Fruits eaten as vegetable (Franco F and Narashimhan, 2009).

Threat status: Not Evaluated

C. kurzii Clarke, Fl. Brit. India 2 (6): 594. 1879. Qiner *et al.* in Fl. China 13: 135. 2007.

Vernacular Name: Not known

Trees, small. *Stipules* minute, c. 1 mm; *petiole* 5 – 15 mm, pubescent; *leaf blade* lanceolate or oblong-lanceolate, 9 – 21 × 4 – 8 cm, papery, abaxially pubescent, adaxially glabrous or with a few hairs toward base, rounded to cordate at base, serrate, or subentire at margin, acute at apex. *Flowers* axillary, sessile, whitish, small. *Pedicels* 5 – 8 mm in flower, c. 1 cm in fruit; *bracts* 0.5 – 0.7 mm, pubescent. *Calyx* 5-lobed, ovate, 2 – 3 mm, outside pubescent, inside glabrous or with few hairs. *Disk lobes* oblong. *Stamens* 7 or 8; *filaments* pubescent, c. 0.7 mm; *anthers* c. 0.5 mm. *Ovary* ovoid, 1 – 2 mm; style short; *stigma* discoid, enlarged. *Fruit* a capsule obovoid to ellipsoid, fleshy.

Flowering & Fruiting: July – March

Habitat: moist regions, 500 – 1500 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 242, 16.

Distribution: India, Bangladesh, China, N Myanmar

Threat status: Not evaluated

C. vareca Roxb., Fl. India 2: 418 1824. *Guidonia vareca* Baill. ex Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 46(2): 92. 1877.

Vernacular Name: Not known

Shrub, branchlets pubescent. *Leaves* oblong, closely serrate at the margin, 8.8 × 3.8 cm, softly hairy beneath; *petiole* 0.6 cm; *pedicels* less than 0.6 cm, hairy below the articulation. *Staminal tube* elongate, *stamen* 10. *Fruit* 0.8 cm, broadly ellipsoid, yellow or pinkish yellow. *Seeds* bright red pulp.

Flowering & Fruiting: Not seen

Habitat: on bank of the stream

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kayang River bank, 12.12.2013, A. Bora & D. Bhattacharyya 11407, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (West Bengal, Assam, Meghalaya, Arunachal Pradesh, Nagaland), Bangladesh, Bhutan, Myanmar

Note: Plant has medicinal value.

Threat status: Not Evaluated

Flacourtia Comm. ex L'Hér.

1a. Calyx 5 – 6 lobed, ovate, *c.* 1.5 mm.....*F. indica*

1b. Calyx 4 – 5 lobed, ovate-triangular, *c.* 2 mm hardly visible in female flowers.....*F. jangomas*

F. indica (Burm.f.) Merr., Interpr. Herb. Amboin. 377. 1917; Qiner *et al.* in Fl. China 13: 120. 2007. *Gmelina indica* N. L. Burman, Fl. Indica, 132. 1768.

Vernacular Name: Shruvavrikksha (H)

Shrubs or small *trees*, deciduous. *Petiole* red, 3 – 5 mm, pubescent; *leaf blade* oblong-ovate, 2 – 4 × 1.5 – 3 cm, thickly papery, abaxially glabrous or pubescent, acute to obtuse at base, margin serrulate, rounded at apex. *Inflorescences* axillary or terminal, racemose, short. *Calyx* 5 – 6 lobed, ovate, *c.* 1.5 mm, outside glabrous, inside pubescent, ciliate at margin, obtuse at apex. *Male flowers:* *stamen filaments* 2 – 2.5 mm, pubescent. *Female flowers:* *ovary* globose; *styles* 5 or 6, united at base, 1 – 2 mm, slender. *Fruit* globose, 8 – 10 mm in diam.

Flowering & Fruiting: January – July

Habitat: broad-leaved forests; roadside; sea level to 1400 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 223.

Distribution: widespread and cultivated in tropical and subtropical regions of Africa, Asia, and the Pacific islands.

Note: An important herb in Ayurveda, where infusions of the bark, leaves and root are used medicinally to treat conditions such as fever, diarrhoea and inflammations. The leaf is carminative, astringent and used as a tonic, an expectorant and for asthma, pain relief, gynaecological complaints and as an anthelmintic, and treatment for hydrocele, pneumonia and intestinal worms. The leaves are used as an antidote to snake bites (Website: <http://tropical.ferns.info/viewtropical.php?id=Flacourtia+indica>)

Threat status: Not evaluated

F. jangomas (Lour.) Raeusch., *Nomencl. Bot. ed. 3:* 290 1797; Qiner *et al.* in Fl. China 13: 119. 2007. *Stigmarota jangomas* Loureiro, Fl. Cochinch. 2: 634. 1790.

Vernacular Name: Poniol (A)

Shrubs or small *trees*, deciduous. *Petiole* 4 – 8 mm; *leaf blade* ovate-elliptic or ovate-oblong, rarely obovate-lanceolate, 7 – 14 × 2 – 5 cm, both surfaces glabrous, acute, obtuse, or rounded at base, entire or serrate at margin, obtuse to narrowly acuminate at apex. *Inflorescences* axillary, racemose. *Pedicels* 5 – 10 mm; *bracts* ovate, 0.5 – 1 mm. *Flowers* white to greenish. *Calyx* 4 – 5 lobed, *c.* 2 mm, ovate-triangular, hardly visible in female flowers. *Male flowers*: stamen filaments 2 – 3 mm, glabrous. *Female flowers*: ovary globose, 2 – 3 mm; *styles* 4 – 6, united into a distinct column *c.* 1 mm; *stigmas* reniform, recurved. *Fruit* brownish red or purple, subglobose, fleshy.

Flowering & Fruiting: April – October

Habitat: Common, evergreen forests

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 264.

Distribution: throughout tropical regions, especially in E Africa and tropical Asia

Note: The roots, leaves and bark all contain tannins and are used in the treatment of diarrhoea. A decoction of the bark, mixed with mustard seed paste, is used in the treatment of diarrhoea and dysentery (Website: <http://tropical.theferns.info/viewtropical.php?id=Flacourtia+jangomas>).

Threat status: Not evaluated

Gynocardia Roxb.

G. odorata Roxb., *Pl. Coromandel* 3 (4): 95 – 96; t. 299. 1819; Yang *et al.* in *Fl. China* 13: 116. 2007.

Vernacular Name: Chhalmogra (H), Bonsha, Bandarpele (A)

Trees. *Petiole* 1 – 3 cm; *leaf blade* oblong-elliptic, rarely ovate-oblong, 13 – 20 × 5 – 10 cm, leathery, margin entire, rounded or acute-cuneate at base, rounded at apex. *Pedicels* 2.5 – 5 cm, sparsely hairy or glabrous. *Male flowers*: aromatic; *calyx lobes* *c.* 7 mm, obtuse to rounded; *corolla* yellowish green, oblong or slightly obovate, 1.5 – 2 cm, glabrous; *stamens* *c.* 1 cm, *filaments* pubescent, *anthers* *c.* 5 mm. *Female flowers*: larger than male flowers; *corollac.* 2.5 cm; *staminodes* 10 – 15, pubescent; *styles* short; *stigmas* peltate. *Fruit* a berry, yellowish brown, globose.

Flowering & Fruiting: January – August

Habitat: Moist sparse forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11494, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

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

Note: Chaulmogra oil is used both internally and externally in leprosy, secondary syphilis, rheumatism, scrofula and in phthisis (Website: <http://www.henriettes-herb.com/eclectic/kings/gynocardia.html>).

Threat status: Not evaluated

Hydnocarpus Gaertn.

H. kurzii Warb., Nat. Pflanzenfam. iii. 6a. 21. 1893; Kanjial *et al.*, Fl. Assam 1(1): 87. 1934.

Vernacular Name: Chalmugra (B), Lamtem (A)

Tree, evergreen. *Leaves* thinly coriaceous, entire at margin, *c.* 17.5 – 20.5 cm long, lanceolate or oblong-lanceolate. *Inflorescence* axillary cyme. *Flowers* dioecious, pale yellow; *calyx* 4-lobed; *corolla* 8-lobed, ovate, ciliate. *Fruit* globose, chocolate-brown, *c.* 7 cm across. *Seeds* numerous.

Flowering & Fruiting: May – December

Habitat: Sparse forests; 200 – 1000 m

Specimen Examined: India, Assam, Cachar dist., Catlicherra, September 1903, *S. Mokim* 55 (ASSAM).

Distribution: India, Bangladesh and Myanmar

Notes: The oil extracted from the seeds, known as 'chaulmugra oil', has a long history of use in the treatment of leprosy. When applied externally, and by direct infiltration of the lesions, it has been shown to be effective in decreasing the size of nodules, numb patches, and skin lesions. The oil has also been recommended as a topical application to treat rheumatism, sprains and bruises, sciatica and chest complaints, and for dressing wounds (Website: <http://tropical.theferns.info/viewtropical.php?id=Hydnocarpus+kurzii>)

Threat status: Data Deficient ver 2.3

65. VIOLACEAEBatsch

Viola L.

- 1a. Flowers purplish or yellowish.....*V. diffusa*
1b. Flowers white.....*V. patrinii*

V. diffusa Ging., Prodr. 1: 298. 1824; Kanjilal *et al.*, Fl. Assam 1 (1): 81. 1934; Chen *et al.* in Fl. China 13: 86. 2007. *Viola diffusa* Ging. var. *brevibarbata* Ching J.Wang in Acta Bot. Yunnan. 13 (3): 264. 1991.

Vernacular Name: Not known

Herbs annual. Stolon with rosulate leaves at top, adventitious roots. *Basal leaves* numerous, fasciculate and rosulate; *stipules* adnate to petioles at base, linear-lanceolate, 4 – 12 mm, acuminate at apex; *petiole* 2 – 4.5 cm, usually puberulous; *leaf blade* ovate or ovate-oblong, 1.5 – 3.5 × 1 – 2 cm, broadly cuneate or truncate, rarely shallowly cordate at base, margin obtusely dentate and ciliate, obtuse or acute at apex. *Flowers* purplish or yellowish, small, long pedicellate, in basal leaf axils and leaf axils of stolon; *pedicels* 1.5 – 8.5 cm, slender, glabrous or sparsely puberulous, 2-bracteolate at middle; *bracteoles* linear. *Calyx* lanceolate, 4 – 5.5 mm, apex acute, margin sparsely ciliate, apex rounded or remotely denticulate. *Lateral corolla* oblong-obovate, 6 – 8 mm, anterior one *c.* 6 mm

(spur included), apex acute; *spur* very short, only *c.* 1.5 mm, slightly exerted out of basal auricles of calyx. *Ovary* glabrous; styles clavate. *Capsule* oblong.

Flowering & Fruiting: March – October

Habitat: Mountain forests, forest margins; below 1,800 m.

Specimens Examined: India, Assam, NC Hills dist., Haflong, 29.08.1908, W. G. Craib 30714 (CAL).

Distribution: India, Bhutan, Japan, China, Indonesia, Malaysia, Myanmar, Nepal, Papua New Guinea, Philippines, Thailand, Vietnam

Note: Plant used in chest disease as a pectoral and bechic (Vardhana, 2008).

Threat status: Not Evaluated

V. patrinii Ging., Prodr. 1: 293. 1824; Kanjilal *et al.*, Fl. Assam 1 (1): 80. 1934; Chen *et al.* in Fl. China 13: 95. 2007.

Vernacular Name: Not known

Herbs perennial, 7 – 20 cm tall. *Rhizome* erect, 4 – 10 mm, stout. *Leaves* 3 – 5 or more, basal; *stipules* green, *c.* 2/3 adnate to petioles, margin denticulate or entire, acuminate at apex; *petiole* long, 2 – 12 cm, slender, usually glabrous or sparsely puberulous; *leaf blade* oblong, elliptic, narrowly ovate or oblong-lanceolate, 1.5 – 6 × 0.6 – 2 cm, thin, truncate at base, slightly cordate or broadly cuneate, decurrent to petiole, margin repand-crenate or subentire, obtuse at apex. *Flowers* white; *pedicels* usually exceeding leaves, glabrous or sparsely puberulous, *Bracteoles* 2 below, linear. *Calyx* ovate-lanceolate, acute or slightly obtuse at apex. *Upper corolla* obovate, *c.* 1.2 cm, narrow at base, lateral ones oblong-obovate, *c.* 1.2 cm; *spur* shallowly saccate, *c.* 3 mm or slightly shorter, rounded at apex. *Anthers* *c.* 2 mm. *Ovary* narrowly ovoid, glabrous; *styles* clavate. *Capsule* glabrous. *Seeds* yellow-brown to dark brown, ovoid-globose.

Flowering & Fruiting: May – September

Habitat: moist places along riversides; 200 – 1700 m

Specimens Examined: India, Assam, NC Hills dist., Haflong, 31.07.1908, W. G. Craib 30993 (CAL).

Distribution: India, Japan, Korea, Mongolia, Russia

Threat status: Not Evaluated

66. LINACEAE DC. ex Perleb

Reinwardtia Dumort.

R. indica Dumort., Commentat. Bot. 19. 1822; Liu *et al.* in Fl. China 11: 34. 2008.

Reinwardtia trigyna Planch. in London J. Bot. 7: 522. 1848.

Vernacular Name: Yellowflax (E), Basanti (H)

Shrubs, upto 1 m tall. *Branches* glabrous. *Petiole* 0.8 – 2.5 cm; *leaf blade* obovate-elliptic, 2 – 8.5 × 0.7 – 3.3 cm, papery, cuneate at base, entire or crenate at margin, acute to

subrounded at apex. *Flowers* 1.5 – 3 cm in diam. *Calyxc.* 0.9 – 1.2 × 0.3 cm, distinct. *Corolla* yellow, 1.7 – 3 × c. 1.3 cm, distinct. *Stamensc.* 1.3 cm; *anthers* c. 2 mm; *staminodes* present. *Styles* 3 or 4, 0.7 – 1.8 cm. *Fruit* a capsule, globose. *Seeds* reniform.

Flowering & Fruiting: April – January

Habitat: Forests, mountain slopes; 500 – 2300 m.

*Specimen Examined:*Included after Dutt *et al.* 1974, *D.* 241.

Distribution: India, Bhutan, China, Laos, Myanmar, Nepal, Pakistan, Thailand, Vietnam.

Note: The plants are used for the treatment of paralysis. Crushed leaves and stems are applied to wounds infested with maggots (Yusuf *et al.*, 2009).

Threat status: Not evaluated

67. IXONANTHACEAE Planch. ex Miq.

Ixonanthes Jack

I. khasiana Hook.f., Fl. Brit. India 1(2): 416. 1874.

Vernacular Name: Not known

Trees, c. 40 m high; fluted at the base. *Leaves* 7 – 13 × 2.5 – 5 cm, elliptic-lanceolate to oblong, glabrous, membranous, obtusely acuminate at the apex, narrowed at the base, decurrent into a short petiole. *Flowersc.* 5mm across. *Fruits* a capsule, 3 – 4 × 1 – 1.5 cm long, oblong.

Flowering & Fruiting: April – December

Habitat: Evergreen forest

*Specimens Examined:*India, Assam, Cachar dist., Bhuban Hill, 02.12.1914, *U. Kanjilal* 65995 (CAL).

Distribution: India (Assam, Meghalaya)

*Note:*Vulnerable, due to habitat loss. This species was last collected by N. L. Bor in 1937.

*Threat status:*Vulnerable B1+2c ver 2.3

68. CLUSIACEAE Lindl.

- 1a. Trees.....*Mesua*
- 1b. Trees or shrubs, subshrubs or herbs2
- 2a. Stamens 4 or 5.....*Hypericum*
- 2b. Stamen many.....3
- 3a. Inflorescence cymose or thyriform, terminal or axillary.....*Calophyllum*
- 3b. Inflorescence terminal or axillary cymes, triads or fascicles or paired or solitary.....*Garcinia*

Calophyllum L.

C. polyanthum Wall., Numer. List n. 4844. 1831; Planch. & Triana, in Ann. Sc. Nat. Ser. IV. xv. 278. 1861.

Vernacular Name: Not known

Trees. *Leaf blade* oblong-elliptic rarely lanceolate, 5.5 – 9.5 × 2.5 – 4.3 cm, leathery, cuneate at the base, margin slightly revolute, acuminate at the apex. *Inflorescence* terminal or rarely axillary thyrses. *Flowers* white; *calyx* pubescent on margin; outer 2: oblong-ovate, c. 2.5 mm; inner 2: elliptic-obovate, c. 4.5 mm; *corolla* absent. *Ovary* ovoid, c. 1.7 mm; *stigma* peltate. *Fruit* a globose.

Flowering & Fruiting: April – October

Habitat: Dense forest

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 141.

Distribution: India, Bangladesh, Bhutan, Laos, Myanmar, S Yunnan, Thailand, Vietnam.

Note: The wood is used for ship and bridge building, general construction, and furniture making

(Website:

<http://tropical.theferns.info/viewtropical.php?id=Calophyllum+polyanthum>).

Threat status: Not Evaluated

Garcinia L.

- 1a. Slender shrubs.....*G. lanceifolia*
1b. Trees.....2
2a. Stamens 10 – 12.....*G. morella*
2b. Stamen not as above.....3
3a. Leaf blade oblong-lanceolate, 6 – 14 × 2 – 5 cm.....*G. cowa*
3b. Leaf blade elliptic or oblong-lanceolate, 14 – 34 × 4 – 12 cm.....*G. xanthochymus*

G. cowa Roxb., *Fl. India* 2: 622. 1832; T. Anderson in Hook.f., *Fl. Brit. India* 1: 262. 1874; Kanjial *et al.*, *Fl. Assam* 1: 105. 1934; Deb, *Fl. Tripura* 1: 363. 1981; P. J. Bora & Y. Kumar, *Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary*. 58. 2003.

Vernacular Name: Brindal berry (E), Cowa, Kuji thekera (A)

Trees. *Leaf blade* oblong-lanceolate, 6 – 14 × 2 – 5 cm, papery, cuneate at the base, acuminate at the apex. *Flowers* dioecious. *Male flowers* terminal or axillary umbel; bracteate; *corolla* yellow; *stamen* 4, connate; *pistillode* absent. *Female flowers* axillary, solitary, larger than male; *staminodes* present, shorter than ovary; *ovary* ovoid. *Mature fruit* ovoid-globose.

Flowering & Fruiting: May – October

Habitat: Mixed forests on hills

Specimen Examined: India, Assam, Cachar dist., Kookicherra, August 1903, Shaik Mokim s.n. (CAL).

Distribution: India, E. Bangladesh, Cambodia, Laos, Malaysia, S and W Yunnan, Vietnam.

Note: Bark is astringent; used in spasm. Fruits are given in headache. Sun-dried slices of the fruits are used in dysentery. Gum resin is drastic cathartic, may produce nausea and vomiting (Yusuf *et al.* 2009).

Threat status: Not Evaluated

G. lanceifolia Roxb., Fl. India 2: 623. 1832 (as "lanceofoelia"); T. Anderson in Hook.f., Fl. Brit. India 1: 263. 1874; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary. 59. 2003.

Vernacular Name: Rupohi thekera (A)

A slender *shrub*. *Leaves* 5 – 10 cm long, thickly membranous, lanceolate, acuminate. *Calyx* yellowish-green. *Corolla* bright-red. *Fruit* orange-yellow, obovoid, seeds 6 – 8.

Flowering & Fruiting: November – May of next year

Habitat: In disturbed forests

Specimen Examined: Included after Dutt *et al.* 1974, D. 198.

Distribution: India, Bangladesh

Note: The plant is endemic to Assam. Bark can be used to relieve pain and delays nociceptive response (Bora *et al.*, 2014). The leaves are sub-acid and reported to be eaten by Mikir tribe after cooking.

Threat status: Not Evaluated

G. morella Desr., in Lam. Encyc. iii. 701. 1792. *Hebradendron cambogioides* Graham in Companion Bot. Mag. 2: 199, t. 27. 1837.

Vernacular Name: Kuji-thekera (A)

Evergreen *trees*. *Leaves* simple, opposite, estipulate; *leaflets* 6 – 16 × 2.5 – 9 cm, elliptic-obovate, acute or cuneate at the base, obtuse at the apex, margin entire, glabrous. *Flowers* dioecious, reddish, sessile. *Male flowers:* axillary fascicles; *calyx* 4 lobed, decussate; *corolla* 4 lobed; *stamens* 10 – 12, monadelphous, *anthers* red; pistillode absent. *Female flowers:* axillary, solitary; *staminodes* 10 – 12; ovary superior, globose, 4-celled; *stigma* peltate. *Fruit* a berry.

Flowering & Fruiting: February – August

Habitat: Common, mixed forest

Specimen Examined: Included after Dutt *et al.* 1974, D. 17, 220.

Distribution: India, Malaysia

Note: Gamboge, a gum-resin obtained from the plant, is used as an ointment. The gum is used as a yellow dye, as an illuminant and in varnishes, water colours etc. (Uphof, 1959).

Threat status: Not Evaluated

G. xanthochymus Hook.f. ex T. T. Anderson in Hook.f., Fl. Brit. India 1 (2): 269. 1874; Kanjial *et al.*, Fl. Assam 1 (2): 104. 1934; Deb, Fl. Tripura 1: 364. 1981; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 59. 2003.

Vernacular Name: Tepor tenga (A)

Trees. *Leaf blade* elliptic or oblong-lanceolate, 14 – 34 × 4 – 12 cm, cuneate at the base, acute to obtuse at the apex, sometimes acuminate. *Inflorescence* corymbose cyme. *Flowers* 5-merous. *Female flower:* *Calyx* and *corolla* 3 large and 2 small, ciliate. *Staminode* 5, *c.* 3 mm, united below. *Ovary* globose; *style c.* 1 mm. *Fruit* a yellow berry when matured, globose.

Flowering & Fruiting: March – November

Habitat: Hilly forests

Specimen Examined: Included after Borah *et al.* 2016.

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Japan (introduced and cultivated), Laos, Myanmar, Nepal, Thailand, Vietnam

Note: Fruits are anthelmintic and cardiotoxic; improves appetite. Ripe fruit is tonic, invigorating and alexipharmac; good in heart trouble and biliousness. A sherbat made with “Amsul” (sun-dried slices of the fruit), with a little rock-salt, pepper, cumin, ginger and sugar, is administered in bilious conditions (Yusuf *et al.* 2009).

Threat status: Not Evaluated

Hypericum L.

- 1a. Herbs, annual.....*H. japonicum*
1b. Shrubs, bushy.....*H. patulum*

H. japonicum Thunb., Syst. Veg., ed. 14. 702. 1784; Dyer in Hook. f., Fl. Brit. India 1: 256.1874; Kanjilal *et al.*, Fl. Assam 1: 102. 1934; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 57. 2003; Li *et al.* in Fl. China 13: 34. 2007.

Vernacular Name: Not known

Herbs, annual. *Leaves* sessile; *leaf blade* ovate-triangular to oblong or elliptic, 0.2 – 1.8 cm × 1 – 10 mm, cordate to cuneate at base, margin entire, obtuse to rounded at apex. *Inflorescence* terminal; *bracts* and *bracteoles* leaflike. *Flowers* 4 – 8 mm in diam., stellate. *Calyx* free, oblong or lanceolate-elliptic, unequal, 2 – 5.5 × 0.5 – 2 mm. *Corolla* pale yellow or orange, oblong or elliptic, 1.7 – 5 × 0.8 – 1.8 mm. *Stamens* 5 – 30. *Ovary* ovoid to subglobose; *styles* usually 3, *c.* 0.4 – 1 mm. *Fruit* a capsule, cylindric, 2.5 – 6 × 1.3 – 2.8 mm.

Flowering & Fruiting: June – November

Habitat: Rice fields, marshes, grasslands, waste places; sea level to *c.* 3000 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11333, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia (Sumatra to Irian Jaya), Japan, S Korea, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; SE Australia, Pacific islands (New Zealand)

Note: The plant is astrigent, alterative, styptic and vulnerary. It is used in asthma and dysentery (Yusuf *et al.* 2009).

Threat status: Not Evaluated

H. patulum Thunb., Syst. Veg., ed. 14. 700. 1784; Li *et al.* in Fl. China 13: 13. 2007.

Vernacular Name: Not known

Shrubs, bushy. *Leaves* with *petiole* 0.5 – 2 mm; *leaf blade* lanceolate or oblong-ovate, *c.* 1.5 – 6 × 0.5 – 3 cm, thickly papery, cuneate at base, obtuse-apiculate to rounded-apiculate at apex. *Inflorescence* 1 – 15-flowered; *bracts* deciduous. *Flowers* 2.5 – 4 cm in diam. *Calyx* subequal to unequal, reddish, ovate or elliptic or obovate-spatulate, 5 – 10 × 3.5 – 7 mm; margin denticulate. *Corolla* golden yellow, oblong-obovate or obovate, *c.* 1.2 – 1.8 × 1 – 1.4 cm. *Stamen* many, longest 7 – 12 mm. *Ovary* ovoid, *c.* 5 – 6 × 3.5 – 4 mm; *styles* 4 – 5.5 mm. *Fruit* a capsule, broadly ovoid. *Seeds* dark brown.

Flowering & Fruiting: May – October

Habitat: Open forests, roadsides; 450 – 2400 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 361.

Distribution: India, China, Japan, South Africa

Note: The plant is used as a traditional medicine for dog bites and bee stings (Anonymous, 1976).

Threat status: Not Evaluated

Mesua L.

M. ferrea L., Sp. Pl. 1: 515. 1753. *Mesua nagassarium* (Burm. f.) Kosterm., Ceylon J. Sci., Biol. Sci. 12: 71. 1976.

Vernacular Name: Nageswar (H), Laternga (Jaintia), Nahor (A)

Trees. *Leaves* generally pendulous; *leaf blade* ovate-lanceolate to linear-lanceolate, 4 – 12 × 1 – 4 cm, leathery, cuneate at the base, acuminate to caudate at the apex. *Flowers* bisexual, solitary, axillary. *Calyx* orbicular. *Corolla* white, obovate-cuneate, 3 – 3.5 cm. *Stamens* *c.* 1.5 – 2 cm, *filaments* filiform. *Ovary* conical, *c.* 1.5 cm; *stigma* oblique. *Fruit* ovoid.

Flowering & Fruiting: March – October

Habitat: Road side, mixed forest

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, roadside, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11755, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, China, Indonesia (Java), Malaysia, Sri Lanka, Thailand.

Note: Oil from the seeds is used for sores, scabies, wounds, and rheumatism. The root of this herb is often used as an antidote for snake poison. The dried flowers are used for bleeding hemorrhoids and dysentery with mucus. Fresh flowers are also prescribed for excessive thirst, excessive perspiration, cough, and for indigestion (Website: <http://www.flowersofindia.net/catalog/slides/Nag%20Kesar.html>).

Threat status: Not Evaluated

69. GERANIACEAE Juss.

Geranium L.

G. nepalense Sweet, *Geraniaceae 1: t. 12. 1820*; Xu *et al.* in *Fl. China* 11: 15. 2008.

Vernacular Name: Nepalese Crane's Bill (E), Bhandra (H)

Perennial herbs. Stem 27 – 72 cm tall. *Stipules* distinct. *Leaves* opposite; leaf blade 2.3 – 4.1 cm, palmately cleft, pilose; 5 segments, rhombic, 3.7 – 6.5 mm wide at base. *Inflorescence* solitary cymes; *peduncle* 1.2 – 8.3 cm. *Pedicel* 1.1 – 2.5 cm; *bracteoles* present. *Calyx* 4.1 – 5.8 mm. *Corolla* white or pale pink, 5.1 – 6 mm. *Staminal filaments* lanceolate with narrowed apex; *anthers* violet, 0.3 – 0.9 mm. *Stigma* reddish. *Fruit* a schizocarp, 1.4 – 1.8 cm. *Seeds* 1.9 – 2.3 mm.

Flowering & Fruiting: April – October

Habitat: Forest margins; 1000 – 3600 m

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 328.

Distribution: Afghanistan, Bhutan, NE and S India, Indonesia (N Sumatra), Kashmir, Laos, N Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, N Vietnam

Note: The whole plant is used for Chinese medicine (Xu & Aedo, 2008).

Threat status: Not evaluated

70. COMBRETACEAE R.Br.

- | | |
|---|-------------------|
| 1a. Stamens 10..... | <i>Anogeissus</i> |
| 1b. Stamen 8 or 10..... | 2 |
| 2a. Petals 4 or 5, white, yellow, orange, red, or purple..... | <i>Combretum</i> |
| 2b. Petals absent..... | <i>Terminalia</i> |

Anogeissus (DC.) Wall. ex Guillem. & Perr.

A. acuminata (Roxb. ex DC.) Wall. ex Guillem. & Perr., *Fl. Seneg. Tent.* 1 (7): 280. 1832.

Anogeissus acuminata (Roxb. ex DC.) Wall. ex Guillem. & Perr. var. *fischeri* (M.Gangop. & Chakrab.) M.Gangop. & Chakrab. in *J. Econ. Taxon. Bot.* 17 (3): 656. 1993. *Anogeissus fischeri* M.Gangop. & Chakrab. in *J. Econ. Taxon. Bot.* 13 (3): 685. 1989.

Vernacular Name: Not known

Trees. *Leaf blade* lanceolate, 4 – 8 × 1 – 3 cm, pubescent along the axillary lateral veins, obtuse at the base, acuminate at the apex. *Inflorescence* flowered numerously; *bracts* deciduous, c. 5 mm. *Flowers* sessile. *Calyx* tube c. 5 mm, abaxially pubescent. *Filaments* 3 – 4 mm. *Fruit* c. 6 × 5 mm including beak, pubescent sparsely and on beak.

Flowering: February – March

Habitat: deciduous forests

Specimen Examined: Included after Dutt *et al.* 1974, D. 588.

Distribution: India, Bangladesh, Cambodia, China, Laos, Myanmar, Thailand, Vietnam.

Note: The wood is not very durable, being poorly resistant to water or humidity. It is used for light construction, furniture, and musical instruments (Sam *et al.*, 2004).

Threat status: Not Evaluated

Combretum Loefl.

- 1a. Stamen 8.....2
1b. Stamen 10.....3
2a. Leaves ovate-elliptic, 7 – 20 × 5 – 10 cm, both surfaces glabrous.....*C. latifolium*
2b. Leaves ovate-elliptic or oblong-elliptic, obtuse, 3.5 – 16 × 1.5 – 6 cm, both the leaf surface glabrous at maturity*C. wallichii* var. *deciduum*
3a. Inflorescences terminal and axillary, compound spikes or leafy panicle.....4
3b. Inflorescences lax.....*C. indicum*
4a. Fruit cylindrical, 5-winged, glabrous.....*C. decandrum*
4b. Fruit glossy, ellipsoid, 5-winged.....*C. pilosum*

C. decandrum Jacq., Enum. Syst. Pl. 19. 1760; in Hook.f., Fl. Brit. India 2: 452. 1878; Kanjial *et al.*, Fl. Assam 2: 250. 1938; Deb, Fl. Tripura 1: 381. 1981; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 151. 2003. *Combretum latipaniculatum* Rusby, Descr. S. Amer. Pl. 69. 1920.

Vernacular Name: Kali goichia (B)

Lianas. *Leaves* opposite; *petiole* 5 – 7 mm, hairy. *Leaf blade* oblong-elliptic, 6 – 13 × 3 – 6 cm, obtuse-rounded at the base, obtuse at the apex. *Inflorescences* terminal and axillary, compound spikes, leafy panicle; *bracts* present, lanceolate, pubescent. *Calyx tube* cupular, 3 – 5 mm, abaxially tomentose, 5-lobed. *Corolla* 5 lobed, obovate-oblong, c. 2 mm, both surfaces tomentose. *Stamens* 10, slightly exerted, c. 2 mm. *Fruit* cylindrical, 5-winged, glabrous.

Flowering & Fruiting: December – April

Habitat: Occasionally, near the bank of the stream

Specimen Examined: Included after Dutt *et al.* 1974, D. 550.

Distribution: India, Bangladesh, China, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Note: The leaves are used in the treatment of bilious haematuric malarial fevers (Chopra *et al.*, 1986).

Threat status: Not Evaluated

C. indicum (L.) DeFilipps, Useful Pl. Dominica 277. 1998. *Quisqualis indica* L., Sp. Pl., ed. 2. 1: 556. 1762; Chen & Turland in Fl. China 13: 315. 2007.

Vernacular Name: Not known

Lianas to 8 m tall. *Branchlets* brownish yellow pubescent. *Petiole* 5 – 9 mm, without an inflated joint near base, densely brown pilose when young; *leaf blade* mostly oblong-elliptic or elliptic, 5 – 18 × 2.5 – 7 cm, abaxially sometimes brown pilose, adaxially glabrous except slightly brown pilose on midvein, finely white verruculose, rarely tomentose on both surfaces, base obtuse, apex acuminate to shortly caudate; *lateral veins* in 7 or 8 pairs. *Inflorescences* lax; *bracts* deciduous, filiform-linear to ovate, 3 – 12 mm, brown pilose. *Flowers* fragrant. *Calyx tube* 5 – 9 cm, yellow pilose; lobes deltoid, 2 – 3 mm, apex acute or shortly acuminate but not cuspidate. *Corolla* opening white, later turning yellowish abaxially and reddish adaxially, obovate to oblanceolate, 10 – 24 × 4 – 10 mm, apex rounded to obtuse. *Fruit* red when young, greenish black or brown when ripe.

Flowering & Fruiting: March – November

Habitat: dry hillsides, riversides, roadsides, wasteland, also cultivated; below 1500 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11742, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (including Andaman Islands), Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, Vietnam; coastal E Africa, Indian Ocean islands, Pacific islands; introduced to other parts of tropical Africa and Central and South America; widely cultivated and often naturalized in the tropics

Note: The fruits are anthelmintic, used particularly to treat ascarids. In large doses they cause nausea, vomiting, hiccough and even unconsciousness. A concentrated decoction of the fruit is used as a gargle that is effective against toothache. A decoction of the root is used as a vermifuge and also to treat rheumatism (Website: <http://tropical.theferns.info/viewtropical.php?id=Combretum+indicum>).

Threat status: Not Evaluated

C. latifolium Blume, Bijdr. Fl. Ned. India 13: 641. 1826. *Combretum extensum* Roxb. ex G. Don in Trans. Linn. Soc. London 15: 414. 1827; Clarke in Hook.f., Fl. Brit. India 2: 458. 1879; Datar *et al.*, Fl. Bhagwan Mahavir (Molem) Park and Adjoining, Goa. 109. 2013.

Vernacular Name: Rangoon creeper (E), Madhumalati (H)

Lianas. *Leaves* opposite; *leaf blade* ovate-elliptic, 7 – 20 × 5 – 10 cm, both surfaces glabrous, obtuse-rounded at the base, obtuse at the apex. *Inflorescences* axillary,

compound, spikes 6 – 10 cm; *bracts* persistent, small. *Flowers* very fragrant. *Calyx tube* funnellform or salverform, 12 – 15 mm, both side tomentose; lobes 4, reflexed, narrowly triangular, 2 – 3 mm. *Corolla* 4 lobed, greenish white or yellowish green, 1 – 1.5 mm. *Stamens* 8, exserted, 5 – 7 mm. *Fruit* obovoid, 4-winged, tomentose in young, glabrous when mature.

Flowering & Fruiting: January – October

Habitat: mixed forests

Specimen Examined: Included after Dutt *et al.* 1974, D. 418.

Distribution: India (including Andaman Islands), Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam.

Note: Leaves have insecticidal property (Shrisha *et al.* 2011).

Threat status: Not Evaluated

C. pilosum Roxb., Fl. India, ed. 1832. 2: 231. 1832.

Vernacular Name: Not known

Stragglng *lianas*. *Leaves* opposite or subopposite; *leaf blade* ovate-oblong, elliptic, 5 – 15 × 2 – 7 cm, glabrous or tomentose, obtuse or cordate at the base, acuminate at the apex.

Inflorescences terminal and axillary, densely compound spikes; *bracts* persistent, tomentose. *Calyx tube* pale green, funnellform, 7 – 8 mm; 5 lobed, 1 – 2 mm. *Corolla* 5 lobed, reddish-pink or yellowish, oblong-oblancoate, 4 – 5 mm, hairy. *Stamens* 10, 7 – 8 mm. *Fruit* glossy, ellipsoid, 5-winged.

Flowering & Fruiting: December – March of the next year

Habitat: sparse forests, river banks, hill slopes

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11579, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Laos, Myanmar, Thailand, Vietnam.

Note: The young twig and dried rice powder grounded together, and made in to paste. This paste is used for children against ascaris. Young twig juice is anti-helminthic (Partha, 2014).

Threat status: Not Evaluated

C. wallichii DC. var. **deciduum** Gang. & T. Chakrab. in J. Econ. Tax. Bot. 17 (3): 680. 1993.

Vernacular Name: Not known

Woody *climber*; *branchlets* greyish or brownish, angular and puberulous in the young stage, terete & glabrous when become matured, 2 – 8 mm thick in diameter. *Leaves* 3.5 – 16 × 1.5 – 6 cm, opposite, ovate-elliptic or oblong-elliptic, obtuse, acute at base, acuminate to caudate apex (canda upto 1 – 1.5 cm long), whitish lepidotes scattered on both the

surface. Abaxial surface sparsely covered with brown or yellow pilose, both the leaf surface glabrous at maturity; petioles puberulous, 2 – 10 mm long. *Inflorescence* axillary or terminal, simple, spikes, *c.* 3 – 7.5 cm long. *Flower* 4-merous, white or cream, *calyx* funnel-shaped to salver-shaped, 2.5 – 3.5 cm long. Middle of the calyx expanded and campanulate, 4-lobed, calyx-teeth acute or sub-acuminate, triangular at the apex, adaxially covered with a ring of dense, coarse hairs. *Corolla* 4-lobed, obovate or oblanceolate, 2 × 1 mm. *Stamens* 8, *c.* 5 – 6 mm long, anther *c.* 1 mm long, exerted. *Style* 1, *c.* 5 – 6 mm long. *Fruit* purple-green or red-green, 4-winged, 2 – 3.5 × 2 – 2.8 cm, glabrous, shiny, white or yellow lepidotes or scales.

Flowering & Fruiting: March – November

Habitat: mixed forests, streamsides, roadsides

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11426, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Myanmar, Nepal, N. Vietnam.

Threat status: Not Evaluated

Terminalia L.

- 1a. Inflorescence simple spikes.....*T. bellirica*
 1b. Inflorescences terminal or axillary, simple or compound spikes.....2
 2a. Leaf blade elliptic, 7 – 18 × 4.5 – 10 cm.....*T. chebula*
 2b. Leaf blade oblong-elliptic or oblong-lanceolate, 10 – 25 × 4 – 10 cm.....*T. myriocarpa*

T. bellirica (Gaertn.) Roxb., Pl. Coromandel t. 198. 1805. *Myrobalanus bellirica* Gaertner, Fruct. Sem. Pl. 2: 90. 1790.

Vernacular Name: Bhumora (A), Bohera (B)

Trees deciduous. *Leaves* spiraled; *petiole* 3 – 9 cm, glabrous but tomentose when young; *leaf blade* obovate, 18 – 26 × 6 – 12 cm, obtuse-rounded at the base, mucronate at the apex. *Inflorescences* axillary, simple spikes, 5 – 18 cm. *Calyx tube* cupular, 4 – 5 mm, abaxially pubescent, adaxially long villous; 5 lobed. *Stamens* 10, exerted, 4 – 5 mm. *Fruit* subglobose to broadly ellipsoid.

Flowering & Fruiting: March – July

Habitat: Scattered forests, mountain slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11756, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam; N Australia; introduced in E Africa

Note: It enhances resistances of the body against diseases and infections. The fruit is believed to cure bronchitis. It is beneficial in curing any digestive problem. It has been proved that it is not intoxicating, is digestive and safe to be taken for all. It is safe both for

children as well as pregnant women. But excessive use of this can cause gastric in some cases (Website: <http://www.homeremediess.com/terminalia-bellerica-medicinal-uses-and-pictures/>).

Threat status: Not Evaluated

T. chebula Retz., *Observ. Bot.* v. 31. 1789; Kanjial *et al.*, *Fl. Assam* 2: 244. 1938; Deb, *Fl. Tripura* 1: 385. 1981; P. J. Bora & Y.Kumar, *Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary* 152. 2003.

Vernacular Name: Silikha (A), Sohartaki (Jaintia)

Trees. Leaves alternate or subopposite; *petiole* 1 – 3 cm; *leaf blade* elliptic, 7 – 18 × 4.5 – 10 cm, obtuse-rounded or cuneate at the base, mucronate at the apex. *Inflorescences* axillary or terminal, simple spikes, 5 – 10 cm, numerous flowered. *Flowers* faintly fragrant, bisexual. *Calyx tube* cupular, 2.5 – 3.5 mm, abaxially glabrous, adaxially pubescent; 5 lobed, mucronate at the apex. *Stamens* 10, exserted, 3 – 4 mm. *Fruit* blackish brown when ripe, ovoid, obtusely 5-ridged, glabrous.

Flowering & Fruiting: May – December

Habitat: Sparse forests, sunny forest margins

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11580, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Laos, Malaysia (introduced), Myanmar, Nepal, Sri Lanka, Thailand, Vietnam.

Note: Chewing the fruit causes increase in digestion power. If it is made into a paste and eaten, it clears and cleanses intestine. Steamed seeds are useful in malabsorption syndrome (Website: <http://easyayurveda.com/2013/01/05/haritaki-terminalia-chebula-uses-side-effects-ayurveda-details/>).

Threat status: Not Evaluated

T. myriocarpa Van Heurck & Müll.Arg., *Observ. Bot.* 215. 1871. *Myrobalanus myriocarpa* Kuntze, *Revis. Gen. Pl.* 1: 237. 1891.

Vernacular Name: Hollokh (A), Jhalna (B)

Trees. Leaves opposite; *petiole* 0.5 – 1.5 cm; *leaf blade* oblong-elliptic or oblong-lanceolate, 10 – 25 × 4 – 10 cm, thickly papery, obtuse at the base, entire at the margin, rarely conspicuously toothed, oblique at the apex. *Inflorescences* terminal or axillary, simple or compound spikes; axes densely tomentose. *Calyx tube* cupular, 2.5 – 3 mm, 5 lobed. *Stamens* 10, exserted, 2 – 3 mm. *Fruit* yellowish when dry, 2-winged.

Flowering & Fruiting: August – January

Habitat: Streamsides

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11757, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bangladesh, Bhutan, China, Indonesia (N Sumatra), Laos, Malaysia, N Myanmar, Nepal, Thailand, N Vietnam

Note: An excellent timber for many purposes, it is used for making cheap furniture, window frames, doors, railway carriages and generally for any work where accurate fitting is the main object. The wood makes an excellent charcoal (Gamble, 1972).

Threat status: Not Evaluated

71. LYTHRACEAE J.St.-Hil.

1a. Herbs, aquatic or terrestrial.....	2
1b. Trees or shrubs.....	4
2a. Stamens 2 – 8 or 4.....	3
2b. Stamens 1 – 6.....	<i>Rotala</i>
3a. Stamen 4; Fruit a drupe; one seeded.....	<i>Trapa</i>
3b. Stamens 2-8; fruit a capsule, seeds many.....	<i>Ammannia</i>
4a. Petals 4 – 8.....	<i>Duabanga</i>
4b. Petals usually 6.....	<i>Lagerstroemia</i>

Ammannia L.

1a. Corolla absent.....	<i>A. baccifera</i>
1b. Corolla 4-lobed.....	<i>A. multiflora</i>

A. baccifera L., Sp. Pl. 1: 120. 1753; Qin *et al.* in Fl. China 13: 275. 2007.

Vernacular Name: Blistering Ammania (E), Aginbuti (H), Banmarich (B)

Herbs, annual, 10 – 50 cm tall. *Leaves* opposite or alternate, narrowly elliptic or oblanceolate to linear, 5 – 60 × 3 – 10 mm, attenuate or subcordate at base. *Inflorescence* dense axillary cymes. *Flowers* 3 to many; *pedicels* subsessile, to 1 mm; *bracteoles* minute. *Floral tube* campanulate, 1 – 2 mm; *calyx* 4-lobed, c. 0.5 mm, deltate. *Corolla* absent. *Stamens* 4. *Style* much shorter than ovary. *Fruit* a capsule, 1 – 2 mm in diam.

Flowering & Fruiting: August – December

Habitat: Wet places

Specimen Examined: Included after Dutt *et al.* 1974, D. 566.

Distribution: India, Afghanistan, Bhutan, Cambodia, China, Laos, Malaysia, Nepal, Philippines, Thailand, Vietnam; tropical Africa, Australia, Caribbean islands.

Note: The young leaves are used on a local scale to treat rheumatic pains, fever, etc. (phytotherapy) (Rhazi *et al.*, 2014).

Threat status: Least Concern ver 3.1

A. multiflora Roxb., Fl. India 1: 447 1820; Qin *et al.* in Fl. China 13: 275. 2007.

Vernacular Name: Not known

Herbs, annual, 8 – 65 cm tall. *Leaves* opposite, elliptic, broadly linear or lanceolate-oblong, 1 – 2.5 cm × 3 – 12 mm, attenuate to cordate at base. *Inflorescence* in dense axillary cymes. *Pedicels* 1 – 2 mm; *peduncle* 1 – 2 mm; *bracteoles* linear, small. *Floral tube* campanulate, *c.* 1.5 mm; *calyx* 4-lobed, deltate. *Corolla* 4-lobed, pink to whitish, obovate, minute. *Stamens* usually 4. *Style* one-third or half of ovary. *Fruit* a capsule, red-brown, *c.* 1.5 mm in diam.

Flowering & Fruiting: July – September

Habitat: Wet places, farmland

Specimen Examined: Included after Dutt *et al.* 1974, D.181.

Distribution: tropics and subtropics of Africa, Asia, and Australia.

Note: The seed is cooked and has been used as a powder to make cakes (Plants for a Future 2010).

Threat status: Least Concern ver 3.1

Duabanga Buch.-Ham.

D. grandiflora Walp, Repert. Bot. Syst. 2: 114 1843; Qin *et al.* in Fl. China 13: 276. 2007.

Lagerstroemia grandiflora Roxb. ex DC., Mem. Soc. Phys. Geneve 3 (2): 84. 1826.

Vernacular Name: Ramdala (B)

Trees, 30 m tall, glabrous. *Leaves* rigid; *petiole* upto 1.2 cm; *leaf blade* ovate to oblong, 12 – 15 × 5 – 7 cm, cordate at base, shortly acuminate at apex. *Inflorescence* corymbs, drooping at ends of branches; *pedicels* 3 – 4 cm. *Floral tube* campanulate, 1.6 – 2.5 × 1.8 – 3 cm; *calyx* 5 – 6-lobed, green, enlarged in fruit. *Corolla* 6-lobed, white, obovate, *c.* 2.5 – 3 × 1.5 – 2 cm. *Stamens* numerous, *c.* 50 or more, white. *Fruit* a capsule, subglobose, 3 – 4 × 4 – 4.5 cm.

Flowering & Fruiting: February – June

Habitat: Common, valley forests, open places; 900 – 1500 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11416, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Cambodia, China, Laos, Malaysia, Myanmar, Thailand, Vietnam.

Note: Raw fruit can be made into a refreshing drink. It is boiled and used as a vegetable. The fruits and leaves are boiled to make a black dye (Website: <http://tropical.theferns.info/viewtropical.php?id=Duabanga%20grandiflora>).

Threat status: Not evaluated

Lagerstroemia L.

1a. Shrub to large tree, deciduous or semi-deciduous.....*L. speciosa*

1b. Deciduous trees.....*L. parviflora*

L. parviflora Roxb., Pl. Coromandel 1: 48. t. 66. 1796.

Vernacular Name: Dhauli, Sida (A)

Deciduous trees, upto 15 m high. *Leaves* simple, opposite; *stipules* intrapetiolar, deciduous; petiole glabrous; *leaflets* c. 3.5 – 7.5 × 2 – 3 cm, elliptic, obovate-elliptic or oblong, round or acute at base, acute, acuminate or obtuse-retuse at apex, margin entire, glabrous or shortly pubescent beneath. *Inflorescence* in lax axillary panicles. *Flowers* bisexual, c. 2 mm across, white, fragrant; *calyx tube* 7 mm, campanulate; 6-lobed, c. 3 mm; *corolla* 6-lobed, c. 6 mm, ovate-suborbicular; *stamens* many, exserted; *anthers* 0.5 mm; *ovary* 2.5 mm, half inferior, sessile, glabrous, ovules many; style to 1 cm; *stigma* capitate. *Fruit* a capsule, 3 × 1.5 cm, ovoid; *seeds* many.

Flowering & Fruiting: February – May

Habitat: roadside, on forest hills

Specimen Examined: India, Assam, Cachar dist., 13.09.1989, Dy. Assam forest herbarium 176930 (CAL); Included after Dutt *et al.* 1974, D. 460.

Distribution: Tropical Himalaya, India, Myanmar

Note: An edible gum is obtained from the tree. The bark is a source of tannins and can be used as a black dye. A fibre obtained from the bark is sometimes used to make a rough rope (Gamble, 1972).

Threat status: Not evaluated

L. speciosa Pers., Syn. Pl. 2 (1): 72. 1806. *Lagerstroemia flos-reginae* Retz., Observ. Bot. 5. 25. 1788. *Lagerstroemia reginae* Roxb., Pl. Coromandel 1: 46. t. 65. 1796.

Vernacular Name: Ajhar (A), Jarul (B)

Shrub to large tree, deciduous or semi-deciduous, up to 15 m in height. *Leaves* opposite, simple, oblong, c. 30 cm long, c. 13 cm wide, leathery; *stipule* minute or absent. *Inflorescence* axillary or terminal panicles, showy. *Flowers* variable in colour, white, purple and lavender, in clusters at the tips of the branches. The flowers c. 7.5 cm wide; *calyx* funnel or bell-shaped, 6 – 9 lobed; *corolla* often 6-lobed, crumpled. *Stamens* numerous, yellow. *Ovary* superior, 3 – 6 locular; *style* 1. *Fruit* a capsule, dry when mature, apical wing present.

Flowering & Fruiting: Summer season

Habitat: Common, roadside

Specimen Examined: Included after Dutt *et al.* 1974, D. 450.

Distribution: India, China, Southeast Asia, and Australia, widely cultivated in tropical regions.

Note: Seeds are narcotic; bark and leaves are purgative; roots are astringent, stimulant and febrifuge (fever removing). In Manipur, the fruit is used as local application for a patch of the mouth. Decoction of dried leaves is used in diabetes (Website: <http://tropical.theferns.info/viewtropical.php?id=Lagerstroemia+speciosa>).

Threat status: Not evaluated

Rotala L.

- 1a. Ovary ellipsoidal; style half of ovary.....*R. indica*
1b. Ovary pyriform to globose; style included, shorter than ovary.....*R. rotundifolia*

R. indica Koehne, Bot. Jahrb. Syst. 1 (2): 172. 1880; Qin *et al.* in Fl. China 13: 285. 2007.
Peplis indica Willd., Sp. Pl., ed. 4. 2 (1): 244. 1799.

Vernacular Name: Not known

Herbs, annual, terrestrial or semi-terrestrial, upto c. 40 cm. *Stem* creeping. *Leaves* decussate or obovate-elliptic, 5 – 17 × 3 – 8 mm, cuneate at base, margin translucent to opaque, obtuse at apex. *Bracts* like foliage leaves. *Flowers* in axillary spikes; *bracteoles* linear. *Floral tube* 4-merous, campanulate, c. 1.5 – 2.5 mm; *calyx* 4-lobed, lanceolate-deltate. *Corolla* 4-lobed, pink, minute half of calyx. *Stamens* 4. *Ovary* ellipsoidal; *style* half of ovary, slightly exserted. *Fruit* a capsule, ellipsoidal, c. 1 mm in diam.

Flowering & Fruiting: September – April

Habitat: Wet places, paddy fields

Specimen Examined: Included after Dutt *et al.* 1974, D. 423.

Distribution: India, Bhutan, Cambodia, China, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; C Asia; introduced in rice fields in Africa (Congo), Europe (Italy, Portugal), and North America (United States)

Note: The plant is used in aquarium.

Threat status: Least concern ver 3.1

R. rotundifolia (Buch.-Ham. ex Roxb.) Koehne, Bot. Jahrb. Syst. 1 (2): 175. 1880; Qin *et al.* in Fl. China 13: 285. 2007. *Ammannia rotundifolia* Buch.-Ham. ex Roxb., Fl. India 1: 446. 1820.

Vernacular Name: Not known

Herbs, perennial, upto 30 cm. *Leaves* decussate, obovate-elliptic or elliptic, 5 – 13 × 3.5 – 15 mm, obtuse at base, obtuse at apex. *Bractsc.* 3 × 1.5 mm. *Inflorescence* terminal, emergent spikes; 1 – 6 cm; *bracteoles* shorter than calyx, scarious. *Floral tube* 4-merous, campanulate, 1 – 1.5 mm; *calyx* 4-lobed. *Corolla* 4-lobed, bright rose. *Stamens* 4. *Ovary* pyriform to globose; *style* included, shorter than ovary; *stigma* discoid. *Fruit* a capsule, globose, 4-valved.

Flowering & Fruiting: November – May

Habitat: Common, Marshes, streamsides, paddy fields; below 2700 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11309; Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11320; Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11608, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Japan, Laos, Myanmar, Nepal, Thailand, Vietnam.

Note: Some uses such as treatment of carbuncle, furuncle, rheumatism and arthralgia, have been recorded in Yunnan province, China (Tan *et al.*, 2009).

Threat status: Least concern ver 3.1

Trapa L.

T. natans L. var. **bispinosa** (Roxb.) Makino in Bot. Mag. (Tokyo) 11: 283. 1897; Deb, Fl. Tripura 2: 180. 1983. *Trapa bispinosa* Roxb., Pl. Coromandel 3: 29. 1815; Kanjilal *et al.*, Fl. Assam 2: 319. 1938; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 161. 2003.

Vernacular Name: Water Chestnut (E), Singhara (H), Paniphal (B)

Annual aquatic floating *herb*. *Floating leaves* rhomboid, crowded at the upper part of the stem, 2 – 6.5 cm in diameter, dark green above and reddish purple beneath, broader than long, denticulate, dentate, serrate or incised at margin, entire at base, acute at apex, red and densely pubescent or villous beneath. *Flowers* white, solitary, axillary. *Calyx* lanceolate, acute, pubescent. *Corolla* obovate, crenulate on margins. *Stamen* 4. *Fruit* is obovoid, triangular with two horns, one seeded; *fruit* pulp whitish.

Flowering & Fruiting: August – December

Habitat: Common, in water bodies of the sanctuary

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11591, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar); also included after Dutt *et al.* 1974, D. 190.

Distribution: Throughout in India, South-east Asia, Sri Lanka, Tropical Africa.

Notes: It is an important plant of Indian Ayurvedic system of medicine which is used in the problems of stomach, genitourinary system, liver, kidney, and spleen. It is bitter, astringent, stomachic, diuretic, febrifuge, and antiseptic. The whole plant is used in gonorrhoea, menorrhagia, and other genital affections. It is useful in diarrhoea, dysentery, ophthalmopathy, ulcers, and wounds (Adkar *et al.*, 2014).

Threat status: Not Evaluated

72. ONAGRACEAE Juss.

Ludwigia L.

- 1a. *Corolla* creamy-white with yellow base.....2
- 1b. *Corolla* yellow.....*L. octovalvis*
- 2a. *Stamens* 10.....*L. adscendens*
- 2b. *Stamens* as many as calyx.....*L. perennis*

L. adscendens (L.) H.Hara, J. Jap. Bot. 28: 291. 1953; Chenet *al.* in Fl. China 13: 403. 2007. *Jussiaea adscendens* L., Syst. Nat., ed. 12, 2: 297; Mant. Pl. 1: 69. 1767.

Vernacular Name: Pani khutora (A)

Herbs perennial, with creeping or floating stems. *Petiole* 5 – 20 mm; *leaf blade* oblong to spatulate-oblong, 0.4 – 7 × 0.7 – 3 cm, glabrous, narrowly cuneate or attenuate at base, margin entire, obtuse to subacute at apex. *Calyx* 5-lobed, deltoid-acuminate, 5 – 11 mm, glabrous or villous. *Corolla* creamy-white with yellow base, obovate, 9-18 × 6 – 10 mm. *Stamens* 10; anthers 0.7 – 1.8 mm. *Style* 4 – 10 mm, glabrous; *stigma* discoid. *Capsule* light brown with dark brown ribs.

Flowering & Fruiting: April – November

Habitat: Wet swampy places; near sea level to 1600 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Gumra, 11.09.2010, H. A. Barbhuiya 85075, Fl. (ASSAM).

Distribution: India, China, Indonesia, Japan, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand; widespread in Africa, S and SE Asia, Australia

Note: A decoction of the aerial parts is used as a treatment for dysentery, fever, cough and ophthalmia. The aerial parts are used to make poultices for treating skin complaints such as boils, ulcers and impetigo. They are pounded with the ash of bamboo leaves and the leaves of *Osmanthus fragrans*, and are then applied to swellings (Website: <http://tropical.ferns.info/viewtropical.php?id=Ludwigia+adscendens>).

Threat status: Not Evaluated

L. perennis L., Sp. Pl. 1: 119. 1753; Chenet *al.* in Fl. China 13: 402. 2007. *Jussiaea perennis* (L.) Brenan in Kew Bull. 8 (1): 163. 1953.

Vernacular Name: Perennial Water Primrose/Paddy clove (E)

Herbs, annual. *Petiole* 2 – 15 mm, winged; *leaf blade* narrowly elliptic to lanceolate, 1 – 11 × 0.3 – 2.7 cm, narrowly cuneate at base, subacute at apex. *Calyx* 4-lobed, deltate, 2 – 3.5 mm, glabrous or minutely puberulous. *Corolla* yellow, elliptic, 1 – 3 × 0.7 – 2 mm. *Stamens* as many as calyx; *filaments* 0.3 – 0.7 mm; *anthers* 0.5 – 0.7 mm. *Style* 0.7 – 1.5 mm; *stigma* globose. *Fruit* a capsule, nodding, pale brown.

Flowering & Fruiting: July – November

Habitat: Wet places; near sea level to 1200 m

Specimens Examined: India, Assam, Cachar dist., Sonaimukh, 20.08.1903, A. T. Gage s.n. (CAL); Included after Dutt *et al.* 1974, D. 40.

Distribution: Bangladesh, Bhutan, India, Indonesia, Japan, Myanmar, Nepal, Philippines, Sri Lanka; Africa (including Madagascar), SE and SW Asia, Australia, Pacific islands (New Caledonia)

Note: It is an important medicinal plant in ayurveda and siddha systems of medicine (Rehel, 2011).

Threat status: Least concern ver 3.1

L. octovalvis (Jacq.) P. H. Raven in Kew Bull. 15 (3): 476. 1962; Chenet *al.* in Fl. China 13: 401. 2007. *Oenothera octovalvis* Jacquin, Enum. Syst. Pl. 19. 1760.

Vernacular Name: Bon jalakia (A), Ban lavanga (B)

Herbs erect, perennial. *Petiole* 1 – 10 mm; *leaf blade* linear to subovate, 1 – 14 × 0.3 – 4 cm, cuneate at base, attenuate at apex. *Calyx* 4-lobed, ovate or lanceolate, 6 – 15 mm. *Corolla* yellow, broadly obovate, 6 – 17 × 5 – 17 mm. *Stamens* 8; *filaments* 1 – 4 mm; *anthers* 1.2 – 4 mm. *Style* 1.5 – 3.5 mm; *stigma* subglobose, 4-lobed. *Fruit* a capsule, pale brown.

Flowering & Fruiting: January – December

Habitat: Moist to wet places; near sea level to 2100 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11719, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Japan, Malaysia, Myanmar, Singapore, Thailand, Vietnam; widespread throughout Africa, S, SE, and SW Asia, Australia, Europe, North America, Pacific islands, South America

Note: This species is apparently used in herbal medicines (Lansdown *et al.*, 2013).

Threat status: Least concern ver 3.1

73. MYRTACEAE Juss.

- 1a. Leaves opposite, petiolate.....2
1b. Leaves opposite or sometimes whorled, petiolate to sessile.....*Syzygium*
2a. Petals 4 or 5.....*Psidium*
2b. Petals 4.....*Eugenia*

Eugenia L.

E. roxburghii DC., Prodr. 3: 271. 1828. *Syzygium ruscifolium* (Willd.) Santapau & Wagh in Bull. Bot. Surv. India 5: 109. 1964.

Vernacular Name: Roxburgh's Cherry (E)

Small *trees* or large *shrubs*. *Leaves* opposite, leathery, ovate or elliptic-lanceolate, caudate-acuminate, acute at base, margin entire, glabrous, to 6.5 × 2.5 cm. *Flowers* white, 7 mm across, in axillary 2 or 3-flowered cymes; *bracteoles* linear; *pedicels* 5 mm long. *Calyx* tubular, unequal. *Corolla* 4-lobed, white, glandular, obovate to round, falling off early. *Stamens* numerous, free. *Style* as long as the stamens, *stigma* simple. *Fruit* a berry, deep orange, *seed* 1.

Flowering & Fruiting: March – April

Habitat: evergreen forests

Specimens Examined: Included after Dutt *et al.* 1974, D. 572.

Distribution: Peninsular India and Sri Lanka

Threat status: Not Evaluated

Psidium L.

P. guajava L., Sp. Pl. 1: 470. 1753; Chen & Craven in Fl. China 13: 332. 2007. *Guajava pyrifera* Kuntze, Revis. Gen. Pl. 1: 239. 1891. *Myrtus guajava* (L.) Kuntze, Revis. Gen. Pl. 3 (3) 91. 1898.

Vernacular Name: Guava (E), Madhuriam (A)

Trees, to 13 m tall. *Branchlets* angular, pubescent. *Petiolec.* 5 mm; *leaf blade* oblong to elliptic, 6 – 12 × 3.5 – 6 cm, leathery, abaxially pubescent, adaxially slightly rough, rounded at base, acute to obtuse at apex. *Flowers* solitary or 2 or 3 in cymes. *Hypanthium* campanulate, c. 5 mm, pubescent. *Calyx* cap nearly rounded, 7 – 8 mm, irregularly opening. *Petals* white, 1 – 1.4 cm. *Stamens* 6 – 9 mm. *Ovary* adnate to hypanthium. *Style* as long as stamens. *Berry* globose, ovoid, or pyriform, 3 – 8 cm; flesh white or yellow; placenta reddish, well developed, fleshy. *Seeds* many.

Flowering & Fruiting: Summer

Habitat: cultivated or open forest

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11723, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, naturalized in many tropical parts of the world

Note: Fruit is eaten raw. Leaves are used to treat stomach problems (local use).

Threat status: Not Evaluated

Syzygium Gaertn.

- 1a. Petiole 1 – 2 cm.....2
- 1b. Petiole less than 1cm.....*S. oblatum*
- 2a. Inflorescences paniculate cymes, axillary or terminal.....3
- 2b. Inflorescence axillary panicle.....*S. grande*
- 3a. Corolla white or light purple.....*S. cumini*
- 3b. Corolla white.....4
- 4a. Calyx lobes inconspicuous.*S. fruticosum*
- 4b. Calyx lobes not as above.....5
- 5a. Leaves 10 – 20 × 10 – 13.4 cm, lanceolate to elliptic-lanceolate.....*S. kurzii*
- 5b. Leaves leathery, 12 – 18 × 6 – 8 cm, elliptic to obovate.....*S. tetragonum*

S. cumini (L.) Skeels in Bull. Bur. Pl. Industr. U.S.D.A. 248, 25. 1912; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 154. 2003; Chen & Craven in Fl. China 13: 355. 2007. *Eugenia jambolana* Lam., Encycl. 3 (1): 198. 1789.

Vernacular Name: Blackpalm (E), Jamuk (A), Jamun (B)

Trees. *Petiole* 1 – 2 cm; *leaf blade* elliptic, 6 – 12 × 3.5 – 7 cm, leathery, broadly cuneate to rarely rounded at base, rounded to obtuse at apex. *Inflorescences* axillary or occasionally terminal, paniculate cymes, to 11 cm. *Hypanthium* obconic or long pyriform, c. 4 – 8 mm. *Calyx lobes* inconspicuous, 0.3 – 0.7 mm. *Corolla* 4-lobed, white or light purple, ovate and slightly rounded, c. 2.5 mm. *Stamens* 3 – 4 mm. *Style* as long as stamens. *Fruit* ellipsoid to pot-shaped, 1 – 2 cm, 1-seeded.

Flowering & Fruiting: February – September

Habitat: secondary forests, roadside, streamsides; below 100 to 1200 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, roadside, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11722 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Laos, Malaysia, Nepal, Sri Lanka, Thailand, Vietnam; Australia

Note: It is a multipurpose tree which is highly valued for its medicinal uses, edible fruits, for fodder, for strong heavy timber and good fuelwood. It is mainly found as a home garden fruit tree, although it is also found wild in secondary forests. It is also a host plant of the tasar silkworm, and a good source of nectar for honeybees. It is a sacred tree to Hindus and Buddhists. Seeds used to be traded for medicinal use until the end of the 1700s, when they were widely exported from India to Malaysia and Polynesia, and from the West Indies to Europe (Website: <http://www.cabi.org/isc/datasheet/52426>).

Threat status: Not Evaluated

S. fruticosum DC., Prodr. 3: 260. 1828; Deb, Fl Tripura 1: 372. 1981; Chen & Craven in Fl. China 13: 355. 2007. *Eugenia fruticosa* Roxb., Fl. India 2: 487. 1832; Duthie in Hook.f., Fl. Brit. India 2: 499. 1878; Kanjilal *et al.*, Fl. Assam 2: 279. 1938.

Vernacular Name: Kutahi jamuk (A)

Trees. *Petiole* 1 – 1.5 cm; *leaf blade* elliptic, 9 – 13 × 3.5 – 5.5 cm, thinly leathery, broadly cuneate to slightly rounded at base, acuminate at apex. *Inflorescences* paniculate cymes, 4 – 7 cm. *Hypanthium* obconic, 2 – 2.5 mm. *Calyx lobes* inconspicuous. *Corolla* 4-lobed, distinct, rounded, 1 – 1.5 mm wide. *Stamens* 1.5 – 2.5 mm. *Style* as long as stamens. *Fruit* globose, 6 – 7 mm in diam., 1-seeded.

Flowering & Fruiting: May – July

Habitat: sparse forests, wastelands; 500 – 1700 m.

Specimens Examined: Included after Dutt *et al.* 1974, D. 517.

Distribution: India, Bangladesh, China, Myanmar, Thailand

Note: Juice of the tender leaves with rice water is taken in blood dysentery (Website: www.mpbid.info/plants/syzygium-fruticosum.php).

Threat status: Not Evaluated

S. grande (Wight) Walp., Repert. Bot. Syst. 2: 180. 1843. *Eugenia grandis* Wight, Ill. India Bot. 2 (1): 17. 1841.

Vernacular Name: Sea Apple (E)

Large tree. *Leaf blade* c. 16 × 9 cm, elliptic-ovate, leathery, wedge-shaped at base; broadly at apex. *Petiole* 16 mm, stout. *Inflorescence* axillary panicle, c. 14 cm long, terete, 2-branched; *bracts* lanceolate. *Calyx* 4-lobed, c. 5 × 5 mm, broadly ovate, strongly unequal, obtuse, imbricate; *stamens* many, cream-white or sometimes pink; *style* 12 mm. *Fruit* c. 4 × 3 cm, ellipsoid, smooth.

Flowering & Fruiting: March – June

Habitat: along rivers and streams, hillsides, swamp forests; upto 900 m

Specimens Examined: Included after Dutt *et al.* 1974, D. 136.

Distribution: Myanmar, Indo-China, Thailand, Peninsular Malaysia, Borneo

Note: It is used for building purposes, boat and house construction (Uphof, 1959).

Threat status: Not Evaluated

S. kurzii (Duthie) N. P. Balakr. in Bull. Bot. Surv. India 22 (1 – 4): 174. 1982. *Eugenia kurzii* Duthie ex Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 46 (2): 68. 1877. *Jambosa kurzii* A.M.Cowan & Cowan, Trees N. Bengal 67. 1929.

Vernacular Name: Bogi Jamuk (A)

Moderate to large-sized tree. *Leaves* 10 – 20 × 10 – 13.4 cm, lanceolate to elliptic-lanceolate, acuminate at the apex, attenuate or acute at the base, glabrous. *Petiole* 1.2 – 2 cm long. *Flowers* white, 1.5 cm across. *Cymes* branched or paniced, 0.7 – 7 cm long, solitary or fascicled in leaf-axils or axils of fallen leaves. *Pedicels* c. 1.2 cm long. *Calyx tube* 0.7 – 1 cm long. *Calyx lobes* rounded, c. 0.5 cm across. *Corolla* free, 0.5 – 0.6 cm across. *Style* persistent. *Fruit* a berry, globose.

Flowering & Fruiting: Summer season

Habitat: Occasionally, forest; 500 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, roadside, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11415, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Meghalaya, Mizoram, Sikkim, West Bengal), Bhutan, Myanmar, Nepal and Thailand

Note: Fruit is eaten raw (local use).

Threat status: Not Evaluated

S. oblatum (Roxb.) Wall. ex Steud., Nomencl. Bot., ed. 2. 2: 657. 1841; Chen & Craven in Fl. China 13: 359. 2007. *Eugenia oblata* Roxb., Fl. India, ed. 1832, 2: 493. 1832.

Vernacular Name: Not known

Trees. Petiole less than 1 cm; leaf blade elliptic, 9 – 12 × 4 – 6 cm, leathery, rounded to broadly cuneate at base, acuminate at apex. *Inflorescences* terminal or axillary, paniculate cymes, 4 – 7 cm; peduncle short. *Hypanthium* obconic, 4 – 5 mm. *Calyx* 4-lobed, shortly angular, c. 1 × 2 – 3 mm. *Corolla* 4-lobed, white, coherent, ovate, c. 5 mm. *Stamens* longer than corolla. *Style* same length as stamens. *Fruit* globose, 1 – 1.5 cm in diam., 1-seeded.

Flowering & Fruiting: April – January

Habitat: open to dense forests, mountain slopes, streamsides; 500 – 1000 m.

Specimens Examined: Included after Dutt *et al.* 1974, D. 540.

Distribution: India, Bangladesh, Cambodia, China, Indonesia (Kalimantan), Malaysia, Thailand, Vietnam

Threat status: Not Evaluated

S. tetragonum Wall. ex Wight, *Illustr. India Bot.* ii. 16. 1841; Chen & Craven in *Fl. China* 13: 349. 2007. *Eugenia tetragona* Wight, *Ill. India Bot.* ii. 16. 1841.

Vernacular Name: Not known

Trees. Petiole 1 – 1.6 cm; leaf blade leathery, elliptic to obovate, 12 – 18 × 6 – 8 cm, broadly cuneate to rounded at base, rounded to obtuse at apex. *Inflorescences* paniculate cymes, 3 – 5 cm. *Flower buds* 6 – 7 mm. *Hypanthium* short. *Calyx lobes* obtuse and short. *Corolla* coherent, white. *Stamens* c. 3 mm. *Fruit* tinged yellow, globose, c. 1 cm in diam.

Flowering & Fruiting: July – January

Habitat: evergreen forests, streamsides; 800 – 2000 m.

Specimens Examined: Included after Dutt *et al.* 1974, D. 580.

Distribution: India, Bhutan, China, Myanmar, Nepal, Thailand

Note: It is used in construction and for making tool handles. The wood is used for making charcoal (Gamble, 1972).

Threat status: Not Evaluated

74. MELASTOMATACEAE Juss.

- 1a. Ovary inferior, 4-celled, glabrous.....*Oxyspora*
1b. Ovary half inferior, 4- or 5-celled.....2
2a. Stamens 10, whorls very unequal in length.....*Melastoma*
2b. Stamens twice as many as perianth segments, equal or subequal.....*Osbeckia*

Melastoma L.

M. malabathricum L., *Sp. Pl.* 390. 1753; Clarke in Hook. f., *Fl. Brit. India* 2: 523. 1879; Kanjilal *et al.*, *Fl. Assam* 2: 297. 1938; Deb, *Fl. Tripura* 1: 388. 1981.

Vernacular Name: Phutki, Ban Padam (B)

Bushy shrubs, c. 15 ft. tall, stem strigose with long. Leaves c. 6 – 12 × 1.8 – 5 cm, oblong-lanceolate to elliptic, acuminate, scabrous with hairs; petiole strigose. Flowers mauve-

purple in cluster at the ends of branchlets; *bracts* enclosing the buds. *Calyx tube* densely covered with linear acuminate, pale brown and serrulate scale; *calyx lobes* lanceolate, scarcely hairy within. *Fruit* c. 6 cm across, truncate, pulpy inside with fleshy purple placenta breaking up irregularly.

Flowering & Fruiting: August – December

Habitat: Common, along roadside, plain forest

Distribution: India, Sri Lanka, Myanmar, Thailand, Vietnam & Malaysia

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11645, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Note: The plant is often used medicinally in Asia, where it is particularly valued for its astringent properties. A decoction of the leaves either alone or in combination with other plants, is used in the treatment of stomach aches, indigestion, diarrhoea dysentery, and leucorrhoea. The ground up leaves are applied externally as a compress to cuts, wounds and swellings. A strong decoction of the leaves is applied to painful arthritic joints, and also to weeping sores caused by stinging insect hairs in order to aid extraction of the hairs (Website: <http://tropical.theferns.info/viewtropical.php?id=Melastoma+malabathricum>).

Threat status: Not evaluated

Osbeckia L.

- 1a. Ovary ovoid-globose or ovoid.....2
- 1b. Ovary subglobose.....*O. chinensis*
- 2a. Corolla 4-lobed, purple.....*O. capitata*
- 2b. Corolla 5-lobed, pink or white.....*O. nepalensis*

O. capitata D. Don ex Wight & Arn., Prodr. Fl. India Orient. 1: 323. 1834; Chen & Renner in Fl. China 13: 362. 2007.

Vernacular Name: Not known

Herbs or shrublets, erect. *Petiole* very short, strigose; *leaf blade* ovate, 1.7 – 2.5 × 0.9 – 1.3 cm, both surfaces tomentose, rounded to subcordate at base, margin entire, acute at apex. *Inflorescences* terminal, 2 or 3-flowered; *bracts* sessile, ovate. *Hypanthium* often reddish, c. 1.5 cm, glabrous. *Calyx* 4-lobed, ovate, c. 1.5 cm, margin ciliate. *Corolla* 4-lobed, purple, obovate, c. 1.5 cm, margin ciliate. *Stamens* 8, inclined to one side; *filaments* equal; anthers lanceolate. *Ovary* ovoid, 4-celled. *Fruit* a capsule, purplish-red, ovoid, c. 7 × 7 mm, glabrous.

Flowering & Fruiting: June – September

Habitat: mountain slopes; 1500 – 2500 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 350.

Distribution: India, Bhutan, China

Threat status: Not evaluated

O. chinensis L., Sp. Pl. 1: 345. 1753; Chen *et al.* in Fl. China 13: 362. 2007.

Vernacular Name: Not known

Herbs or shrubs, 20 – 60 cm tall, erect. *Petiole* 2 – 10 mm, pubescent; *leaf blade* linear-lanceolate, oblong-ovate or elliptic-ovate, 2 – 5 × 0.3 – 1 cm, both surfaces strigose, obtuse, subrounded or subcordate at base, margin entire, acute at apex. *Inflorescences* terminal, capitate; *bracts* sessile, ovate. *Hypanthium* usually pink, 6 – 6.5 mm, glabrous. *Calyx lobes* 4 – 5 lobed, triangular-lanceolate, margin ciliate. *Corolla* 4 – 5 lobed, pale purple, obovate, 1 – 1.5 × c. 1.3 cm, margin ciliate, apex apiculate. *Stamens* 8 or 10, inclined to one side; *anthers* lanceolate, beaked. *Ovary* subglobose. *Fruit* a capsule, purplish red, ovoid – globose, c. 6 × 4 mm, glabrous.

Flowering & Fruiting: July – December

Habitat: Grasslands on mountain slopes, grassy areas on open slopes, sparse forests, roadsides; near sea level to 2800 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 384.

Distribution: India, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam, Australia

Note: A decoction is used in the treatment of watery diarrhoea, dysentery and excessive sputum production in coughing (Website: <http://tropical.theferns.info/viewtropical.php?id=Osbeckia+chinensis>).

Threat status: Not evaluated

O. nepalensis Hook., Exot. Fl. 1 (2): t. 31. 1822; Chen *et al.* in Fl. China 13: 362. 2007.

Vernacular Name: Not known

Shrubs, erect. *Petiole* 1 – 4 mm, tomentose; *leaf blade* oblong-lanceolate to ovate-lanceolate, 7 – 13 × 2.5 – 3.8 cm, both surfaces pubescent. *Inflorescences* terminal, a panicle of cymes, 5 – 8 cm; *bracts* leaflike. *Bracteoles* 2, c. 1.3 cm. *Hypanthium* c. 2 cm. *Calyx* 5-lobed, ovate, both surfaces glabrous, margin ciliate, acuminate at apex. *Corolla* 5-lobed, pink or white, obovate, 1.5 – 2.5 cm, margin ciliate, rounded at apex. *Stamens* 10, inclined to one side; *anthers* beaked. *Ovary* ovoid-globose, 5-celled. *Fruit* a capsule, ovoid-globose, c. 8 × 6 mm, densely tomentose.

Flowering & Fruiting: August – December

Habitat: Mountain slopes, open slopes, forest margins, streamsides; 500 – 1900 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 452.

Distribution: NE India, Bhutan, China, Laos, Myanmar, Nepal, Thailand, Vietnam

Threat status: Not evaluated

Oxyspora DC.

1a. Leaf blade ovate or elliptic-ovate, 15 – 30 × 5 – 10 cm, abaxially glabrous, adaxially pubescent or glabrous.....*O. cernua*

1b. Leaf blade ovate to elliptic, 11 – 16.5 × 5 – 7.5 cm, both surfaces hairy.....*O. vagans*

O. cernua Hook.f. & Thoms. ex Triana, *Trans. Linn. Soc. London* 28 (1): 73 1871; Chen *et al.* in *Fl. China* 13: 368. 2007. *Melastoma cernuum* Roxb., *Fl. India*, ed. 1832, 2: 404. 1832.

Vernacular Name: Not known

Shrubs. *Petiole* 0.5 – 4 cm; *leaf blade* ovate or elliptic-ovate, 15 – 30 × 5 – 10 cm, abaxially glabrous, adaxially pubescent or glabrous, rounded to subcordate at base, margin entire or subentire, acuminate at apex. *Inflorescences* terminal, a cymose panicle, *c.* 20 – 40 cm; *bracts* sessile, leaflike. *Bracteoles* lanceolate, 1 – 3 mm. *Hypanthium* narrowly funnellform, 0.5 – 1 cm, glabrous or furfuraceous. *Calyx lobes* broadly triangular-ovate, 1 – 1.2 mm, acute and apiculate at apex. *Corolla* pink to red, oblong, 1 – 1.2 × 0.6 – 0.8 cm. *Fruit* a capsule obovoid, 9 – 13 × *c.* 5 mm.

Flowering: September – November

Habitat: Mixed forest margins, moist places; 600 – 1200 m.

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 273.

Distribution: India, Bhutan, China

Threat status: Not evaluated

O. vagans Hook., *Bot. Mag.* 76: t. 4553. 1850; Chen *et al.* in *Fl. China* 13: 368. 2007. *Melastoma vagans* Roxburgh, *Fl. India*, ed. 2: 404. 1832.

Vernacular Name: Not known

Shrubs. *Stems* obtusely 4-sided or terete. *Petiole* 1.5 – 5.5 cm; *leaf blade* ovate to elliptic, 11 – 16.5 × 5 – 7.5 cm, both surfaces hairy, rounded to subcordate at base, margin denticulate, acuminate at apex. *Inflorescences* terminal, a cymose panicle, 12 – 25 × 2.6 – 6 cm, with 2 leaflike bracts at base. *Bracteoles* subulate, *c.* 1 mm, caducous. *Hypanthium* narrowly urceolate, *c.* 6 mm. *Calyx lobes* inconspicuous, apiculate at apex. *Corolla* pink to red, ovate, *c.* 6 mm. *Stamens* with connective swollen and spurred at base. *Ovary* fusiform. *Capsule* elliptic, *c.* 5.5 × 4 mm.

Flowering & Fruiting: October – March

Habitat: Sparse or dense mixed forests, stream banks, moist places; 700 – 1000 m.

Specimen Examined: India, Assam, NC Hills dist., Haflong, 20.12.1953, *Bro. Goodfrey* 172788 (CAL); Included after Dutt *et al.* 1974, *D.* 336.

Distribution: India, China, Myanmar, Thailand

Threat status: Not evaluated

75. CRYPTERONIACEAE DC.

Crypteronia Blume

C. paniculata Blume, *Bijdr.* 1151. 1826. *Crypteronia glabra* Endl., *Gen. Pl. Suppl.* iv. II. 39. 1848. *Crypteronia glabra* Endl., *Gen. Pl. Suppl.* iv. II. 39. 1848. *Crypteronia lutea* Blume *Mus. Bot.* 2 (1 – 8): 123. 1856.

Vernacular Name: Garumara (A)

Trees. Leaf blade elliptic-oblong, ovate-oblong, *c.* 7 – 18 × 3 – 8 cm, rounded to cuneate at the base, acuminate at the apex. *Inflorescence* terminal or axillary panicles, *bracts* present. *Flowers* many, dense; *calyx* 5-lobed, *c.* 1 mm long. *Stamen* 5 in male flower, 3 – 5 mm, glabrous, reduced in female flower. *Ovary* subglobose. *Fruit* capsule, compressed.

Flowering & Fruiting: July – November

Habitat: Moist places

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 175.

Distribution: India, Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam

Note: The bark is used to treat blisters. Young shoots are eaten raw or cooked. Eaten in salads or cooked and eaten as a vegetable (Soepadmo *et al.*, 2002).

Threat status: Not Evaluated

76. BURSERACEAE Kunth

- 1a. Ovary 4- or 5-celled.....2
- 1b. Ovary 2- or 3-celled.....*Canarium*
- 2a. Drupe globose.....*Protium*
- 2b. Drupe subglobose.....*Garuga*

Protium Burm.f.

P. serratum Engl., Monogr. Phan. 4: 88. 1883. *Bursera serrata* Wall. ex Coleb., Trans. Linn. Soc. London 15 (2): 361, t. 4. 1827

Vernacular Name: Indian Red Pear (E), Mir-tenga (A)

Trees deciduous. *Leaflets* 5 – 9; *leaves* oblong or ovate-oblong, *c.* 7 – 10 × 2.5 – 4.5 cm, papery, base rounded or cuneate, margin serrulate or rarely entire, apex acute to caudate-acuminate; *lateral veins* densely pubescent. *Inlorescence* panicles, axillary, *c.* 6 – 14 cm, pubescent. *Flowers* pale green; *pedicel* *c.* 2 mm. *Calyc.* 1 mm. *Corolla* oblong-lanceolate, *c.* 1.5 – 2 mm. *Fruit* a drupe, globose.

Flowering & Fruiting: April – June

Habitat: dense forest

Specimens Examined: Included after Dutt *et al.*, 1974, *D.* 124.

Distribution: India, Bhutan, Cambodia, China, Laos, Myanmar, Thailand, Vietnam

Note: The fruits are used in the treatment of mouth ulcers (Gardener *et al.*, 2000).

Threat status: Not Evaluated

Canarium L.

- 1a. leaflets 5 or 6 pairs.....*C. resiniferum*
- 1b. Leaflets 6 – 8 pairs.....*C. bengalense*

C. resiniferum Bruce ex King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 62 (4): 188. 1894; Kanjilal *et al.*, Fl. Assam 1 (2): 224. 1934; Deb, Fl. Tripura 1: 443. 1981. *Canarium strictum* Roxb., (Hort. Bengal. 49. 1814. Nom. Nud &) Fl. India iii. 138. 1832; Benth. in Hook.f., Fl. Brit. India 1: 534. 1875.

Vernacular Name: Indian white Mahogany (E), Dhuna (A)

Trees. *Leaves* stipulate; *leaflets* 5 or 6 pairs; *leaf blades* ovate-lanceolate, c. 10 – 20 × 4 – 6.5 cm, papery or leathery, base oblique, margin somewhat sinuate, apex acuminate. *Inflorescences* axillary, rarely fascicled at ends of branches. *Male flower:* inflorescence cymose panicles, tomentose, many flowered. *Flower* c. 7 mm; calyx c. 4 mm; *Stamens* glabrous, filaments connate at the base; ovary almost absent. *Female flower:* inflorescence racemose, few flowered. *Flower* c. 9 mm; calyx c. 5.5 mm; *Ovary* glabrous to dotted hairs. *Infructescences* racemose, 10 – 20 cm, glabrous, 1 – 3-fruited. *Fruit* a drupe, obovoid or ellipsoid.

Flowering & Fruiting: April – Cold season

Habitat: Occasionally, plain forest

Specimens Examined: Included after Dutt *et al.*, 1974, D. 260.

Distribution: India, China, Myanmar

Note: The resin obtained from the trunk is used medicinally (Gardener *et al.*, 2000).

Threat status: Not Evaluated

C. bengalense Roxb., Fl. India iii. 136. 1832; Kanjilal *et al.*, Fl. Assam 1 (2): 224. 1934.

Vernacular Name: Dhuna rata (B), Umchhiang (Jaintia)

Medium sized *tree*. *Leaves* alternate, c. 30 – 7.5 cm long, crowded at the end the branchlets; stipulate. *Leaflets* 6 – 8 pairs; *blades* ovate-oblong, lanceolate, 10 – 20 × 4.5 – 6 cm, rounded at base, entire at margin, acuminate at the apex. *Inflorescences* axillary, cymose panicles in male plants. *Calyx* c. 2 mm. *Stamens* glabrous. *Disk* tubular, margin and abaxial surface tomentose in *male flowers*; annular, 3-fid, fimbriate in *female flowers*. *Fruit* a drupe, obovoid.

Flowering & Fruiting: May – October

Habitat: mixed forest

Specimen Examined: Included after Sajem *et al.* 2008.

Distribution: India, China, Laos, Myanmar, Thailand

Note: Latex is used in the treatment of wounds and gum infection (Jaintia). It is also collected and sold in the market by the tribals. The leaves and bark are used externally for rheumatic swellings.

Threat status: Near threatened (NT) in the district (Sajem *et al.*, 2008).

Garuga Roxb.

G. pinnata Roxb., Pl. Corom 3: 5. t. 208. 1819; Benth. in Hook.f., Fl. Brit. India 1: 528. 1875; Kanjilal *et al.*, Fl. Assam 1 (2): 221. 1936; Deb, Fl. Tripura 1: 443. 1981.

Vernacular Name: Bombuk, Engla (B)

Trees. Leaves with 9 – 20 leaflets; *leaflets* pubescent, elliptic, oblong-lanceolate, *c.* 5 – 11 × 2 – 3 cm, rounded at base, serrate at the margin, acuminate at the apex. *Inflorescence* panicles, lateral or axillary. *Flowers* yellowish white, 7 – 10 mm; *calyx* deltoid, *c.* 2.5 – 3.5 mm; *corolla* oblong, *c.* 5 × 1.5 – 2 mm, pubescent. *Stamens* unequal; filaments hairy. *Ovary* oblong; *style* pilose; *stigma* 5-lobed. *Fruit* globose.

Flowering & Fruiting: March – October

Habitat: Hilly forests

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11569, Frt. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Laos, Myanmar, Thailand, Vietnam

Note: Leaf juice is astringent; given with honey in asthma; also given along with the leaf juice of *Adhatoda zeylanica* and *Vitex trifolia*. Fruits are stomachic and expectorant; given in diarrhoea in Rema-Kalenga. Stem juice dropped into the eyes to cure opacities of the conjunctiva. Decoction of the root is given for the treatment of pulmonary affections (Yusuf *et al.*, 2009).

Threat status: Not Evaluated

77. ANACARDIACEAE R.Br.

- 1a. Woody climbers, polygamous.....*Pegia*
- 1b. Trees or shrubs.....2
- 2a. Deciduous shrubs or trees, polygamous or dioecious; styles 3.....*Rhus*
- 2b. Trees dioecious or andro-monoecious; style not as above.....3
- 3a. Flowers 5-merous.....4
- 3b. Flowers 4- or 5-merous.....5
- 4a. Calyx glabrous.....*Drimycarpus*
- 4b. Calyx tomentose.....*Holigarna*
- 5a. Stamens 5.....*Mangifera*
- 5b. Stamens 8-10.....6
- 6a. styles 3 or 4.....*Lannea*
- 6b. styles 4 or 5.....*Spondias*

Drimycarpus Hook.f.

D. racemosus (Roxb.) Hook.f., Gen. Pl. 1 (1): 424. 1862. *Holigarna racemosa* Roxb., Fl. India ed. 2: 82. 1832; Dezhao *et al.*, Flora of China 11:356. 2008.

Vernacular Name: Not known

Large tree, glabrous. *Leaves* elliptic to oblong-lanceolate, c. 20 – 35 cm × 5 – 10 cm, margin entire, apex acuminate, lateral veins c. 15 – 20 pairs. *Inflorescence* panicle to racemose, *bract* present. *Calyx* glabrous, triangular, c. 0.8 mm long. *Corolla* ovate, glabrous. *Stamen* filament c. 0.5 mm long. *Ovary* inferior; *stylec.* 1mm long. *Fruit* drupe, elliptic.

Flowering & Fruiting: April – June

Habitat: dense forest

Specimens Examined: Included after Dutt *et al.* 1974, D. 314.

Distribution: India, China, Bhutan, Myanmar, Nepal, Vietnam

Note: Bark and leaves are used in skin diseases.

Threat status: Not Evaluated

Holigarna Buch.-Ham. ex Roxb.

H. caustica (Dennst.) Oken, Allg. Naturgesch. 3 (3): 1776. 1841. *Holigarna longifolia* Roxb., Hort. Bengal. 22. 1814; Kanjilal *et al.*, Fl. Assam 1 (2): 337. 1934.

Vernacular Name: Jawa (Sylh.)

Large tree. *Leaves* densely crowded at the tip of the branchlets, c. 30 – 50 cm × 7.5 – 14 cm, margin entire, tip acuminate, glabrous. *Flower* small, dioecious, off-white; *bract* present. *Calyx* 5 lobed, tomentose, lobes minute. *Corolla* 5 lobed, oblong, hairy. *Anthers* 5, filaments shorter than corolla. *Ovary* inferior, pubescent, compressed.

Flowering & Fruiting: December – June

Habitat: Common in forest

Specimens Examined: India, Assam, Cachar dist., Katakhal forest, March 1885, G. Mann 6914; India, Assam, Cachar dist., Sonai Reserve, 04.12.1914, U. Kanjilal 99986; Included after Kanjilal *et al.* 1934.

Distribution: India, Bangladesh and Myanmar

Threat status: Not Evaluated

Lannea A.Rich. in Guillem.

L. coromandelica (Houtt.) Merr., J. Arnold Arbor. 19: 353. 1938; Deb, Fl. Tripura 1: 463. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 108. 2003. *Lannea grandis* Engl., Nat. Pflanzenfam. Nachtr. 1: 213. 1897; Kanjilal *et al.*, Fl. Assam 1 (2): 338. 1934.

Vernacular Name: Kuhimola (A)

Deciduous trees, branchlets covered with ferruginous hairs. *Leaves* opposite, imparipinnate, c. 4 – 13 × 1.5 – 5 cm, ovate to ovate-oblong, acuminate apex, base oblique, margin entire, lateral veins 6 – 10 pairs, adaxially glabrous, abaxially pubescent. *Inflorescence* paniculate. *Flower* dioecious, female flower smaller than male flower, greenish yellow; *Calyx* lobes ovate, c. 1 mm, ciliate margins; *Corolla* ovate-oblong,

obtuse, c. 2.5 × 1.5 mm. *Stamens* 8 in male flower, reduced to stamenoids in female flower. *Ovary* glabrous. *Drupe* oblong, reniform, purple-red at maturity.

Flowering & Fruiting: February – June

Habitat: common, forest hill

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11518, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Tropical India, China, Malaysia, Myanmar, Sri Lanka

Note: The bark is acrid, astringent, stodyne. It is used as a lotion for bruises, wounds, sores, ulcers and sore eyes. The gum is given in asthma and as cordial to women lactation.

Threat status: Not Evaluated

Mangifera L.

M. indica L., Sp. Pl. 1: 200. 1753; Hook. f., Fl. Brit. India 2: 13. 1876; Kanjilal *et al.*, Fl. Assam 1 (2): 355. 1936; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 108. 2003.

Vernacular Name: Am (A)

Evergreen trees. *Branchlets* glabrous. *Petiolec.* 2 – 6 cm; *leaf* oblong to oblong-lanceolate, apex acuminate to acute, c. 10 – 30 × 3 – 7 cm, deep green adaxially, light green abaxially, glabrous on both sides, base cuneate, margin entire and undulate, lateral veins 20 – 25 pairs. *Inflorescence* paniculate; *bractsc.* 1.5 mm, elliptic-lanceolate, tomentose. *Calyx* 5 lobed, oblong, acuminate. *Corolla* light yellow, imbricate. *Fertile stamen* 1, c. 2.5 mm; *staminodes* 4, c. 0.7 – 1 mm. *Ovary* ovate; *stylec.* 2.5 mm. *Drupe* oblong ovoid, subreniform, greenish yellow to red; fleshy mesocarp bright yellow.

Flowering & Fruiting: February – July

Habitat: common throughout the sanctuary

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, way to Jatinga, 28.02.2015, A. Bora & D. Bhattacharyya 11554, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Native to continental SE Asia; cultivated in tropical regions worldwide

Note: Pulp sour, sub-sweetish, eaten raw or pickle prepared.

Threat status: Data Deficient ver 2.3

Pegia Coleb.

P. nitida Colebr., Trans. Linn. Soc. London 15 (2): 364. 1827; Min & Barfod in Fl. China 11: 343. 2008. *Phlebochiton extensum* Wall., Trans. Med. Soc. Calcutta vii. 231. 1835. *Tapirira hirsuta* (Roxb.) Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 39 (2): 75, in obs. 1870.

Vernacular Name: Not known

Woody climbers. *Petiole* and *rachis* densely tomentose; *leaf blade* 20 – 40 cm, imparipinnately compound with 9 – 15 opposite leaflets; leaflet petiolule 2 – 3 mm, densely tomentose; leaflet blade ovate-elliptic, 4 – 11 × 2 – 4.5 cm, membranous or papery, slightly oblique, cordate or subcordate at base, margin serrate, rarely entire, acuminate or acute at apex. *Inflorescence* paniculate, 20 – 35 cm, loosely branched, tomentose; *bracts* subulate, *c.* 1 mm, pubescent. *Pedicel* slender, *c.* 1.5 mm, glabrous; *flower* small, white. *Calyx* glabrous, lobes narrowly triangular, *c.* 0.8 mm. *Corolla* narrowly ovate, *c.* 1.5 × 0.7 mm, acute. *Stamens* 0.7 mm. *Disk* 5-lobed. *Ovary* ovoid, *c.* 1 mm, glabrous; *style* 0.5 mm. *Fruit* a drupe, ellipsoid, slightly compressed. *Seed* compressed.

Flowering & Fruiting: January – July

Habitat: lowland and hill forests; 200 – 1800 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11420, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Myanmar, Nepal, Thailand

Note: Fruits are edible. The juice is applied to cuts and wounds as an antiseptic.

Threat status: Not Evaluated

Rhus L.

1a. Leaflet blade ovate to oblong, 6 – 12 × 3 – 7 cm.....*R. chinensis*

1b. Leaves ovate-lanceolate or elliptic, *c.* 3 – 10 × 1.5 – 4 cm.....*R. succedanea*

R. chinensis Mill., Gard. Dict., ed. 8. n. 7. 1768; Min & Barfod in Fl. China. 11: 346.

2008. *Rhus semialata* Murray in Commentat. Soc. Regiae Sci. Gott. vi. 27. t. 3. 1784.

Rhus amela D. Don, Prodr. Fl. Nepal. 248. 1825.

Vernacular Name: Chinese sumac (E), Sama (Jaintia), Gembao (Dimasa)

Shrubs to trees, 2 – 10 m tall. *Leaf blade* sessile, imparipinnately compound; *leaflets* 5 – 13; leaflet blade ovate to oblong, 6 – 12 × 3 – 7 cm, rounded to cuneate in terminal leaflet at base, dentate at margin, acute at apex. *Inflorescence* many branched, densely ferruginous pubescent, male ones 30 – 40 cm, female ones shorter. *Pedicel* *c.* 1 mm, minutely pubescent; flowers white. *Male flowers*: *calyx* minutely pubescent, lobes long ovate, *c.* 1 mm, with ciliate margins; *corolla* obovate-oblong, *c.* 2 mm; *stamen* filaments *c.* 2 mm, *stamen* ovoid, *c.* 0.7 mm; *disk* annular; *ovary* reduced to absent. *Female flowers*: *calyx* lobes *c.* 0.6 mm; *corolla* elliptic-ovate, *c.* 1.6 mm; *staminodes* much reduced; *disk* annular; *ovary* ovoid, *c.* 1 mm, densely pubescent, *styles* 3, *stigma* capitate. *Drupe* globose, slightly compressed, red at maturity.

Flowering & Fruiting: August – October

Habitat: Lowland, hill, and mountain forests, forests along streams, thickets; 100 m and above

Specimens Examined: India, Assam, NC Hills dist., Haflong, 05.08.1908, W. G. Craib 98089 (CAL).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Japan, Korea, Laos, Malaysia, Singapore, Thailand, Vietnam

Note: Fruits used in the treatment of stomach ache.

Threat status: Not Evaluated

R. succedanea L., Mant. Pl. Altera 221. 1771; Hook. f., Fl. Brit. India 2: 12. 1876; Kanjilal *et al.*, Fl. Assam 1 (2): 332. 1936; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 109. 2003. *Rhus succedanea* var. *acuminata* (DC.), Hook. f., Fl. Brit. India 2: 12. 1876.

Vernacular Name: Not known

Small tree. Leaves crowded at the tip of the branchlets, c. 3 – 10 × 1.5 – 4 cm, ovate-lanceolate, elliptic, acuminate at the tip. Inflorescence axillary, paniculate. Flower drooping, light yellow. Fruit drupe, compressed.

Flowering & Fruiting: March – December

Habitat: Occasionally, hilly forest

Specimens Examined: Included after Dutt *et al.* 1974, D. 485.

Distribution: India (Arunachal Pradesh, Assam, Meghalaya, Sikkim), Temperate Himalaya, Japan

Note: A valuable wax is obtained from mesocarp of fruits, known as Japanese wax or tallow. It is used in manufacturing candles, waxy-matches, pencils, drawing lubricants, leather and furniture polishes.

Threat status: Not Evaluated.

Spondias L.

S. pinnata (L.f.) Kurz, Prelim. Rep. Forest Pegu 44. 1875; Deb, Fl. Tripura 1: 466. 1981; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 109. 2003. *Spondias mangifera* Willd., Sp. Pl., ed. 4. 2 (1): 751. 1799; Baker in Hook. f., Fl. Brit. India 2: 42. 1876; Kanjilal *et al.*, Fl. Assam 1 (2): 340. 1934.

Vernacular Name: Amora (A)

Medium sized trees, deciduous; branchlets glabrous; leaf blade c. 30 – 40 cm, imparipinnately compound; ovate-oblong to elliptic-oblong, c. 7 – 12 × 4 – 5 cm, papery, glabrous on both sides, base cuneate to rounded, apex acuminate, lateral veins 12 – 25 pairs, slightly impressed adaxially, prominent abaxially. Inflorescence panicle, terminal, glabrous. Flower greenish-white, glabrous. Calyx 5 lobed, triangular, c. 0.5 mm. Corolla 5, ovate-oblong, c. 2.5 × 1.5 mm. Stamens 1.5 mm, filaments filiform. Ovary c. 1 mm; styles 4 or 5, c. 0.5 mm. Drupe elliptic-ovoid, yellowish orange at maturity, 4 – 5 × 2.5 – 3 cm.

Flowering & Fruiting: March – December

Habitat: common, hilly forest

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11555, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Probably native to Indonesia and the Philippines; widely cultivated and naturalized in Bhutan, Cambodia, China, Indonesia, Laos, Malaysia (peninsular), Myanmar, Nepal, Philippines, Singapore, Thailand, and Vietnam

Note: Leaves and bark are source of tannin. Gum is also exuded from bark with smooth shining surface. Wood employed for packing cases and tea chests, floats and boats, non ornamental ply wood and fairly good as unbleached wood pulp.

Threat status: Not Evaluated

78. SAPINDACEAE Juss.

- 1a. Herbaceous or woody climbers, rarely shrubs..... *Cardiospermum*
- 1b. Trees or shrubs..... 2
- 2a. Plant monoecious..... 3
- 2b. Plant monoecious or dioecious..... 4
- 3a. Petals 4 or 5, often spoon-shaped..... *Lepisanthes*
- 3b. Petals 5, clawed..... *Sapindus*
- 4a. Ovary without a gynophore..... *Aesculus*
- 4b. Ovary not as above..... 5
- 5a. Stamens 8..... 6
- 5b. Stamens 5 – 8..... *Harpullia*
- 6a. Leaves digitate..... *Allophylus*
- 6b. Leaves mostly simple and palmately lobed..... *Acer*

Acer L.

A. laurinum Hassk., Tijdschr. Natuurl. Gesch. Physiol. 10: 138. 1843.
Acer niveum Blume, Rumphia 3: 193. 1849; Kanjilal *et al.*, Fl. Assam 1 (2): 311. 1934.

Vernacular Name: Mota-bhe (A)

Large tree, brownish bark. *Leaves* opposite to ternate, c. 10 – 20 × 3.5 – 7 cm, oblong-elliptic, acuminate, entire. *Inflorescence* cymose-paniculate. *Flower* minute, glabrous, racemose; *calyx* 5, ovate, glabrous; *corolla* 5. *Stamens* 4 – 12, glabrous. *Ovary* rudimentary in staminate flowers. *Fruit* winged, base constricted.

Flowering & Fruiting: June – December

Habitat: evergreen forests

Specimens Examined: Included after Kanjilal *et al.* 1934.

Distribution: China, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam

Note: It is used domestically and occasionally for making furniture and musical instruments. The wood has been used for construction, especially in mountainous areas,

and it is suitable for purposes such as making boxes, crates and walking sticks (Website: http://www.unep-wcmc.org/forest/timber/workshops/pdf/SEAsia_2007_V2.pdf).

Threat status: Not Evaluated

Aesculus L.

A. assamica Griff., Not. Pl. Asiat. 4: 540. 1854; Xia *et al.* in Fl. China 12: 3. 2007. *Aesculus punduana* Wall. ex Hiern, Fl. Brit. India 1 (3): 675. 1875; Kanjilal *et al.*, Fl. Assam 1 (2): 313. 1934.

Vernacular Name: Raman bih (A)

Trees. Petiole 8 – 30 cm, glabrous; leaf blade 5 – 9 foliolate; leaflets oblong-lanceolate, 12 – 35 × 5 – 18 cm, cuneate or rounded at base, margin serrulate, acuminate to caudate at apex. Inflorescence pale yellow; thyse cylindrical. Flowers aromatic. Calyx 4 – 8 mm, abaxially pubescent. Corolla 4-lobed, white or pale yellow, with purple spots, unequal, 13 – 22 × 3 – 7 mm, abaxially pubescent. Stamens 5 – 7, 18 – 40 mm; filament glabrous. Style glabrous, tomentose. Fruit a capsule, ovoid or depressed globose, 4.5 – 5 × 3 – 7.5 cm.

Flowering & Fruiting: January – November

Habitat: subtropical hill forests; 100 – 2000 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 6, 100.

Distribution: NE India, Bangladesh, Bhutan, China, Laos, Myanmar, Thailand, N Vietnam

Threat status: Not evaluated

Allophylus L.

A. chartaceus Radlk., Nat. Pflanzenfam. iii. 5. 313. 1895.
Allophylus zeylanicus var. *grandifolius* Hiern, Fl. Brit. India 1: 673. 1875.

Vernacular Name: Not known

Shrubs, small. Branchlets terete. Leaves unifoliate; petioles 2 – 8 cm, stout, strong; leaflets petiolate; blades shiny, broadly lanceolate or elliptic, 18 – 32 × 8 – 14 cm, membranous-papery, glabrous. Thyrses unbranched, in pairs or fascicles, nearly as long as petioles; rachis striate, glabrous. Flower buds c. 2 mm in diam. Calyx subglabrous. Corolla cuneate; scales with long red hairs. Fruit red, subglobose.

Fruiting: November

Habitat: Thickets, on hilly slopes; c. 1100 m

Specimens Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, 15 No. Hill, 11.11.2011, H. A. Barbhuiya 84926 (ASSAM).

Distribution: India, Bhutan, China

Threat status: Not Evaluated

Cardiospermum L.

C. halicacabum L., Sp. Pl. 1: 366. 1753; Hiern in Hook. f., Fl. Brit. India 1: 670. 1875; Kanjilal *et al.*, Fl. Assam 1 (2): 313. 1934; Xia & Gadek in Fl. China 12: 24. 2007.

Vernacular Name: Lataphatkari (B), kapal phuta (A)

Climbers, herbaceous, 1 – 1.5 m. *Leaves* biternate; *petioles* 3 – 4 cm; *leaflets* subsessile; *blades* thinly papery, margin sparsely serrate or pinnately parted; terminal blade obliquely lanceolate or subrhombic, 3 – 8 × 1.5 – 2.5 cm, apex acuminate; lateral ones slightly smaller, ovate or narrowly elliptic. *Inflorescence* in panicle, few flowered; *peduncles* straight, 4 – 8 cm, *tendrils* spiralled. *Calyx* 4-lobed, ciliate, outer 2 ovate, 8 – 10 mm, inner 2 narrowly elliptic, *c.* two times as long as outer ones. *Corolla* milky-white, obovate. *Stamens* as long as or slightly longer than corolla; *filaments* villous. *Ovary* obovoid, pubescent. *Capsules* brown, pearlike, pubescent. Seeds black.

Flowering & Fruiting: June – November

Habitat: Forest margins, grasslands, cultivated areas, wastelands

Specimen Examined: Included after Kanjilal *et al.* 1934; included after Dutt *et al.* 1974, D. 131.

Distribution: India, widely distributed in tropical and subtropical regions

Note: This medicinal plant act against arthritis, inflammations, constipation and abdominal discomfort (Website: <http://ssimediplants.blogspot.in/p/avuri.html>).

Threat status: Not Evaluated

Harpullia Roxb.

H. cupanioides Roxb., *Fl. India* 2: 442 1824; Kanjilal *et al.*, *Fl. Assam* 1 (2): 318. 1934; Xia & Gadek in *Fl. China* 12: 8. 2007.

Vernacular Name: Not known

Trees, to 20 m tall. *Branches* strong, stout. *Leaves* with petiole 15 – 50 cm; *blades* adaxially shiny, obliquely lanceolate, asymmetrical, 6 – 12 × 2 – 4 cm, thinly leathery, glabrous; cuneate at base, acuminate at apex. *Inflorescences* sparse, axillary or terminal, shorter than leaves; *bracts* lanceolate, deciduous. *Flowers* fragrant. *Pedicels* 6 – 8 mm. *Calyx* broadly ovate, *c.* 5 mm, tomentose, persistent. *Corolla* 8 – 10 mm, slightly fleshy, cuneate. *Disk* tomentose. *Stamens* 5, slightly shorter than corolla. *Ovary* ovoid, tomentose. *Capsules* brown, subglobose or transversely ellipsoid, compressed, *c.* 2 × 2 – 3 cm, glabrous when mature. *Seeds* black.

Flowering & Fruiting: Spring – Late autumn

Habitat: open areas, roadsides; below 700 m

Specimen Examined: Included after Kanjilal *et al.* 1934.

Distribution: India, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, New Guinea, Philippines, Thailand, Vietnam; N Australia

Note: The wood is used for timber. The wood is used for fuel and to make charcoal (Website: <http://tropical.theferns.info/viewtropical.php?id=Harpullia+cupanioides>).

Threat status: Not Evaluated

Lepisanthes Blume

L. senegalensis (Poir.) Leenh. in Blumea 17. 85. 1969; Xia & Gadek in Fl. China 12: 13. 2007. *Aphania rubra* Radlk. in Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München viii. 238. 1878; Kanjilal *et al.*, Fl Assam 1 (2): 321. 1934. *Sapindus attenuatus* Wall., Numer. List [Wallich] n. 8037. 1847. *Sapindus senegalensis* Poiret in Lamarck, Encycl. 6: 666. 1804.

Vernacular Name: Lalkoipura (B)

Trees or shrubs, evergreen, 4 – 6 m tall or more. *Branches* terete, glabrous. *Leaves* with petiole to 60 cm; *leaflets* 3 – 6 pairs; *blades* ovate or ovate-lanceolate, 15 – 40 × 4 – 14 cm, subleathery, glabrous, rounded or sometimes nearly cuneate at base, margin entire, acuminate at apex. *Inflorescences* axillary. *Pedicels* 1 – 2 mm. *Smaller calyx* broadly ovate, 1.2 – 2 mm; *larger calyx* suborbicular, 2.5 – 3 mm in diam. *Corolla* 5 or 4, purplish red, broadly ovate, 4 – 5 × 3 – 3.5 mm; scales ciliate. *Stamens* 8 or 7; *filaments* 1.5 mm, villous; *anthers* oblong. *Ovary* usually 2 – lobed; *style* short; *stigma* shallowly 2 – lobed. *Fruit* purplish red.

Flowering & Fruiting: March – May

Habita: wet places

Specimen Examined: Included after Kanjilal *et al.* 1934; included after Dutt *et al.* 1974, D. 469.

Distribution: India, Bangladesh, Bhutan, China, Indochinese peninsula, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka; Africa, Madagascar

Note: The roots are used medicinally. The leaves are used to make a shampoo (Website: <http://www.asianplant.net/>).

Threat status: Not Evaluated

Sapindus L.

1a. leafblades opposite or alternate, 5 – 18 × 2.5 – 5 cm, lanceolate, acuminate, entire, glabrous.....*S. mukorossi*

1b. Leaf blades oblong or ovate-lanceolate, 7 – 13 × 1.5 – 4 cm, papery, glabrous or densely villous.....*S. rarak*

S. mukorossi Gaertn., *Fruct. Sem. Pl. 1: 342, pl. 70, f. 3* 1788; Hiern in Hook. f., Fl. Brit. India 1: 683. 1875; Kanjilal *et al.*, Fl Assam 1 (2): 320. 1936.

Vernacular Name: Manishal (A), Ritha (B), Sukathaiphang (Dimasa)

Deciduous *tree*, usually up to 12 m. *Leaves* 30 – 50 cm long, alternate, paripinnate; *petiole* narrowly bordered, glabrous; *leaflets* 5 – 10 pairs, opposite or alternate, 5 – 18 × 2.5 – 5 cm, lanceolate, acuminate, entire, glabrous; *petioles* 2 – 5 m long. *Inflorescence* a compound terminal panicle, with pubescent branches. *Flowers* about 5 mm across,

polygamous, greenish white, subsessile, numerous, mostly bisexual. *Calyx* 5. *Fruit* a globose, fleshy. *Seed* globose, smooth, black.

Flowering & Fruiting: May – November

Habitat: not common, well drained soil; 1500 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11597 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Japan

Note: The fruits are of considerable importance for their medicinal value for treating a number of diseases like excessive salivation, pimples, epilepsy, chlorosis, migranes, eczema and psoriasis. The powdered seeds are employed in the treatment of dental caries, arthritis, common colds, constipation and nausea. The seeds of *Sapindus mukorossi* are used in Ayurvedic medicine to remove tan and freckles from the skin. It cleanses the skin of oily secretion and is even used as a cleanser for washing hair as it forms a rich, natural lather. The leaves are used in baths to relieve joint pain and the roots are used in the treatment of gout and rheumatism (Upadhyay and Singh, 2012).

Threat status: Not Evaluated

S. rarak DC., Prodr. 1: 608. 1824; Xia & Gadek in Fl. China 12: 11. 2007. *Dittelasma rarak* Hook.f., Gen. Pl. 1 (1): 396. 1862.

Vernacular Name: Not known

Trees, deciduous, c. 20 m tall. *Branches* strong, stout, grooved, grayish yellow pubescent when young. *Leaves* with petiole 25 – 40 cm or longer, axis terete, often red when dry; *leaflets* 7 – 12 pairs, subopposite; *petiolules* 5 – 8 mm; *blades* oblong or ovate-lanceolate, 7 – 13 × 1.5 – 4 cm, papery, glabrous or densely villous, obtuse at base, acute or sometimes nearly acuminate at apex. *Inflorescences* terminal, erect, tower-shaped. *Flowers* zygomorphic, slightly large. *Pedicels* c. 1.5 mm. *Calyx* 5, oblong or broadly ovate, larger ones c. 3 mm. *Corolla* 4, oblanceolate, c. 3.8 mm, tomentose; *scales* large, nearly as long as 2/3 of corolla. *Disk* semilunar, thick. *Filaments* densely shortly hispid. *Fertile schizocarps* dark red or orange-red, globose, c. 2.5 cm in diam.

Flowering & Fruiting: Summer – Autumn

Habitat: sparse forests; 500 – 2100 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 209.

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, W Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam

Note: The fruits are used externally in the treatment of scabies (Uphof, 1959).

Threat status: Not Evaluated.

79. RUTACEAE Juss.

1a. Leaves opposite.....	2
1b. Leaves alternate.....	3
2a. Stamens 8.....	<i>Acronychia</i>
2b. Stamens 4 or 5.....	<i>Tetradium</i>
3a. Stamen 8 or 10.....	4
3b. Stamen not as above.....	6
4a. Fruit a berry, with neither pulp nor pulp vesicles.....	<i>Clausena</i>
4b. Fruit a berry, with mucilaginous pulp or dry, without pulp vesicles.....	5
5a. Disk annular, pulvinate, columnar, conic or bell-shaped.....	<i>Glycosmis</i>
5b. Disk annular, pulvinate or columnar.....	<i>Murraya</i>
6a. Sepals 3-5.....	7
6b. Sepals 4 or 5.....	8
7a. Stamens 6 – 10.....	<i>Atalantia</i>
7b. Stamens usually 4(-10) × as many as petals.....	<i>Citrus</i>
8a. Stamen 30 – 50.....	<i>Aegle</i>
8b. Stamen not as above.....	9
9a. Stamens 10, distinct.....	<i>Micromelum</i>
9b. Stamens 4 or 5, distinct.....	<i>Zanthoxylum</i>

***Acronychia* J.R.Forst. & G.Forst.**

A. pedunculata Miq., Fl. Ned. India, Eerste Bijv. 3: 532. 1861; Zhang & Hartley in Fl. China 11: 77. 2008. *Jambolifera pedunculata* L., Sp. Pl. 1: 349. 1753.

Vernacular Name: Indian Aspen (E)

Shrubs or small to large *trees*. *Petiole* 0.5 – 5 cm; *leaflet blades* usually elliptic-oblong but grading to obovate, oblanceolate or nearly oblong, 3.5 – 24.5 × 2 – 8.5 cm, cuneate or sometimes rounded at base, obtusely acuminate at apex. *Inflorescences* few to many flowered. *Pedicel* 2 – 12 mm. *Calyx* 0.6 – 1.5 mm. *Corolla* 4 – 12 mm. *Ovary* pubescent at apex; *style* pubescent at base. *Fruit* subglobose or sometimes ellipsoid, pyriform. *Seeds* reddish black to black.

Flowering & Fruiting: April – August

Habitat: secondary forests, woods or thickets on lower hills; near sea level to 900 m.

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 238.

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam.

Note: The young leaves are used as a condiment (Uphof, 1959). A decoction of the roots, bark and leaves is used to treat scabies, sores, ulcers, and a variety of stomach diseases (Biotik, website: <http://biotik.org/index.html>).

Threat status: Not Evaluated

Aegle Corrêa ex Koenig

A. marmelos (L.) Correa in Trans., Linn. Soc. London 5: 223.1800; Hook. f., Fl. Brit. India 1: 516. 1875; Kanjilal *et al.*, Fl. Assam 1: 215. 1936; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 81. 2003. *Crataeva marmelos* L., Sp. Pl. 444. 1753.

Vernacular Name: Bel (A, B)

Medium sized deciduous aromatic *tree*, with erect stout axillary thorns. *Leaves* alternate, 3 foliate, petiolate; *leaflets* 4 – 13 × 2.2 – 5.0 cm, elliptic or ovate-lanceolate, sessile, entire. *Flower* greenish-white, fragrant, on few flowered cymose panicles. *Corolla* 4 – 5, oblong. *Stamens* many. *Calyx* small, pubescent. *Fruit* globose, oblong, pulp orange, sweet.

Flowering & Fruiting: April – August

Habitat: throughout the sanctuary

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11702, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Tropical Asia and Africa

Note: Unripe fruits are astringent and are used in dysentery. Pulp is aromatic and cooling used in the form of juice.

Threat status: Not Evaluated

Atalantia Corrêa

1a. Stamens 8 or 10, unequal, base connate.....*A. monophylla*

1b. Stamens 8, free.....*A. simplicifolia*

A. monophylla (L.) DC. in Prodr. 1: 535. 1824. *Atalantia carissoides* Wall., Numer. List n. 6354. 1832. *Atalantia floribunda* Wight, Icon. Pl. Ind. Orient. iv. t. 1611.

Vernacular Name: Wild lime (E)

Small *trees* with spines. *Leaves* 3 – 7 × 2 – 4 cm, ovate or elliptic, broadly cuneate at base, margins entire to obscurely undulate, obtuse or emarginate, coriaceous at apex; *petiole* to 1 cm long. *Inflorescence* in racemes, axillary, contracted. *Calyx* irregularly lobed or spatheform, c. 3 mm long. *Corolla* 4 or 5, white, 7 – 9 × 3 – 4 mm, obovate. *Stamens* 8 or 10, unequal, base connate. *Ovary* 4 – 5 mm long, oblong, 4-celled; ovule 1 or 2 per cell; *style* to 3 mm long. *Fruit* c. 1.5 cm across, globose, yellowish-green, glandular dotted. *Seeds* few.

Flowering & Fruiting: December – March

Habitat: Common in plains; up to 1000 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 251.

Distribution: India to Malesia.

Note: The fruits are said to make a nice pickle (University of California Riverside. Citrus Variety Collection, website: <http://www.citrusvariety.ucr.edu/citrus/alphabetical.html>).

Warm oil obtained from the fruit is used in the treatment of chronic rheumatism (Uphof, 1959).

Threat status: Not Evaluated

A. simplicifolia (Roxb.) Engl. in Engl. & Prantl, Nat. Pflanzenfam. 3(4): 192. 1896. *Amyris simplicifolia* Roxb., Fl. Ind. 2: 244. 1832. *Sclerostylis roxburghii* Wight, Icon. Pl. Ind. Orient. 1: 72. 1840. *Atalantia roxburghii* (Wight) Oliver in J. Linn. Soc., Bot. 5. Suppl. 2: 25. 1861. *A. caudata* Hook.f., Fl. Brit. India 1: 513. 1875.

Vernacular Name: Not known

Shrubs or small *trees*. *Leaves* unifoliolate, *leaflet* 7.5 – 13.5 × 2.5 – 5.2 cm, elliptic-lanceolate or elliptic-oblong, shallowly narrowed at base, caudate-acuminate at apex, margin entire, coriaceous, glabrous, notched at tip; *petioles* 5 – 10 mm long. *Inflorescence* axillary racemes, up to 2.5 cm long, few-flowered, glabrous; *pedicels* slender, c. 7 mm long, glabrous. *Flowers* small. *Calyx* 4-lobed, acute calyx. *Corolla* 4-lobed, obovate-oblong. *Stamens* 8, free; *anthers* ovoid. *Ovary* seated on an annular disk; *stigma* subcapitate. *Berry* globose.

Fruiting: November

Habitat: evergreen forests

Specimen Examined: India, Assam, Cachar dist., 20. 11.1889, J. C. Prazer 76477 (CAL); also included after Dutt *et al.* 1974, D. 311.

Distribution: N.E. India: Assam (Cachar hills), Meghalaya (Khasi hills), Mizoram (Lushai hills) and Nagaland (Naga hills), Myanmar, Asia-Tropical.

Threat status: Not Evaluated

Citrus L.

- 1a. Stamens many, some undeveloped.....*C. maxima*
2b. Stamens 30 – 50.....*C. medica*

C. maxima (Burm.) Merr., Interpr. Rumph. Herb. Amboin 296. 1917; Zhang & Mabberley in Fl. China 11: 93. 2008. *Aurantium maximum* Burm., Herb. Amboin. Auctuar. Index Univ. 16: 1. 1755.

Vernacular Name: Chinese grapefruit (E), Robab tenga (A)

Trees. *Branches* usually purplish. *Petiole* 2 – 4 × 0.5 – 3 cm; *leaf blade* broadly ovate or elliptic, 9 – 16 × 4 – 8 cm, rounded at base, rounded to obtuse and sometimes mucronate at apex. *Flowers* solitary or in racemes; *flower buds* purplish or rarely milky white. *Calyx* 3 – 5 – lobed. *Corolla* 1.5 – 2 cm. *Stamens* many, some undeveloped. *Style* long and thick. *Fruit* pale yellow globose.

Flowering & Fruiting: April – December

Habitat: forest margin, roadside

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11701, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, probably native to SE Asia, widely cultivated in Bangladesh, Myanmar, Malaysia, Indonesia, New Guinea, Southern China, Southernmost Japan, Thailand, Taiwan, Tahiti and Vietnam.

Note: The hot leaf decoction is applied on swellings and ulcers. The fruit juice is taken as a febrifuge. The seeds are employed against coughs, dyspepsia and lumbago. Gum that exudes from declining trees is collected and taken as a cough remedy in Brazil. (Morton, 1987).

Threat status: Not Evaluated

C. medica L., Sp. Pl. 2: 782. 1753. *Aurantium medicum* M.Gómez, Fl. Habanera 205. 1897. *Citrus alata* (Tanaka) Tanaka, Syst. Pomol. (Kwaju Bunruigaku) 140. 1951.

Vernacular Name: Jora tenga (A)

Shrubs or small *trees*. *Branches* with c. 4 cm spines. *Leaves* simple or rarely 1-foliolate; petiole short, not winged; *leaf blade* elliptic to ovate-elliptic, 6 – 12 × 3 – 6 cm or larger, serrate at margin, rounded, obtuse or rarely mucronate at apex. *Inflorescences* axillary, c. 12-flowered or sometimes flowers solitary. *Flowers* bisexual or sometimes male by complete abortion of pistil. *Petals* 5, 1.5 – 2 cm. *Stamens* 30 – 50. *Ovary* cylindrical; *style* long and thick; *stigma* clavate. *Fruit* pale yellow, elliptic to subglobose, surface coarse. *Seeds* small.

Flowering & Fruiting: April – November

Habitat: Cultivated and sometimes naturalized

Specimens Examined: India, Assam, NC Hills dist., Haflong, 30.08.1908, W. G. Craib 76577, Fl. (CAL).

Distribution: native to NE India, China, possibly Myanmar

Note: Bark is used in the treatment of malaria (Jaintia tribe) and dysentery (Hmar tribe). The fruit is used for preparing pickle. The juice is refrigerant and astringent.

Threat status: Not Evaluated

Clausena Burm.f.

1a. Corolla white or pale yellowish white, ovate to obovate, 2 – 3 × 1 – 2 mm.....*C. excavata*

1b. Corolla oblong, 3 – 3.5 × 1 – 1.5 cm, greenish-yellow.....*C. heptaphylla*

C. excavata Burm.f., Fl. India 89, t. 29. 1768; Zhang & Hartley in Fl. China 11: 83. 2008. *Amyris graveolens* Spreng., Syst. Veg. (ed. 16) 4 (2, Cur. Post.): 148. 1827. *Clausena javanensis* Raeusch. ex DC., Prodr. 1: 538. 1824.

Vernacular Name: Not known

Shrubs 1 – 2 m tall. *Petiole* 2 – 5 mm; *leaflet blades* ovate, lanceolate or rhomboid, 2 – 9 × 1 – 3 cm, both surfaces pubescent or only pubescent along veins, base oblique, margin repand. *Inflorescences* terminal; bracts opposite. *Flowers* globose in bud. *Corolla* white or pale yellowish white, ovate to obovate, 2 – 3 × 1 – 2 mm. *Stamens* 8. *Style* stout. *Fruit* ellipsoid.

Flowering & Fruiting: April – August

Habitat: Below 1000 m

Specimen Examined: India, Assam, Cachar dist., Mahoon, September 1903, Shaik Mokim 265 (CAL); also included after Dutt *et al.* 1974, *D.* 91.

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

Note: The plant is considered to be astringent, bitter, emmenagogue and tonic (Plant Resources of Southeast Asia, website: <http://proseanet.org/>). A decoction of the roots is used in the treatment of fevers, headaches and colic (Biotik, website: http://biotik.org/species_list_laos.html)

Threat status: Not Evaluated

C. heptaphylla (Roxb. ex DC.) Wight & Arn. ex Steud., *Nomencl. Bot.*, ed. 2. 1: 377. 1840. *Amyris anisata* Willd., *Sp. Pl.*, ed. 4. 2 (1): 337. 1799.

Vernacular Name: Koronful (B)

Large *shrub* or small *tree*, aromatic. *Leaves* imparipinnate, 15 – 35 cm long; *leaflets* 5 – 9, ovate or lanceolate, acuminate at apex, obscurely crenate at margin, oblique at base, 12.5 × 3.5 – 6 cm, glabrous. *Flowers* small, greenish in terminal panicles. *Sepal* 4-lobed, ovate, acute, c. 1 mm long. *Corolla* oblong, 3 – 3.5 × 1 – 1.5 cm, greenish-yellow. *Stamen* 8. *Fruit* a berry, ovoid or oblong, 12 mm long, pink when ripe.

Flowering & Fruiting: April – July

Habitat: Occasionally in forests

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11634, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Myanmar, Thailand, Cambodia, Laos, N & S Vietnam, Tura and Sumatra

Note: An essential oil from the leaves is used to flavour alcoholic beverages (Plant Resources of Southeast Asia, Website: <http://proseanet.org/>).

Threat status: Not Evaluated

Glycosmis Corrêa

G. pentaphylla (Retz.) DC., *Prodr.* 1: 538. 1824; Zhang & Hartley in *Fl. China* 11: 81. 2008. *Limonia pentaphylla* Retzius, *Observ. Bot.* 5: 24. 1789. *Glycosmis arborea* (Roxb.) DC., *Prodr.* 1: 538. 1824.

Vernacular Name: Ban Nimbu (H)

Trees. Leaves 3- or 5-foliolate; *leaflet blades* oblong, 10 – 25 × 3 – 7 cm, papery, cuneate at base, serrate at margin, mucronate at apex. *Inflorescences* axillary or terminal, paniculate. *Flowers* globose in bud. *Calyx* broadly ovate, less than 1 mm. *Corolla* white or pale yellow, 3 – 4 mm, caducous. *Stamens* 10. *Ovary* globose to broadly ovoid; *style* extremely short; *stigma* slightly expanded. *Fruit* reddish, subglobose, 8 – 10 mm in diam.

Flowering & Fruiting: July – March

Habitat: hillside and valley woods; 600 – 1200 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11602, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, NW Vietnam

Note: The plant is often used in traditional medicine. A decoction of the roots is taken to treat bilious attacks. A decoction of roots and leaves is taken for intestinal trouble (Website: <http://proseanet.org/>).

Threat status: Not Evaluated

Micromelum Blume

M. integerrimum (Roxb. ex DC.) Wight & Arn. ex M. Roem., Fam. Nat. Syn. Monogr. 1: 47. 1846; Zhang & Hartley in Fl. China 11: 79. 2008. *Micromelum pubescens* Blume, Bijdr. Fl. Ned. India 3: 138. 1825.

Vernacular Name: Not known

Trees 6 – 8 m tall. *Bark* gray, smooth. *Leaves* 5 – 15-foliolate; petiolules 2 – 5 mm; *leaflet blades* alternate to subopposite, elliptic, lanceolate or ovate, margin entire, acuminate at apex. *Flower buds* pale green, oblong. *Calyx lobes* c. 1 mm. *Corolla* pale yellow, 5 – 10 mm, outside densely pubescent. *Disk* columnar. *Stigma* capitate. *Fruit* ellipsoid to obovoid.

Flowering & Fruiting: February – September

Habitat: moist montane forests, valley forests; near sea level to 2000 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11527, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Laos, Myanmar, Nepal, Philippines, Thailand, Vietnam.

Note: Bark of the root, stem and branches are used in the treatment of tubercular treatment (Khare, 2008).

Threat status: Not Evaluated

Murraya J.Koenig

- 1a. Leaves imparipinnate; leaflets ovate-lanceolate.....*M. koenigii*
1b. Leaves 2 – 5-foliolate; leaflets suborbicular to ovate to elliptic, 2 – 9 × 1.5 – 6
cm.....*M. paniculata*

M. koenigii (L.) Spreng., Syst. Veg. 2: 315. 1825; Hook. f., Fl. Brit. India 1: 503. 1875; Kanjilal *et al.*, Fl. Assam 1(2): 207. 1936; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 85. 2003.

Vernacular Name: Curry patta (B), Narahinha (A)

Deciduous *shrub* with strong scent, pubescent. *Leaves* imparipinnate; *leaflets* 9 – 25, alternate, ovate-lanceolate, oblique at base, pubescent beneath. *Flower* white, *c.* 0.9 cm long, in terminal corymbose panicles. *Calyx* segments 5, small. *Corolla* 5, *c.* 0.4 cm long. *Stamens* 10. *Berries* ovoid.

Flowering & Fruiting: March – June

Habitat: Common, roadside, cultivated

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11600, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Arunachal Pradesh, Assam, Garhwal, Sikkim, South India, West Bengal, Sri Lanka.

Note: People generally use the fresh leaves, dried leaf powder and essential oil for flavoring soups, curries, fish and meat dishes, egg dishes, traditional curry powder blends etc. The aromatherapy industry uses the essential oil in the making of soaps and cosmetics. For natural hair tone and hair growth, one can use the blanked residue of boiled curry leaves along with coconut oil. It can be used as antihelmets, it also acts as febrifuge, blood purifier, antifungal, depressant, antiinflammatory, body aches, for kidney pain and vomiting (Rao *et al.*, 2011 and Rana *et al.*, 2004).

Threat status: Not Evaluated

M. paniculata (L.) Jack in Malayan Misc. i. n. v. 31. 1820; Zhang & Hartley in Fl. China 11: 86. 2008. *Camunium exoticum* Kuntze, Revis. Gen. Pl. 1: 99. 1891. *Chalcas paniculata* L., Mant. Pl. 1: 68. 1767.

VernacularName: Orange Jasmine, Chinese box (E), Kamini (H)

Shrubs or *trees*, 1.8 – 12 m tall. *Leaves* 2 – 5-foliolate; *petiole* less than 1 cm; *leaflet blades* suborbicular to ovate to elliptic, 2 – 9 × 1.5 – 6 cm, margin entire or crenulate, rounded to acuminate at apex. *Inflorescences* terminal or/and axillary. *Flowers* 5-merous, fragrant. *Calyx* ovate to lanceolate, to 2 mm, persistent in fruit. *Corolla* white, elliptic to oblanceolate, to 2 cm. *Stamens* 10. *Fruit* narrowly ellipsoid.

Flowering & Fruiting: April – February

Habitat: montane forests; near sea level to 1300 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 43.

Distribution: India, Bhutan, Cambodia, China, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; Australia, SW Pacific islands

Note: The leaves are used to flavour curries (Facciola, 1998). The leaves are astringent, stimulant and tonic. They are used in the treatment of dropsy, diarrhoea and dysentery (Chopra *et al.*, 1986).

Threat status: Not Evaluated

Tetradium Lour.

T. ruticarpum (A.Juss.) T.G.Hartley in Gard. Bull. Singapore 34(1): 116. 1981; Zhang & Hartley in Fl. China 11: 69. 2008. *Boymia ruticarpa* A. Jussieu, Mém. Mus. Hist. Nat. 12: 507. 1825. *Ampacus ruticarpa* Kuntze, Revis. Gen. Pl. 1: 98. 1891.

Vernacular Name: Not known

Shrubs or *trees*. *Leaves* 15 – 40 cm; *leaflet blades* elliptic to ovate or sometimes lanceolate, oblanceolate or obovate, 4.5 – 17 × 2 – 8 cm, base in lateral leaflets obtuse to narrowly cuneate, margin entire or irregularly crenulate, acuminate. *Inflorescences* 2.5 – 18 cm. *Flowers* 4 to 5-merous. *Calyx* 0.5 – 1.2 mm. *Corolla* green, yellow or white. *Ovary* glabrous or with sparse trichomes. *Fruit* usually 5-carpelled; *follicles* subglobose, 3.5 – 6 mm, glabrous or sometimes with sparse trichomes, apex not beaked; *endocarp* glabrous. *Seeds* ovoid or sometimes ellipsoid.

Flowering & Fruiting: April – November

Habitat: Forests, thickets, open places; 100 – 3000 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 128.

Distribution: NE India, Bhutan, China, Myanmar, Nepal

Note: Used internally for stomach chills and pains, vomiting and acid regurgitation, diarrhea (especially in early morning), painful menstruation, and threadworm infections (Website: <http://www.prcupcc.com/herbs/herbst/tetradiumruticarpum.htm>).

Threat status: Not Evaluated

Zanthoxylum L.

Z. armatum DC., Prodr. 1: 727. 1824; Zhang & Hartley in Fl. China 11: 63. 2008. *Fagara armata* Thunb., Prodr. Pl. Cap. 1: 28. 1794. *Zanthoxylum alatum* Roxb., Fl. Ind. 3: 768 1832.

Vernacular Name: Tejphal (H), Yaulaishak (Dimasa)

Shrubs, *woody climbers* or *trees*, deciduous. *Leaves* 3 – 9 foliolate; *leaflet blades* subsessile, opposite, lanceolate, ovate or elliptic, 3 – 12 × 1 – 3 cm, broadly cuneate at base, crenate or entire at margin, acute to acuminate at apex. *Inflorescences* terminal and sometimes axillary, 1 – 7 cm. *Perianth* in 2 irregular series or 1 series, with 6 – 8 undifferentiated 0.3 – 1.5 mm tepals. *Male flowers:* *stamens* 4 – 6; *anthers* yellow prior to

anthesis; *carpels* connective apex with oil gland. *Female flowers*: *carpels* 2 or 3; styles recurved; *staminodes* ligulate or lacking. *Fruit* purplish red, 4 – 5 mm in diam.

Flowering & Fruiting: April – October

Habitat: Found in many habitats; below 3100 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11599 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Indonesia, Japan, Kashmir, Korea, Laos, Myanmar, Nepal, Pakistan, Philippines, Thailand, Vietnam.

Note: The seed is ground into a powder and used as a condiment. A light roasting brings out more of the flavour. Young leaves are used as a condiment. The seeds and the bark are stomachic and vermifuge. They are used as an aromatic tonic in the treatment of fevers, dyspepsia and cholera (Website: <http://tropical.theferns.info/viewtropical.php?id=Zanthoxylum+armatum>).

Threat status: Not Evaluated

80. SIMAROUBACEAE DC.

Ailanthus Desf.

A. integrifolia Lam. ssp. **calycina** (Pierre) Nooteb. in Steenis, Fl. Males. ser. I. 6: 218. 1962; R. K. Basak in Hajra *et al.*, Fl. India 4: 411. 1997. *Pongelion calycinum* Pierre, Fl. Forest Cochin. 4: t. 294. 1893. *Ailanthus grandis* Prain in Indian Forester 28: 131, t. 210. 1902; Kanjilal *et al.*, Fl. Assam 1 (2): 216. 1936.

Vernacular Name: Borpat, Borkesutu, Saragphula (A)

Lofty trees, 30 – 50 m high. *Leaves* alternate, 60 – 100 cm long, parpinnate; *leaflets* alternate, ovate-lanceolate or ovate, oblique, cuneate at base, acuminate at apex, entire or rarely sinuate along margins, 6 – 20 × 3 – 9.5 cm, glabrous. *Flowers* in loosely branched; *pedicels* 5 mm long. *Calyx* irregularly lobed; lobes 3-angular, pubescent. *Corolla* c. 4 mm long, densely hairy along margins. *Anthers* c. 2 mm long in male flowers. *Ovary* hairy; *styles* 5, connate; *stigma* spreading. *Fruit* a samara, apically twisted, rounded along outer margins, straight along inner margins; seeds flat.

Flowering & Fruiting: January – April

Habitat: plantations

Specimen Examined: Included after Kanjilal *et al.* 1934.

Distribution: India, Cambodia, Laos, Thailand, Vietnam and Indonesia

Note: Wood is used for making packing cases.

Threat status: Not Evaluated

81. MELIACEAE Juss.

1a. Trees.....	2
1b. Shrubs or trees.....	6
2a. Corolla 5.....	3
2b. Corolla 4 or 5 or 4 – 6.....	5
3a. Leaves pinnate, crowded at the end of the branches.....	<i>Azadirachta</i>
3b. Leaves spirally arranged, even-pinnate or occasionally odd-pinnate.....	4
4a. Stamens 5(or 6), distinct.....	<i>Toona</i>
4b. Stamens 10.....	<i>Walsura</i>
5a. Ovary 3 – 5-locular.....	<i>Chukrasia</i>
5b. Ovary 2 – 4-locular.....	<i>Chisocheton</i>
6a. Fruit a drupe.....	<i>Melia</i>
6b. Fruit capsule.....	7
7a. Petals 4 or 5.....	8
7b. Petals 3 – 5.....	9
8a. Calyx slightly or deeply 3 – 5-lobed.....	<i>Aglaia</i>
8b. Calyx 5, distinct or connate at base, imbricate.....	<i>Aphanamixis</i>
9a. Ovary (3 or)4- or 5-locular.....	<i>Dysoxylum</i>
9b. Ovary glabrous or pubescent, 2- or 3-locular.....	<i>Heynea</i>

Aglaia Lour.

1a. Corolla 5-lobed.....	2
1b. Corolla 3-lobed.....	<i>A. spectabilis</i>
2a. Leaflet blades ovate-oblong to elliptic, 5 – 10 × 1.5 – 4 cm, papery, both surfaces glabrous.....	<i>A. edulis</i>
2b. Leaflet blades oblong-elliptic or ovate, 5 – 15 × 3 – 4.5 cm, both surfaces glabrous.....	<i>A. perviridis</i>

A. edulis (Roxb.) Wall., Report on Calcutta Bot. Gard. to G.A. Bushby 26. 1840; Peng *et al.* in Fl. China 11: 124. 2008. *Aglaia khasiana* Hiern, Fl. Brit. India 1 (3): 554. 1875. *Milnea edulis* Roxb., Fl. India 2: 430. 1824.

Vernacular Name: Not known

Trees. Leaves 25 – 30 cm; petiole 10 – 15 cm, glabrous; leaves 7 – 11, alternate to subopposite; *leaflet* blades ovate-oblong to elliptic, 5 – 10 × 1.5 – 4 cm, papery, both surfaces glabrous, rounded to cuneate at base, acute to acuminate at apex. *Inflorescence* thyrses, axillary, 5 – 15 cm. *Flowers* subsessile, globose. *Calyx* 5-lobed, rounded, scaly, margin ciliate. *Corolla* 5-lobed, broadly ovate, glabrous. *Staminal tube* globose, free from corolla; *anthers* 5, ovoid. *Style* very short; stigma conical, glabrous. *Fruit* indehiscent, brown, elliptic, c. 5.5 × 3 – 3.5 cm.

Flowering & Fruiting: November – January

Habitat: Evergreen broad-leaved forests; 1200 – 1800 m.

Specimen Examined: Included after Kanjilal *et al.* 1934.

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

Note: The pericarp has medicinal properties. It is used in the treatment of diarrhoea (website: <http://tropical.theferns.info/viewtropical.php?id=Aglaia+edulis>).

Threat status: Lower Risk/near threatened ver 2.3

A. perviridis Hiern, Fl. Brit. India 1 (3): 556. 1875; Peng *et al.* in Fl. China 11: 124. 2008.

Vernacular Name: Not known

Trees. Leavesc. 30 cm; *leaflets* alternate to subopposite; *petiole* 5 – 10 mm; *leaflet blades* oblong-elliptic or ovate, 5 – 15 × 3 – 4.5 cm, both surfaces glabrous, cuneate to subrotund at base, acuminate at apex. *Inflorescence* in thyrses, axillary, 20 – 24 cm. *Flowers* c. 2 mm in diam., glabrous. *Pedicel* short. *Calyx* 5-segments, rounded, margin ciliate. *Corolla* 5-lobed, white, orbicular to ovate, c. 1.5 mm. *Staminal tube* subglobose, glabrous; *anthers* 5, ovoid. *Ovary* with 2 ovules in each locule. *Fruit* indehiscent, oblong, 3 – 3.8 × c. 2 cm.

Flowering & Fruiting: March – December

Habitat: seasonal rain forests, evergreen broad-leaved forests; 100 – 1400 m.

Specimen Examined: Included after Kanjilal *et al.* 1934; Included after Dutt *et al.* 1974, *D.* 168.

Distribution: India, Bangladesh, Bhutan, China, Laos, Malaysia, Thailand, Indian Ocean islands.

Note: The genus 'Aglaia' is the only source of the group of about 50 known representatives of compounds that bear a unique cyclopenta[b]tetrahydrobenzofuran skeleton. These compounds are more commonly called rocaglate or rocaglamide derivatives, or flavaglines, and most have been found to have potent insecticidal properties, antifungal, antiviral, antibacterial or anthelmintic bioactivity (Wang *et al.*, Chaidir *et al.*, 2001).

Threat status: Vulnerable A1c ver 2.3

A. spectabilis (Miq.) S. S. Jain & Bennet in Indian J. Forest. 9 (3): 271. 1987; Peng *et al.* in Fl. China 11: 122. 2008. *Amoora wallichii* King in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 64: 56. 1895; Kanjilal *et al.*, Fl. Assam 1 (2): 237. 1934. *Amoora spectabilis* Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 37. 1868.s

Vernacular Name: Amari, Bhoto-mayna (A)

Trees. Leaves alternate; *petiole* glabrous; *leaflet blades* oblong-elliptic, both surfaces more or less glabrous, truncate to rounded at base, margin reflexed, acuminate at apex. *Inflorescence* in thyrses, axillary, 20 – 25 cm. *Pedicel* 2 – 4 mm. *Calyx* 3-lobed, triangular, abaxially stellately lepidote. *Corolla* 3-lobed, ovate, 5 – 6 mm, abaxially densely lepidote, adaxially glabrous. *Staminal tube* urceolate, c. 3 mm, glabrous; *anthers* 10, included.

Ovary ovoid, 3 – locular, densely pubescent; stigma conical, apex 3-dentate. Fruit dehiscent, obovoid.

Flowering & Fruiting: September – November

Habitat: dense forests; 900 – 1800 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11778, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, Vietnam, NE Australia, Pacific islands

Note: A magnificent timber, it is used for making furniture, wall panelling, decorative work, boat building etc. (Uphof, 1959).

Threat status: Lower Risk/least concern ver 2.3

Aphanamixis Blume

A. polystachya (Wall.) R.Parker in Indian Forester 57. 486. 1931; Peng *et al.* in Fl. China 11: 125. 2008. *Aglaia polystachya* Wall. in Roxburgh, Fl. India 2: 429. 1824.

Vernacular Name: Not known

Trees or shrubs, 20 – 30 m tall. *Leaves* odd or even pinnate; *leaf blades* oblong-elliptic, elliptic or ovate, 17 – 25 × 4 – 10 cm, subleathery to leathery, both surfaces glabrous, oblique and cuneate at base, margin entire, caudate-acuminate at apex. *Inflorescences* axillary. *Flowers* 6 – 7 mm in diam., with 3 *bracteoles*. *Calyx* 5-lobed, suborbicular. *Corolla* concave. *Staminal tube* globose, glabrous; *anthers* 5 or 6, oblong. *Ovary* 3-locular. *Capsule* spherical-pyriform, 2 – 2.5 × 2.5 – 3 cm, orange when mature.

Flowering & Fruiting: May – April

Habitat: deciduous forests in mountains; low to middle elevations

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 28.02.2015, A. Bora & D. Bhattacharyya 11727, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Laos, Malaysia, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam, Pacific islands (Solomon Islands)

Note: The bark is astringent. It is used in the treatment of spleen and liver diseases, tumours and abdominal complaints. The oil from the seed is used as a liniment in the treatment of rheumatism (Chopra *et al.*, 1986).

Threat status: Lower Risk/least concern ver 2.3

Azadirachta A.Juss.

A. indica Juss. in Mem. Mus. Par. 19: 221. 1830; Kanjilal *et al.*, Fl. Assam 1 (2): 227. 1934; Hiern in Hook. f., Fl. Brit. India 1: 544. 1875; Deb, Fl. Tripura 1: 448. 1981; P. J. Bora & Y. Kumar, Florist. Diversity Assam 90. 2003.

Vernacular Name: Neem (A)

Deciduous *tree*, large. *Leaves* pinnate, crowded at the end of the branches; *leaflets* 5 – 15, opposite or alternate, lanceolate, acuminate, serrate, oblique, glabrous, shortly petiolate. *Flowers* white, fragrant. *Calyx lobes* 5, obtuse or rounded. *Corolla* 5 obtuse, linear-oblong, *staminal tube* laciniate at apex; *anther* sessile. *Stigma* 3 toothed. *Drupes* oblong, 1-seeded.

Flowering & Fruiting: March – July

Habitat: Occasionally, scattered all over sanctuary

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, way to Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11726, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Java, Sri Lanka

Note: The bark exudes a clean bright amber coloured gum. Bark used in skin diseases. Leaves considered as antiseptic. Decoction is given for ulcer and eczema (local use).

Threat status: Not evaluated

Chisocheton Blume

C. paniculatus Hiern. in Hook, Fl. Brit. India 1 (3): 552. 1875; Prain, Beng. Pl. 315. 1903; Kajilal *et al.* Fl. Assam 1 (2): 234. 1934; Deb, Fl. Tripura 1: 449. 1981.

Vernacular Name: Bandordima (A)

Small *tree*, 16 meters high. *Leaves* 50 cm long or longer; small blade oblong-lanceolate, 13 – 30 × 4 – 6 cm, acuminate at apex, broadly cuneate or rounded at base. *Inflorescence* axillary panicles, usually leaves or too long, *pedicels* 3 – 5 mm; *flower* polygamous, pale yellow, *calyx* tubular, about 1.5 mm long, truncate or inconspicuous, 4-lobed; *corolla* 4, linear-spatulate, 14 – 18 × 1.5 mm, rounded at apex; *stamens* long cylindrical tube, outside the upper densely puberulent. *Ovary* chamber 4. *Style* slender, *stigma* head-shaped. *Fruit* a capsule, spherical pear-shaped.

Flowering & Fruiting: June – October

Habitat: Occasionally, forest margin

Specimens Examined: India, Assam, Cachar dist., Barak Reserve, 22.11.1914, U. Kanjilal 79925, Fr. (CAL).

Distribution: India, Bangladesh, China, Malaysia and Vietnam

Note: The oil from the seed is used as a purgative (Uphof, 1959).

Threat status: Not evaluated

Chukrasia A.Juss.

C. tabularis A.Juss., Bull. Sci. Nat. Geol. 23 (no. 140): 241. 1830; Peng *et al.* in Fl. China 11: 117. 2008.

Vernacular Name: Boga poma, Hatia (A), Chikrassi (B)

Trees. *Leaves* usually 30 – 45 cm; *leaf blades* ovate to oblong-lanceolate, 7 – 12 × 3 – 5 cm, papery, both surfaces glabrous or abaxially pubescent, oblique at base, margin entire, acute to acuminate at apex. *Inflorescence* in thyrses, lax; *peduncle* short; *bracts* present.

Flowers 1.2 – 1.5 cm, aromatic. *Calyx* c. 2 mm, puberulent. *Corolla* cream or lavender, linear-oblong to spatulate, 12 – 15 × 5 – 6 mm. *Staminal tube* glabrous; *anthers* 10, oblong, inserted near apex of tube. *Ovary* elongate, covered with trichomes; *style* cylindrical, short, thick, tomentose; *stigma* apex 3-lobed. *Fruit* a capsule, subglobose to oblong, c. 4.5 × 3.5 – 4 cm, many seeded. *Seeds* broadly winged.

Flowering & Fruiting: April – January

Habitat: Mixed evergreen broad-leaved and deciduous forests, sparse forests in hilly regions; 300 – 1600 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11758, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Laos, Malaysia, Nepal, Sri Lanka, Thailand, Vietnam

Note: An extract of the bark has powerful astringent properties and has been used to treat diarrhoea and as a febrifuge. The flowers contain a red and a yellow dye (Website: <http://tropical.theferns.info/viewtropical.php?id=Chukrasia+tabularis>).

Threat status: Lower Risk/least concern ver 2.3

Dysoxylum Blume

- 1a. Leaves odd-pinnate.....*D. mollissimum*
1b. Leaves even-pinnate.....2
2a. leaflet blades elliptic to oblong, 25 – 35 × 8 – 15 cm.....*D. excelsum*
2b. leaf blades oblong-elliptic or lanceolate, 8 – 16 × 4 – 7 cm.....*D. gotadhora*

D. excelsum Blume, Bijdr. Fl. Ned. India 4: 176. 1825; Peng *et al.* in Fl. China 11: 126. 2008. *Dysoxylum procerum* Hiern, Fl. Brit. India 1 (3): 547. 1875; Kajilal *et al.* Fl. Assam 1 (2): 231. 1934.

Vernacular Name: Amari, Lali (A)

Trees. Leaves even-pinnate; *leaflet* blades elliptic to oblong, 25 – 35 × 8 – 15 cm, both surfaces glabrous, oblique and cuneate to rounded at base, acute at apex. *Thyraxes* axillary, glabrous or sparsely pubescent. *Flowers* 7 – 10 mm. *Calyx* 4-lobed. *Corolla* 4-lobed, white, linear to narrowly elliptic, 6 – 10 × 2 – 3 mm, abaxially puberulent, adaxially glabrous. *Staminal tube* glabrous on both surfaces; *anthers* 8. *Ovary* conical, 4-locular, with 2 ovules per locule; *style* longer than ovary. *Fruit* a capsule, globose, c. 3.5 × 3.5 – 4 cm, glabrous.

Flowering & Fruiting: September – June

Habitat: evergreen broad-leaved forests, sparse forests; 100 – 1000 m

Specimens Examined: India, Assam, Cachar dist., Chuttacherra, 19.12.1914, U. Kanjilal 79319, Fr. (CAL).

Distribution: NE India, Bhutan, China, Indonesia, Laos, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Pacific islands (Solomon Islands)

Note: The tree may be useful for reforestation purposes. The bark shows insecticidal properties. It is used for a wide variety of products such as general construction, boat construction, heavy decking, flooring, posts, foundation piles, doors, window frames and sills, mouldings, interior finish, decorative wall panelling, high grade furniture, cabinet work, coffins, vats, pallets, cart wheels, carving, turnery, tool handles, billiard cue butts, and match splints and matchboxes (Website: <http://tropical.theferns.info/viewtropical.php?id=Dysoxylum+excelsum>).

Threat status: Not Evaluated

D. gotadhora (Buch.-Ham.) Mabb. in Fl. China 11: 127. 2008. *Dysoxylum binectariferum* Hook.f. ex Bedd., Trans. Linn. Soc. London 25 (2): 212. 1865; Kajilal *et al.* Fl. Assam 1 (2): 232. 1934. *Guarea gotadhora* Buch.-Ham. in Mem. Wern. Nat. Hist. Soc. 6: 307. 1832.

Vernacular Name: Bandardima (A), Bandarfela (B)

Trees. Leaves 20 – 30cm, even-pinnate; *leaf blades* oblong-elliptic or lanceolate, 8 – 16 × 4 – 7 cm, papery, both surfaces glabrous, oblique and cuneate to round at base, acuminate at apex. *Inflorescence* in thyrses, axillary. *Pedice*l 2 – 4 mm, pubescent. *Calyx* cup-shaped, pubescent, 4-lobed. *Corolla* 4-lobed, yellow, oblong, 6 – 8 × 2 – 4 mm, both surfaces pubescent. *Staminal tube* cylindric, free from corolla; *anthers* 8. *Disk* cylindric. *Ovary* densely pubescent; *style* cylindric; *stigma* globose to oblate, glabrous. *Fruit* a capsule, obovoid or subglobose, 4.5 – 5 × 3 – 4 cm, glabrous.

Flowering & Fruiting: March – November

Habitat: Dense forests in mountains; 500 – 1700 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, roadside, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11759, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Laos, Nepal, Thailand, Vietnam

Note: A useful, attractive wood, it is used for making furniture and carts (Gamble, 1972).

Threat status: Not Evaluated

D. mollissimum Blume, Bijdr. Fl. Ned. India 4: 175. 1825; Peng *et al.* in Fl. China 11: 128. 2008. *Dysoxylum hamiltonii* Hiern, Fl. Brit. India 1 (3): 548. 1875; Kajilal *et al.* Fl. Assam 1 (2): 231. 1934.

Vernacular Name: Keotai (A), Rauni poma (B)

Trees. Leaves alternate, 25 – 30 cm, odd-pinnate; *leaf blades* oblong-lanceolate, 5 – 11 × 2 – 3.5 cm, membranous, oblique at base, acuminate at apex. *Inflorescence* in thyrses, axillary, lax and with a few scattered flowers. *Flowers* 4-merous, c. 9 mm. *Calyx* disc-form, c. 2 mm in diam., pubescent, lobes round. *Corolla* yellow, spatulate, c. 8.5 mm, glabrous. *Staminal tube* cylindric, c. 7 mm, both surfaces tomentose; *anthers* 8. *Ovary* densely pubescent; *style* 7 – 8 mm. *Fruit* a capsule, globose.

Flowering & Fruiting: January – November

Habitat: Forests in mountains; low to middle elevations

*Specimen Examined:*Included after Kanjilal *et al.* 1934; Included after Dutt *et al.* 1974, D. 411.

Distribution: India (Assam), Bhutan, China, Indonesia, Malaysia, Myanmar, Philippines

Note: The wood is suitable for medium to heavy construction work, planking, flooring, panelling and for manufacturing high grade furniture, wood pallets, veneer and plywood (Soepadmo *et al.*, 2002).

Threat status: Not Evaluated

Heynea Roxb.

H. trijuga Roxb., Hort. Bengal. 33; et in Sims, Bot. Mag. t. 1738; Kajilal *et al.* Fl. Assam 1 (2): 229. 1934; Peng *et al.* in Fl. China 11: 121. 2008. *Walsura trijuga* Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 44 (3): 148. 1876.

Vernacular Name: Theng-are-arong (Mik.)

Trees. Leaves alternate, usually 20 – 36 cm; leaflets 7 or 9, opposite; leaf blades lanceolate, ovate or oblong-elliptic, 8 – 16 × 3.5 – 5 cm, membranous, oblique at base, margin entire, acuminate at apex. *Inflorescence* in thyrses, axillary; peduncle pubescent.

Flowers 3 – 4 mm. *Pedicel* pubescent or glabrous. *Calyx* 4 – 5-lobed, orbicular to obtusely triangular. *Corolla* 4 – 5-lobed, white or creamy white, oblong-elliptic. *Anthers* 8 – 10.

Ovary spherical, glabrous; *stigma* spherical, tip 2-cleft. *Fruit* a capsule, ellipsoid.

Flowering & Fruiting: April – December

Habitat: forests in hilly regions; 200 – 1300 m.

*Specimen Examined:*Included after Kanjilal *et al.* 1934.

Distribution: India, Bhutan, China, Indonesia, Laos, Nepal, Philippines, Thailand, Vietnam

Note: The bark, leaves and fruit are bitter and have medicinal value (Gardener *et al.*, 2000).

Threat status: Not Evaluated

Melia L.

M. azedarach L., Sp. Pl. 1: 384. 1753; Hiern in Hook.f., Fl. Brit. India 1: 544. 1875; Peng *et al.* in Fl. China 11: 130. 2008.

Vernacular Name: Ghura Neem (A)

Trees. Leaves 2-pinnate or 3-pinnate, 20 – 40 cm; leaflets opposite; leaf blades ovate, elliptic or lanceolate, 3 – 7 × 2 – 3 cm, oblique and cuneate at base, margin crenate or entire, shortly acuminate at apex. *Inflorescence* in thyrses, glabrous or pubescence.

Flowers scented. *Calyx* 5-lobed, oblong-ovate, abaxially puberulent, acute at apex. *Corolla* lilac-colored, obovate-spatulate, 0.9 – 1.3 cm, both surfaces puberulent. *Staminal tube* purple, 7 – 8 mm; *anthers* 10, narrowly elliptic. *Ovary* spherical, glabrous, 5 – 8-locular, with 2 ovules per locule; *stigma* capitate, apex 5-lobed. *Fruit* a drupe, globose to ellipsoid.

Flowering & Fruiting: March – December

Habitat: Mixed evergreen broad-leaved and deciduous forests, sparse forests, field margins, roadsides; 500 – 2100 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11453, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Laos, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; tropical Australia, Pacific islands (Solomon Islands)

Note: An aqueous extract reduces the intensity of asthmatic attacks. The leaf juice is anthelmintic, antilithic, diuretic and emmenagogue. The flowers and leaves are applied as a poultice in the treatment of neuralgia and nervous headache (Chopra *et al.*, 1986).

Threat status: Not Evaluated

Toona (Endl.) M. Roem.

T. ciliata M. Roem., Fam. Nat. Syn. Monogr. 1: 139. 1846; Peng *et al.* in Fl. China 11: 114. 2008. *Cedrela toona* Roxb. ex Rottler, Ges. Naturf. Freunde Berlin Neue Schriften 4: 198. 1803; Hook. f., Fl. Brit. India 1: 568. 1875; Kajilal *et al.* Fl. Assam 1 (2): 242. 1934; P. J. Bora & Y. Kumar, Florist. Diversity Assam 91. 2003.

Vernacular Name: Red cedar (E), Poma (A)

Trees. Petiole 6 – 11 cm, glabrous or pilose; *leaf blades* ovate – lanceolate, 9 – 12.8 × 3.2 – 5 cm, asymmetric at base, margin entire, acute to acuminate at apex. *Inflorescences* to 55 cm. *Flowers* 3.5 – 5 mm, fragrant. *Pedicel* 0.5 – 1 mm. *Calyx* 0.7 – 1.3 mm, lobes imbricate. *Corolla* white to creamy white, 3.5 – 5.8 × 1.3 – 3.1 mm. *Androgynophore* 3 – 4.9 mm; *anthers* of male flowers 0.6 – 1.1 × 0.4 – 0.9 mm. *Disk* reddish orange. *Ovary* 1.2 – 1.8 mm in diam., moderately pubescent. *Fruit* a capsule, 1.5 – 2 cm. *Seeds* winged at both ends.

Flowering & Fruiting: January – August

Habitat: Common to abundant in shade or open habitats; 400 – 2800 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11454, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; E Australia, W. Pacific islands

Note: Bark is powerful astringent, expectorant, tonic and valuable antiperiodic; in the form of infusion it is given in fevers, rheumatism and chronic infantile dysentery; as a local astringent it is applied in various forms of ulceration. Flowers are considered emmenagogue; used in menstrual disorders. Alcoholic extract of the leaf possesses moderate antibacterial and antifungal properties (Taniya, 2004).

Threat status: Lower Risk/least concern ver 2.3

Walsura Roxb.

W. robusta Roxb., Fl. India ed. 1832 2: 386 1832; Kajjal *et al.* Fl. Assam 1 (2): 241. 1934; Peng *et al.* in Fl. China 11: 120. 2008.

Vernacular Name: Lali (A)

Trees. Leaves 15 – 30 cm; *petioles* 2.5 – 8 cm; *leaf blades* oblong, elliptic or lanceolate, 5 – 16 × 1.5 – 7 cm, cuneate at base, acuminate at apex. *Inflorescence* in thyrses, 8 – 17 cm, sparsely pubescent. *Flowers* 4 – 6 mm. *Calyx* short, abaxially pubescent; lobes ovate. *Corolla* white, oblong to elliptic, 3 – 4 mm, abaxially pubescent, acuminate to obtuse at apex. *Anthers* yellow, ovoid. *Disk* red, cup-shaped. *Ovary* oblate, 2-locular; *style* cylindrical; *stigma* disc-form. *Fruit* a berry, globose to ovoid.

Flowering & Fruiting: February – December

Habitat: Sparse or dense forests in hilly regions.

Specimen Examined: Included after Kanjilal *et al.* 1934; Included after Dutt *et al.* 1974, D. 324.

Distribution: India, Bangladesh, Bhutan, China, Laos, Malaysia, Myanmar, Thailand, Vietnam

Note: Wood is used for construction and has also been used in paper manufacture (Gamble, 1972).

Threat status: Not Evaluated

82. MALVACEAE Juss.

- 1a. Lianas, shrubs or subshrubs.....*Byttneria*
- 1b. Herbs, subshrubs, shrubs or small trees.....2
- 2a. Herbs, subshrubs or shrubs, annual or perennial.....3
- 2b. Shrubs or small trees.....6
- 3a. Fruit a capsule.....*Triumfetta*
- 3b. Fruit a schizocarp.....4
- 4a. Ovary 7 – 20-loculed.....*Abutilon*
- 4b. Ovary 5 – 10-loculed.....5
- 5a. Epicalyx campanulate, 5-lobed.....*Urena*
- 5b. Epicalyx absent.....*Sida*
- 6a. Petals absent.....7
- 6b. Petals present.....9
- 7a. Trees; anthers 4 – 15.....*Heritiera*
- 7b. Trees or shrubs; anthers not as above.....8
- 8a. Flowers unisexual or polygamous.....*Firmiana*
- 8b. Flowers unisexual.....*Sterculia*
- 9a. Ovary 5-locular.....10
- 9b. Ovary not as a bove.....14

10a. Fruit a schizocarp.....	<i>Pterospermum</i>
10b. Fruit a capsule.....	11
11a. Corolla dark purple, red or yellow, ciliate.....	<i>Abroma</i>
11b. Corolla yellow, orange or purplish or variously coloured with a dark centre.....	12
12a. Style not branched.....	13
12b. Style branches 5.....	<i>Hibiscus</i>
13a. Style clavate.....	<i>Azanza</i>
13b. Style filiform, longer than stamens.....	<i>Bombax</i>
14a. Ovary 3 – 5- loculed.....	<i>Colona</i>
14b. Ovary 2 – 4-loculed.....	15
15a. Petals 5, mostly yellow or white.....	<i>Grewia</i>
15b. Petals 5, pink or white.....	<i>Kydia</i>

Abroma Jacq.

A. augustum (L.) L.f., Suppl. pl.: 341. 1782.

Vernacular Name: Devil's Cotton (E)

Erect *shrub* or small *tree*. *Leaves* alternate, simple, two main forms exist (heterophylly): lobed on orthotropic branches or unlobed on plagiotropic branches; lobed form with petiole up to 40 cm long, *blade* 3 – 5-lobed, cordate-ovate, up to 30 – 40 cm × 30 – 40 cm, margin irregularly dentate; unlobed form with petiole up to 1.5 cm long, blade lanceolate, 10 – 23 cm × 9 – 12 cm, cordate at base, margin denticulate. *Inflorescence* a leaf-opposed or terminal cyme; *bracts* 6 – 8 mm long. *Flowers* bisexual, 5-merous; *bracteoles* 2; *calyx* deeply divided into 5 lobes, lobes entire, triangular, 15 – 20 mm × 6 mm, greenish; *corolla* 5, spoon-shaped, 2 – 3.5 cm × 1 cm, base concave, blade dark purple, red or yellow, ciliate; *staminal tube* short, *anthers* 5 alternating with 5 *staminodes*; *ovary* superior, 2 – 3 mm long, 5-lobed, *style* 1 – 2.5 mm long. *Fruit* a capsule, base rounded, 5-winged.

Flowering & Fruiting: June – November

Habitat: Not common, on hill slopes

Specimens Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, 11.09.2010, H. A. Barbhuiya85879 (ASSAM).

Distribution: NE India, Himalayas, South-east Asia to southern China, northern Australia and the Solomon Islands

Note: The fresh viscid sap of the root bark is considered to be a valuable emmenagogue and uterine tonic. The juice of the plant is used to treat dysmenorrhoea. The root has been used to treat itch. Used in the treatment of diabetes (Website: <http://tropical.theferns.info/viewtropical.php?id=Abroma+augustum>).

Threat status: Not Evaluated

Abutilon Mill.

A. indicum (L.) Sweet, Hort. Brit. 1: 54. 1826; Tang *et al.* in Fl. China 12: 278. 2007. *Sida indica* L., Cent. Pl. 2: 26. 1756.

Vernacular Name: Potari (B)

Herbs or *sub-shrub*, erect, 1 – 2.5 m, puberulent. *Stipulesc.* 1 – 2 mm; *petiole* 2 – 4 cm, sparsely hairy; *leaf blade* ovate-orbicular, 3 – 9 × 2.5 – 7 cm, puberulent, cordate at base, margin irregularly serrate, acute or acuminate at apex. *Flowers* solitary, axillary. *Pedicelc.* 4 cm, pubescent. *Calyx* green, disk-shaped, 5-lobed, broadly ovate, densely puberulent. *Corolla* yellow, c. 7 – 8 mm. *Staminal column* stellate scabrous. *Ovary* 15 – 20 loculed. *Fruit* black, flat topped.

Flowering: July – October

Habitat: Disturbed sites on sandy soils; below 800 – 1500 m.

*Specimen Examined:*Included after Dutt *et al.* 1974, D. 153.

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Note: The roasted seeds are eaten. The juice of the leaves is demulcent and diuretic. A paste made of the leaves or seeds is applied to wounds, boils and ulcers. The seeds are laxative and are useful in cases of haemorrhoids and cough (Manadhar and Manandhar, 2002).

Threat status: Not evaluated

Azanza Moc. & Sessé ex DC.

A. lampas Alef., Bot. Zeitung (Berlin) 19: 297. 1861. *Thespesia lampas* (Cav.) Dalzell, Bombay Fl. 19. 1861; Tang *et al.* in Fl. China 12: 278. 2007. *Hibiscus lampas* Cav., Diss. 3: 154. 1787.

Vernacular Name: Bon Kapas (A)

Shrubs evergreen. *Branchlets* tomentose. *Stipule* filiform, 5 – 7 mm; *petiole* 1 – 4 cm, stellate pubescent; *leaf blade* ovate or palmately 3-lobed, 8 – 13 × 6 – 13 cm, tomentose, rounded or nearly cordate at base, acuminate at apex. *Flowers* solitary or in cymes, axillary; *peduncle* 3 – 8 cm. *Pedicel* 0.5 – 1 cm, puberulent. *Epicalyx* 5-lobed. *Calyx* cup-shaped, subtruncate, 5 – lobed, c. 4 – 8 mm, pubescent. *Corolla* yellow, campanulate, c. 6 cm, abaxially densely pubescent. *Fruit* a capsule ellipsoid, stellate puberulent.

Flowering & Fruiting: August – December

Habitat: Dense forest

*Specimen Examined:*Included after Dutt *et al.* 1974, D. 69.

Distribution: India, China, Indonesia, Laos, Nepal, Philippines, Thailand, Vietnam, E Africa

Note: The roots and fruits are used in the treatment of gonorrhoea and syphilis. The root juice is used in the treatment of a range of ailments and also as a health tonic. A root paste is used in the treatment of jaundice. The stem of the plant is used traditionally in the treatment of inflammation, hyperacidity, epistaxis, bronchitis, cough, dysentery, fever, sun stroke, carbuncles, and worms (Website: <http://tropical.ferns.info/viewtropical.php?id=Thespesia+lampas>).

Threat status: Not evaluated

Bombax L.

- 1a. Flowers bright red and orange yellow, large, solitary or clustered.....*B. cieba*
1a. Flowers pale pink, solitary, axillary.....*B. insigne*

B. cieba L., Sp. Pl. 511. 1753; Deb, Fl Tripura 1: 293. 1981; P. J. Bora & Y.Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 66. 2003. *Bombax malabaricum* DC., Hook. f., Fl. Brit. India 1: 349. 1874; Kanjilal *et al.*, Fl. Assam 1: 147. 1934.

Vernacular Name: Simolu (A)

Large deciduous *tree*, *branches* in whorls, spreading *trunk* continuous and straight, more or less buttressed at base when old, covered with large conical prickles when young. *Leaves* digitate, 5 – 7 foliolate; *leaflets* elliptic-lanceolate, acuminate, entire, glabrous. *Flowers* bright red and orange yellow, large, solitary or clustered, short fleshy pedicel at the end of the branches. *Calyx* very fleshy, cup-shaped. *Corolla* obovate or oblong. *Stamens* many, anthers reniform. *Ovary* 5 celled, stigma 5. *Fruit* oblong-ovoid capsule. *Seeds* many, white silky hairy.

Flowering & Fruiting: January – May

Habitat: Occasionally, roadside, hilly slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11566, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Hotter parts of India, Bangladesh, Java, Myanmar, South China.

Note: The bark is emetic; used as a styptic in metrorrhagia. The gum is acrid, astringent, demulcent, tonic, alterative, haemostatic and aphrodisiac; useful in diarrhoea, dysentery, menorrhagia, cough, leucorrhoea, stomatitis and burning of the body. Root has stimulant, demulcent, tonic, diuretic, emetic and aphrodisiac properties; given in impotence. Young tap root is astringent, and is used in dysentery (website: <http://www.mpbd.info/plants/bombax-ceiba.php>).

Threat status: Not Evaluated

B. insigne Wall., Pl. Asiat. Rar. 1: 74, t. 79 et 80. 1830; Masters in Hook.f., Fl. Brit. India 1: 349. 1874; Kanjilal *et al.*, Fl. Assam 1 (1): 148. 1934; Deb, Fl. Tripura 1: 293. 1981.

Vernacular Name: Showy silk cotton tree (E), Bon Semal (B)

Deciduous *trees*; to 25 m high. *Leaves* digitately compound, alternate; *stipules* small; *leaflets* 6 – 8, whorled; apex caudate to acuminate; margin entire, glabrous. *Flowers* bisexual, pale pink, solitary, axillary; *calyx* unequally lobed, 3 – 5 cm long, campanulate; *corolla* 5-lobed, 8 – 12 × 2.5 cm, linear-oblong, base narrow, apex curved, outer surface pubescent. *Stamens* about many. *Ovary* superior, ovoid, pubescent; *ovules* numerous; *style* long, *stigma* 5-fid. *Fruit* a capsule, 5-angled. *Seeds* many, surrounded by silky fibres.

Flowering & Fruiting: November – March

Habitat: moist deciduous forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park, Kalain, 26.11.2014, A. Bora & D. Bhattacharyya 11567, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India and Myanmar.

Note: A fibre obtained from the seed floss can be used as a stuffing material or spun. The whitish wood is very light, soft, but more durable (Gamble, 1972).

Threat status: Not Evaluated

Byttneria Loefl.

B. aspera Colebr. ex Roxb., Fl. India, ed. Carey & Wall. ii. 383. 1824.

Byttneria grandifolia DC., Prodr. 1: 486. 1824; Tang *et al.* in Fl. China 12. 323. 2007.

Byttneria integrifolia Lace in Bull. Misc. Inform. Kew 9: 396. 1915.

Vernacular Name: Not known

Woody climber. Branchlets sparsely puberulent when young. *Petiole* 2 – 8 cm, hairy; *leaf blade* broadly ovate, cordate or nearly orbicular, 7 – 23 × 5.5 – 16 cm, cordate at base, margin entire, obtuse or acute at apex. *Calyx* ovate, c. 2 mm, puberulent, apex acute. *Corolla* yellowish white and purple-red adaxially, apex 2-lobed, nearly as long as calyx. *Capsule* ovoid-globose, spiny, spines short and robust, puberulent. *Seeds* oblong, black when mature.

Flowering & Fruiting: Spring and summer

Habitat: open forests, valley streamsides; 200 – 300 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11463, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Laos, Nepal, Thailand, Vietnam.

Note: The root extract is taken and a paste of leaves is applied to forehead for the treatment of fever (website: http://www.asianplant.net/Malvaceae/Byttneria_aspera.htm).

Threat status: Not Evaluated

Colona Cav.

C. floribunda Craib, Fl. Siam. 189. 1925; Tang *et al.* in Fl. China 12: 250. 2007.

Columbia floribunda Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42 (2): 63. 1873; Kanjilal *et al.*, Fl. Assam 1 (1): 169. 1934.

Vernacular Name: Not known

Trees 8 – 10 m tall. *Petiole* 1.5 – 5.5 cm; *leaf blade* broadly obovate-orbicular or nearly orbicular, 14 – 21 × 11 – 20 cm, slightly cordate at base, margin serrulate, acute or acuminate at apex, sometimes 3 – 5-lobed. *Inflorescences* terminal, to 27 cm. *Flowers* 8

mm in diam. *Calyx* lanceolate, c. 4 mm, stellate tomentose abaxially. *Corolla* yellow, spatulate, nearly as long as calyx. *Stamens* 40, nearly as long as corolla, in 5 bundles. *Ovary* stellate tomentose; *stigma* hairy. *Capsule* 1 – 1.5 cm in diam., hairy, 3 – 5-winged.

Flowering & Fruiting: June – October

Habitat: montane forests; 300 – 2000 m.

Specimen Examined: Included after Kanjilal *et al.* 1934.

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

Threat status: Not Evaluated

Firmiana Marsili

F. colorata (Roxb.) R.Br., *Pterocymbium* 235, 1844; P. J. Bora & Y. Kumar, *Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary* 67. 2003; Tang *et al.* in *Fl. China* 12. 312. 2007. *Sterculia colorata* Roxb., *Pl. Coromandel* 1: 26. 1795; Kanjilal *et al.*, *Fl. Assam* 1 (1): 151. 1934.

Vernacular Name: Jari-udal (A)

Deciduous trees. *Leaf blade* broadly cordate, 17.5 – 25 × 18 – 20 cm, thinly leathery, both surfaces puberulent, cordate at base, apex 3 – 5-lobed. *Inflorescence* cymose-paniculate, densely puberulent. *Calyx* funnel-shaped, cuneate at base, c. 20 × 7 – 8 mm, apex 5-lobed. *Male flower*: androgynophore 10 – 12 mm, stellate puberulent. *Female flower*: ovary 5 – locular, almost separated, glabrous. Style short; stigma curved outward. *Seeds* black, globose.

Flowering & Fruiting: January – June

Habitat: forested slopes; 700 – 1000 m.

Specimen Examined: Included after Kanjilal *et al.* 1934; included after Dutt *et al.* 1974, *D.* 321.

Distribution: India (including Andaman Islands), Bhutan, China, Indonesia (Sumatra), Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam.

Note: A fibre is obtained from the bark. It is used in rope making (Watt, 1883)

Threat status: Not Evaluated

Grewia L.

- 1a. Erect bushy shrubs.....*G. nervosa*
- 1b. Shrubs or trees.....2
- 2a. Petiole 0.5 – 1 cm.....*G. eriocarpa*
- 2b. Petiole 1 – 2 cm.....3
- 3a. Calyx white, narrowly oblong, 6 – 8 × c. 2 mm, abaxially hairy, adaxially glabrous.....*G. abutilifolia*
- 3b. Calyx oblong or lanceolate, 9 – 16 × 3 – 5 mm, tomentose.....*G. serrulata*

G. abutilifolia Vent. ex Juss. in Ann. Mus. Natl. Hist. Nat. iv. 92. 1804; Mast. in Hook. f., Fl. Brit. India 1: 390. 1874; Kanjilal *et al.*, Fl. Assam 1: 166. 1934; Tang *et al.* in Fl. China 12: 255. 2007. *Grewia macrophylla* G. Don, Gen. Hist. 1: 549. 1831.

Vernacular Name: Mallow-Leaved Crossberry (E)

Shrubs or *small trees* 1 – 5 m tall. *Petiole* 1 – 2 cm, coarsely tomentose; *leaf blade* broadly ovate to nearly orbicular, 7 – 11 × 5 – 9 cm, papery, rounded or slightly cordate at base, margin serrulate, acute at apex. *Cymes* 3 – 7 per leaf axil; *peduncle* 3 – 6 mm. *Pedice* 4 – 8 mm. *Bracts* filiform, caducous. *Calyx* white, narrowly oblong, 6 – 8 × c. 2 mm, abaxially hairy, adaxially glabrous. *Corolla* 2 – 3 mm. *Androgynophore* glabrous. *Stamens* 4 – 5 mm. *Ovary* villous; *style* as long as calyx; *stigma* 2-lobed. *Drupe* tomentose.

Flowering & Fruiting: Throughout the year

Habitat: Common, slopes on grasslands

Specimen Examined: India, Assam, NC Hills dist., Haflong, 24.08.1908, W. G. Craib 61633 (CAL); also included after Dutt *et al.* 1974, D. 301.

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

Note: The roots ingredient with water use to relieve the favour. It is a good fibre, used for making rope, is obtained from the bark (Anonymus, 1896).

Threat status: Not Evaluated

G. eriocarpa Juss. in Ann. Mus. Natl. Hist. Nat. iv. 93. 1804. *Grewia elastica* Royle, Illustr. Bot. Himal. 104. t. 22. 1834.

Vernacular Name: Man-bijal (A), Dhamni (B)

Shrubs or *small trees* to 8 m tall. *Branchlets* softly gray stellate tomentose. *Stipule* filiform, lanceolate, 5 – 10 mm; *petiole* 5 – 10 mm; *leaf blade* ovate or ovate-oblong, 6 – 13 × 3 – 6 cm, papery, black-brown when dry, lateral veins 3 – 4 pairs, obliquely rounded or truncate at base, serrulate at margin, acuminate or acute at apex. *Cymes* 1 – 3, axillary, 1.5 – 3 cm; *peduncle* 3 – 8 mm. *Pedice* 3 – 5 mm. *Bracts* lanceolate. *Flowers* bisexual. *Calyx* narrowly oblong, 6 – 8 mm, hairy on both surfaces. *Corollac.* 3 mm, eglandular. *Androgynophore* absent. *Stamens* irregular in length, shorter than calyx. *Ovary* hairy; *style* puberulent. *Drupe* subglobose, furrowed, 6 – 8 mm in diam., stellate hairy; *drupelets* 1 or 2.

Flowering & Fruiting: February – November

Habitat: forest margin, roadside

Specimen Examined: Included after Dutt *et al.* 1974, D. 240.

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

Note: The bark ingredient with spirit use to prevent skin, sickness (Anonymus, 1896).

Threat status: Not Evaluated

G. nervosa (Lour.) Panigrahi in Taxon 34 (4): 702. 1985. *Microcos paniculata* L., Sp. Pl. 1: 514. 1753, non *Grewia paniculata* Roxb. ex DC. 1824. . *Grewia microcos* L., Syst. Nat. ed. 12, 2: 602. 1767, nom. illeg.; Masters in Fl. Brit. India 1: 392. 1874.

VernacularName: Asar (B)

Erect bushy *shrubs*. Young stem, petioles, peduncles and calyx densely stellate pubescent. *Leaves* 6 – 18 × 3 – 5.5 cm, elliptic-oblong or ovate-lanceolate, rounded or cordate at base, subentire to serrulate at margins, acute to acuminate at apex, hairy when young, glabrous on ageing except the nerve on both sides, 3-ribbed; *petioles* upto 1 cm long. *Flowers* in axillary and terminal panicles; *pedicels* c. 1 mm long; *bracts* 5 – 6 mm long, linear-lanceolate. *Calyx* 5, free, 4 – 6 mm long, oblong-obovate, tomentose without. *Corolla* 5, yellow, 2 – 3 mm long, ovate. *Stamens* many; *filaments* 3 – 4 mm long. *Ovary* c. 1 mm across, globose, 2 – 4-celled; ovules 2 in each cell. *Drupe* 6 – 10 mm across, globose, purple on ripening. *Seeds* 1 – 2.

Flowering & Fruiting: August – April

Habitat: Semi-evergreen forests, sacred groves and scrub jungles

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11343, Fl.; Barail Wildlife sanctuary, Madhura khuwari, 05.04.2012, A. Bora & D. Bhattacharyya 11331, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Tropical Asia.

Note: The plant has some medicinal value.

Threat status: Not Evaluated

G. serrulata DC., Prodr. 1: 510. 1824. *Grewia laevigata* Vahl, Symb. Bot. (Vahl) i. 34. 1790; Mast. in Fl. Brit. India 1: 381. 1874. *Grewia multiflora* Juss. in Ann. Mus. Natl. Hist. Nat. iv. 89. I. 47. 1804; Mast. in Fl. Brit. India 1: 388. 1874.

VernacularName: Kukur-huta (A), Pani-sara (B)

Trees or *shrubs*. *Leaves* 1 – 18 × 1.5 – 7 cm, lanceolate, ovate-lanceolate, elliptic-ovate or obovate, rounded or narrowed at base, acute or acuminate at apex, sharply serrate at base, 3-nerved; *petioles* up to 1.5 cm long. *Flowers* in axillary, umbellate cymes; *peduncles* 1 – 2 together, 1.5 – 2.5 cm long; *buds* 8 – 15 × 5 – 8 mm, ovoid, ovoid-oblong or subglobose, tomentose; *pedicels* up to 2.5 cm long. *Calyx* 9 – 16 × 3 – 5 mm, oblong or lanceolate, tomentose. *Corolla* greenish white, c. 3.5 × 1.5 mm, ovate or obovate. *Receptacle* 2 – 3 mm long, grooved, pubescent in upper half. *Stamens* numerous; *filaments* 4 – 5 mm long, glabrous. *Ovary* c. 2.5 × 1.5 mm, ovoid, pilose; *stigma* 5 – lobed; lobes lacinate. *Drupe* 2 – lobed, dry black.

Flowering & Fruiting: April – March

Habitat: roadside, sparse forest

Specimen Examined: India, Assam, Cachar dist., 16.06.89, J. C. Prazer 61427 (CAL); also included after Dutt *et al.* 1974, D. 315.

Distribution: India, Pakistan, Nepal, Bhutan, Myanmar, Indo-china, Australia, Malesia and Tropical Africa.

Threat status: Not Evaluated

Heritiera Aiton

H. papilio Bedd., *Fl. Sylv. S. India t. 218. 1872*; Mast. in *Fl. Brit. India 363. 1874*. *Heritiera acuminata* Wall. ex Kurz in *J. Bot. 12: 65, t. 141. f. 1. 1 – 3. 1874*; Kanjilal *et al.*, *Fl. Assam 1 (1): 155. 1934*.

Vernacular Name: Akhar (A)

Evergreen *trees*. *Leaves* simple, alternate; *stipules* free, deciduous; *petiole* 10 – 37 mm, stout; *leaf blade* 4 – 20 × 1.5 – 10 cm, ovate or ovate-lanceolate, obtuse or round at base, acute at apex, margin entire, glabrous above, coriaceous. *Flowers* small, bi or unisexual, axillary panicle, cream coloured; *calyx* campanulate, 5-fid; *corolla* absent. *Male flowers:* adnate anthers in a regular ring on an androgynophore topped by sterile ovary. *Female flowers:* carpels 5, subdistinct, superior, staminodes present, ovules 1 – 2 in each carpel; styles short; stigmas 5. *Fruit* of 1 – 6 samaroid carpels, red, *wing* membranous; *seed* one.

Flowering & Fruiting: January – October

Habitat: Canopy trees in wet evergreen forests; 400 to 1400 m.

Specimen Examined: Included after Kanjilal *et al.* 1934; included after Dutt *et al.* 1974, *D. 27*.

Distribution: India and Bangladesh

Threat status: Not Evaluated

Hibiscus L.

H. macrophyllus Roxb. ex Hornem., *Hort. Bot. Hafn. Suppl. 149. 1819*.

Vernacular Name: Chamia (B)

Trees, 6 – 9 m tall. *Branchlets*, bud, leaves, petioles, stipules, epicalyx lobes and inflorescences densely hairy. *Stipules* foliaceous, oblong, large; *petiole* 15 – 30 cm; *leaf blade* orbicular-cordate, not lobed, both surfaces densely tomentose, cordate at base, margin entire or serrate, acuminate at apex. *Inflorescences* terminal, multi-flowered cymes, to 30 cm. *Pedicel* 2.5 – 3 cm, bracts spatulate and connate at base. *Epicalyx* lobes 10 – 12, filiform, *c.* 2.5 cm, almost as long as calyx, connate at base. *Calyx* campanulate, 5-lobed, lanceolate. *Corolla* yellow with purple center, villous abaxially. *Staminal column* *c.* 3 cm. *Ovary* hairy; style 5, hairy; *stigma* capitate. *Fruit* a capsule oblong, 2.5 – 3 cm, hirsute.

Flowering & Fruiting: March – July

Habitat: evergreen broad – leaved forests; 400 – 1000 m.

Specimen Examined: Included after Dutt *et al.* 1974, *D. 122*.

Distribution: India, Cambodia, China, Indonesia, Malaysia, Myanmar, Pakistan, Thailand, Vietnam

Note: Wood used for building purpose. Bark is made into cordage (Asiatic Society of Bengal, 1833).

Threat status: Not evaluated

Kydia Roxb.

K. calycina Roxb., *Pl. Coromandel* 3: 11, pl. 215 1819; Tang *et al.* in *Fl. China* 12: 279. 2007.

Vernacular Name: Not known

Trees. *Petiole* 2 – 4 cm, pubescent; *leaf blade* almost round, palmately 3 – 5-lobed, *c.* 6 – 14 × 5 – 11 cm, densely pubescent on both surface, rounded or nearly cordate at base, margin denticulate, acute or obtuse at apex. *Inflorescences* puberulent. *Flowers* *c.* 1.6 cm in diam. *Epicalyx* 4 – 6 lobed, oblong, *c.* 4 mm. *Calyx* slightly cup-shaped, 5-lobed, nearly as long as epicalyx. *Corolla* reddish, obcordate, apex fimbriate. *Fruit* a capsule globose, *c.* 5 mm in diam., stellate tomentose.

Flowering: September – November

Habitat: Sparse mixed forests in valleys; 500 – 1600 m.

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 332.

Distribution: India, Bhutan, China, Myanmar, Nepal, Pakistan, N Thailand, Vietnam

Note: Fibre from the bark is used to make coarse ropes. A mucilaginous material obtained from the stems is used to clarify sugar (Uphof, 1959).

Threat status: Not evaluated

Pterospermum Schreb.

1a. Leaf blade orbicular or oblong, 24 – 34 × 14 – 29 cm.....*P. acerifolium*

1b. Leaf blade lanceolate or oblong-lanceolate, 5 – 9 × 2 – 3 cm.....*P. lanceifolium*

P. acerifolium Willd., *Sp. Pl.*, ed. 4 3 (1): 729. 1800; Mast. in *Fl. Brit. India* 368. 1874; Kanjilal *et al.*, *Fl. Assam* 1 (1): 157. 1934; P. J. Bora & Y. Kumar, *Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary* 69. 2003; Tang *et al.* in *Fl. China* 12. 328. 2007.

Vernacular Name: Moragos (A), Muskanda (B)

Big trees. *Stipules* linear; *petiole* robust; *leaf blade* orbicular or oblong, 24 – 34 × 14 – 29 cm, cordate at base, margin entire or crenate, truncate, nearly rounded, or pointed at apex; *young leaves* palmately lobed, peltate. *Flowers* solitary, fragrant; *epicalyx* lobes fimbriate or palmately divided. *Calyx* linear-oblong, *c.* 9 × 0.7 cm. *Corolla* white, linear-oblong, slightly cuneate, shorter than calyx, glabrous. *Staminodes* clavate, hairy. *Ovary* oblong, 5-angular. *Capsule* woody, cylindrical, base tapering, apex rounded.

Flowering & Fruiting: March – July

Habitat: Forested slopes; 1200 – 1700 m

Specimen Examined: Included after Borah *et al.* 2016.

Distribution: India, Bangladesh, Bhutan, China, Laos, Malaysia, Myanmar, Nepal, Thailand

Note: The indumentum from the lower side of leaf is said to be used to prevent bleeding from wounds (Gamble, 1972).

Threat status: Not Evaluated

P. lanceifolium Roxb., Fl. India, ed. 1832. 3: 163. 1832; Tang *et al.* in Fl. China 12. 329. 2007.

Vernacular Name: Not known

Trees. *Stipules* 2- or 3-fimbriate; *petiolec.* 0.5 cm; *leaf blade* lanceolate or oblong-lanceolate, 5 – 9 × 2 – 3 cm, abaxially densely yellow-brown or yellow-white velutinous, adaxially glabrous, oblique or obtuse at base, entire or with several teeth near apex at margins, acuminate or acute at apex. *Flowers* solitary; *pedicels* 3 – 5 cm, articulate, velutinous; *epicalyx lobes* at middle of pedicel, 4- or 5-fimbriate or linear, 7 – 8 mm. *Calyx* linear, c. 2 × 0.3 cm, both surfaces puberulent. *Corolla* white, lanceolate, as long as calyx or slightly shorter, apex obtuse. *Staminodes* filiform, longer than stamens, basally villous. *Ovary* puberulent. *Capsule* woody, cylindrical-ovoid, tomentose.

Flowering & Fruiting: Spring – Summer

Habitat: Dense or open forests, slopes, valleys; 800 – 900 m

Specimens Examined: India, Assam, Cachar dist., 13.05.89, J. C. Prazer 59118 (CAL); also included after Dutt *et al.* 1974, D. 267.

Distribution: India, China, Malaysia, Myanmar, Vietnam.

Note: The wood is used for fuel (Anonymous 1995).

Threat status: Not Evaluated

Sida L.

- 1a. Plant undershrub 2
1b. Plant subshrub or herb..... 3
2a. Petiole equal to leafblade; corolla pale yellow..... *S. cordifolia*
2b. Petiole much shorter than the blade; corolla yellow..... *S. rhombifolia*
3a. Flowers solitary or paired, axillary..... *S. acuta*
3b. Flowers usually solitary, axillary, racemelike..... *S. cordata*

S. acuta Burm.f., Fl. India 147. 1768; Deb, Fl. Tripura 1: 306. 1981; P. J. Bora & Y. Kumar, Florist. Diversity Assam 65. 2003. *Sida carpinifolia* Mast. in Hook.f., Brit. India 1: 323. 1874, *non* L.f.; Kanjial *et al.*, Fl. Assam 1: 140. 1934.

Vernacular Name: Baraira (H)

Subshrubs or *herbs*, erect. *Leaves* more or less distichous; *stipules* filiform, 4 – 6 mm, persistent; *petiole* 4 – 6 mm, sparsely pubescent; *leaf blade* ovate, oblong or linear-lanceolate, 2 – 5 × 0.4 – 1 cm, obtuse at base, margin dentate, acute or acuminate at apex.

Flowers solitary or paired, axillary. *Calyx* shallowly cup-shaped, c. 6 mm, 5-lobed, caudate. *Corolla* yellow, obovate, 6 – 7 mm, ciliate, attenuate at base, rounded at apex. *Filament tube* c. 4 mm, tomentose. *Fruit* a shizocarp, almost globose.

Flowering & Fruiting: Winter – Spring

Habitat: roadsides, wastelands

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 451.

Distribution: India, Bhutan, Cambodia, China, Laos, Nepal, Thailand, Vietnam

Note: A decoction of the whole plant is used as a treatment for fevers. The plant is ground and mixed with soft grease and sugar to make a poultice that is applied to soften abscesses and release pus. The leaves are diuretic. An infusion is used to treat dysentery. The juice of the leaves is mixed with vinegar to make an anti-inflammatory and digestive remedy (Website: <http://tropical.theferns.info/viewtropical.php?id=Sida+acuta>).

Threat status: Not evaluated

S. cordata (Burm.f.) Borss.Waalk. in *Blumea* xiv. 182. 1966; Tang *et al.* in *Fl. China* 12: 274. 2007. *Sida veronicifolia* Lam., *Encycl.* 1 (1): 5. 1783. *Melochia cordata* N. L. Burman, *Fl. Indica*, 143. 1768.

Vernacular Name: Bor Sonborial (A)

Subshrubs. *Stipule* filiform, 2 – 3 mm, sparsely pubescent; *petiole* 1 – 3 cm, hairy; leaf blade broadly ovate, 2 – 5 × 1.8 – 4.5 cm, both surfaces puberulent, cordate at base, margin crenate or dentate, acuminate at apex. *Flowers* usually solitary, axillary, racemelike. *Pedice*l 1.5 – 4 cm, hairy. *Calyx* cup-shaped, 4 – 6 mm, sparsely pilose, lobes 2 – 3 mm, acute. *Corolla* yellow, 8 – 9 mm in diam. *Filament tube* c. 2 mm, glabrous or sparsely pilose. *Fruit* a schizocarp, nearly globose, c. 3 mm in diam.

Flowering & Fruiting: July – February

Habitat: grassy roadsides

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 319.

Distribution: India, China, Philippines, Sri Lanka, Thailand

Note: The juice of the plant is applied to boils and pimples. The juice of the root is used to treat indigestion. A paste of the root is applied as a poultice to remove pus from boils and wounds. It is also used in the treatment of gonorrhoea and other venereal diseases (Manandhar and Manandhar, 2002).

Threat status: Not evaluated

S. cordifolia L., *Sp. Pl.* 684. 1753; Masters in Hook. f., *Fl. Brit. India* 1: 324. 1874; Kanjilal *et al.*, *Fl. Assam* 1 (1): 140. 1934; Deb, *Fl. Tripura* 1: 307. 1981; Tang *et al.* in *Fl. China* 12: 273. 2007.

Vernacular Name: Shweta berela (B)

Small *undershrub*. *Leaves* ovate to oblong, cordate at the base, serrate or crenate; *petiole* equal to blade; *stipules* filiform. *Flowers* axillary, solitary, sometimes in cluster of 2 – 5. *Calyx* campanulate to urceolate. *Corolla* pale yellow. *Carpels* 10.

Flowering & Fruiting: June – September

Habitat: Common, moist places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, roadside, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11728 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand; Africa, South America; pantropical

Note: The plant has anti inflammatory properties. Its preparations are used as external applications in swelling of wounds and inflammation of eyes. Oils prepared using this herb are very useful in arthritis and other diseases which affect joints. These oils help to reduce pain and inflammation (Website: http://www.ayurhelp.com/articles/ayurveda-medicinal-properties-bala-sida-cordifolia#.V44AO_197IU).

Threat status: Not evaluated

S. rhombifolia L., Sp. Pl. 648. 1753; mast. in Hook. f., Fl. Brit. India 1: 323. 1874; Kanjilal *et al.*, Fl. Assam 1: 140. 1934; Deb, Fl. Tripura 1: 307. 1981; P. J. Bora & Y. Kumar, Florist. Diversity Assam 65. 2003; Tang *et al.* in Fl. China 12: 271. 2007.

Vernacular Name: Lal Berela (B)

Small *undershrub*, suberect or decumbent, stellate-tomentose. *Leaves* ovate-cordate, acute, serrate, *petiole* much shorter than the blade. *Flowers* yellow, axillary, solitary, sometimes in cluster of 2 – 5, *pedicel* long than the *petiole*. *Calyx* hairy, lobes acute. *Corolla* yellow. *Carpels* 10, ovary conical. *Mericarps* 5, glabrous, seeds, reniform, flattened.

Flowering & Fruiting: June – November

Habitat: Common, road side

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11391, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Laos, Nepal, Thailand, Vietnam; pantropical.

Note: A decoction of the whole plant is used as a treatment for fevers. A paste of the plant is used to treat indigestion. It is also used as a poultice in the treatment of headaches, boils, cramps, rheumatism, toothache, chapped lips and pimples (Manandhar and Manandhar, 2002).

Threat status: Not evaluated

Sterculia L.

- 1a. Leaves digitate.....*S. versicolor*
1b. Leaves simple.....*S. villosa*

S. versicolor Wall., Pl. Asiat. Rar. 1: 48, t. 59. 1830; Kanjilal *et al.*, Fl. Assam 1 (1): 150. 1934.

Vernacular Name: Durong (A & Bodo)

Tree with a spreading canopy, up to 5 m tall. *Leaves* digitate, *petiole* 25 – 40 cm long; *leaflets* 7 – 9 pairs, 15 – 25 × 5 – 10 cm, elliptic, lanceolate, entire, glabrous above, puberulous beneath. *Flowers* pale yellow, long penicles; 0.5 – 0.6 cm. *Calyx* campanulate; lobes oblong, shorter than the tube. *Ovary* 5-lobed, villous. *Follicles* 5 – 6, large, coriaceous, dark brown hairs. Each follicle contain 10 *seeds*.

Flowering & Fruiting: March – June

Habitat: moist evergreen forest

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, way to Jatinga, 28.02.2015, A. Bora & D. Bhattacharyya 11514, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (S India, upper Assam and N.C. Hills), E. Asia-Myanmar, Thailand.

Notes: A fibre obtained from the bark is used for making ropes and cordage (Website: <http://tropical.theferns.info/viewtropical.php?id=Sterculia+versicolor>).

Threat status: Not Evaluated

S. villosa Roxb. ex Sm., Cycl. (Rees) 34: Sterculia no. 16. 1816; Kanjilal *et al.*, Fl. Assam 1 (1): 151. 1934.

Vernacular Name: Udal (A)

Trees. *Leaves* simple; *stipules* lanceolate, *c.* 1 cm; *petiole* robust, *c.* 16 cm, pilose; *leaf blade* palmately 3 – 7-lobed, 17 – 22 cm, broadly cordate at base, *c.* 8 × 8 cm at base, caudate at apex. *Inflorescence* subterminal, paniculate, densely tomentose. *Calyx* yellow, campanulate, *c.* 1 cm, tube *c.* 4 mm, lobes lanceolate, apex acuminate, *c.* 6 mm. *Male flowers:* androgynophore curved, glabrous. *Stamens* 10. *Female flowers:* ovary globose. Style curved downward, hairy. *Follicles* narrowly ellipsoid, 3 – 5 cm, villous, apex shortly beaked. *Seeds* black, oblong.

Flowering & Fruiting: February – October

Habitat: Mixed forests; 500 – 1500 m.

Specimens Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, Kalain Range, 17.02.2012, H. A. Barbhuiya 85108 (ASSAM).

Distribution: India, Bhutan, Cambodia, China, Myanmar, Nepal, Thailand.

Note: The plant possesses diuretic, cooling and aphrodisiac properties. Sherbet prepared from the petiole along with water and sugar is given in urinary problem and rheumatism. Leaves are used for the treatment of impotency in Habiganj. The bark and the petiole are used as a remedy in seminal weakness in Jointiapur of Sylhet (Website: <http://www.mpbid.info/plants/sterculia-villosa.php>).

Threat status: Not Evaluated

Triumfetta L.

T. rhomboidea Jacq., Enum. Syst. Pl. 22. 1760; Hook. f., Fl. Brit. India 1: 395. 1874; Kanjilal *et al.*, Fl. Assam 1: 168. 1934; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 75. 2003; *Bartramia angulata* Lam., Tabl. Encycl. t. 430. f. 2. 1792. *Bartramia crispifolia* Stokes, Bot. Mat. Med. iii. 14. 1812.

Vernacular Name: Burr Bush (E), Agra (A), Bon okhra (B)

Subshrubs or herbs. Branchlets gray-brown tomentose. *Petiole* 1 – 5 cm; *lower leaf blades* broadly ovate-orbicular, rhomboid or broadly ovate, 3-lobed, 3 – 9.5 × 2 – 8.5 cm, abaxially stellate pilose, adaxially sparsely hairy, base broadly cuneate or rounded, margin irregularly bluntly serrate, apex acute; *upper leaf blades* oblong-lanceolate, not lobed. *Cymes* 3 – 5 per axil; peduncle to 2 mm. *Flower buds* cylindrical, apex slightly wider, c. 4 mm. *Pedicel* less than 1 mm. *Calyx* narrowly oblong, 4.5 – 5.5 mm, villous, appendaged at tip. *Corolla* yellow, slightly shorter than calyx, hairy along margins. *Stamens* 10. *Ovary* spiny. *Capsule* globose, spiny, indehiscent; *spinesc.* 2 mm, gray-yellow puberulent, tip hooked.

Flowering & Fruiting: Summer – Autumn

Habitat: Forest margins, open areas, wastelands; 100 – 1500 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 204.

Distribution: India, throughout tropics

Notes: The whole plant is used medicinally.

Threat status: Not Evaluated

Urena L.

1a. Corolla pinkish with a purple centre *U. lobata*

1b. Corolla 5-lobed, pink..... *U. repanda*

U. lobata L., Sp. Pl. 692. 1753; Mast. in Hook. f., Fl. Brit. India 1: 329. 1874; Kanjilal *et al.*, Fl. Assam 1: 141. 1934; Deb, Fl. Tripura 1: 309. 1981; P. J. Bora & Y. Kumar, Floristic Diversity Assam 66. 2003; Tang *et al.* in Fl. China 12: 281. 2007.

Vernacular Name: Banokra (B)

Stellate, pubescent *undershrub*. *Leaves* variable; upper ones small, serrate, elliptic; lower ones large, orbicular, 3 – 5 lobed; *stipule* linear. *Flower* bright pink, axillary, solitary. *Corolla* pinkish with a purple centre. *Fruit* globular, glochidiate, indehiscent.

Flowering & Fruiting: October – April

Habitat: Common, shady places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11641, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, China, Indonesia, Japan, Laos, Myanmar, Nepal, Thailand, Vietnam; pantropica

Note: The juice of the leaves or roots is used widely to treat bowel complaints, especially colic, stomach-ache, diarrhoea and dysentery, and also to treat gonorrhoea and persistent fever from malaria. A decoction from the leaves and roots is drunk to relieve pains all over the body due to excessive exertion. A decoction of a very old plant, boiled with eggs, is said to induce abortion (Website: <http://tropical.theferns.info/viewtropical.php?id=Urena+lobata>).

Threat status: Not evaluated

U. repanda Roxb. ex Sm., Cycl., (London ed.) 37: Urena no. 6. 1818; Tang *et al.* in Fl. China 12: 282. 2007.

Vernacular Name: Not known

Herbs perennial. *Stipules* 4 – 5 mm; *petiole* 1 – 7 cm, stellate; *leaf blade* ovate, 4 – 8 × 1 – 7 cm; rounded to nearly cordate at base, margin serrate, obtuse at apex, pubescent both abaxially and adaxially. *Pedice*l 1 – 3 mm. *Epicalyx* campanulate, hirsute. *Calyx* longer than bracteoles, ovate, acute, persistent, hirsute. *Corolla* 5-lobed, pink, 2.5 – 3.5 cm. *Staminal column* glabrous. *Ovary* glabrous; *style* verrucose. *Fruit* nearly globose, glabrous.

Flowering: August – November

Habitat: on slopes; 300 – 1600 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 231.

Distribution: India, Cambodia, China, Laos, Thailand, Vietnam.

Note: Roots and bark is considered a cure for hydrophobia (Vardhana, 2008).

Threat status: Not evaluated

83. THYMELAEACEAE Juss.

Aquilaria Lam.

A. malaccensis Lam., Encycl. 1 (1): 49. 1783. *Aquilaria agallocha* Roxb., Fl. India 2: 422. 1832; Kanjilal *et al.*, Fl. Assam 4: 112. 1940.

Vernacular Name: Agarwood (E), Agaru (B)

Evergreen tree up to 23 m, sometimes up to 40 meters in height, 1.5 – 2.5 meters in girth, moderately straight and often fluted stem, aromatic wood and resin. Leaves up to 5 – 9 cm long, oblong-lanceolate. Flower small, greenish, white, green, or dirty yellow with umbellate cymes. Perianth 5-lobed, persistent in fruit, campanulate, 0.5 – 0.7 cm long, villous, connate at base. Stamen 10; anthers 10. Ovary sessile, pubescent; stigma large. Fruit a capsule.

Flowering & Fruiting: April – September

Habitat: along foothills of evergreen and semi-evergreen forests

Specimen Examined: Included after Kanjilal *et al.* 1940.

Distribution: India, East Himalayan and Myanmar

Note: Used as perfume and a drug. Agar powder is used in treatment of excessive thirst in fever, vomiting, cough headache, low appetite, indigestion and diarrhea (Website: <http://www.bimbima.com/health/post/2015/10/03/agarwood.aspx>)

Threat status: Not Evaluated

84. BIXACEAE Kunth

Bixa L.

B. orellana L., Sp. Pl. 1: 512. 1753.; Hook.f., Fl. Brit. India 1: 190. 1872; Kanjilal *et al.*, Fl. Assam 1 (1): 83. 1934. *Betula affinis* Endl., Gen. Pl. Suppl. 4 (2): 20. 1848.

Vernacular Name: Jolandhar (A), Latkan (B)

Small trees. *Petiolec.* 2.5 – 5 cm, glabrous; *leaf blade* cordate-ovate, *c.* 5 – 25 × 3.5 – 16 cm, palmately 5-veined, glabrous, base rounded or slightly cordate, margin entire, acuminate at the apex. *Inflorescence* robust panicles, 5 – 10 cm, densely hairy; *bracts* caducous. *Flowers* 4 – 5 cm in diam.; *pedicel* 4 – 12 mm. *Calyx* obovate, *c.* 8 – 10 × 7 mm, pubescent. *Corolla* pink, pale purple, or white with light red veins, obovate, *c.* 1 – 3 × 0.8 – 2 cm. *Stamens* many, *anthers* yellow. *Capsule* ovoid, compressed. *Seeds* numerous.

Flowering & Fruiting: October – December

Habitat: Occasionally, Roadside

Specimens Examined: Included after Kanjilal *et al.* 1934.

Distribution: India, native to tropical America; cultivated pantropically

Note: Leaves are used as a topical antiseptic for ear, eye and skin infections. Also used for digestive problems (heartburn, constipation and stomachache), prostate, urinary infections, hypertension and high cholesterol levels (Website: <http://www.rain-tree.com/annato.htm#.V1WOXPI97IU>).

Threat status: Not Evaluated

85. DIPTEROCARPACEAE Blume

1a. Inflorescence axillary racemes.....*Dipterocarpus*

1b. Inflorescence panicles or racemose.....*Shorea*

Dipterocarpus Gaertn.f.

1a. Petiole glabrous; Leaf blade broadly ovate, 16 – 20 × 10 – 15 cm.....*D. retusus*

1b. petiole puberulous or glabrescent; Leaf blade ovate-oblong, 18 – 25 × 6 – 10 cm.....*D. turbinatus*

D. retusus Blume, Cat. Gew. Buitenzorg 77: 182. 1823. *Dipterocarpus macrocarpus* Vesque., *Compt. Rend. Hebd. Séances Acad. Sci.* 78: 627 1874.

Vernacular Name: Rusty Leaf Garjan (E)

Trees. *Stipules* present; *petiole* glabrous. *Leaf blade* broadly ovate, 16 – 20 × 10 – 15 cm, leathery, rounded or cordate at the base, margin entire to sinuate-crenate, acute at the apex. *Inflorescence* axillary racemes; flower scented, 8 – 10 cm. *Calyx* 5 segments, 2 long and linear and 3 shorter. *Corolla* reddish, elliptic, 5 – 6 cm, hairy. *Stamens* many; anthers linear-lanceolate, c. 5 mm. *Ovary* ovoid, tomentose, 3-loculed. *Fruit* a nut, ovoid.

Flowering & Fruiting: May – January

Habitat: dense forests

*Specimen Examined:*Included after Dutt *et al.* 1974, *D.* 444.

Distribution: India, China, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam

Note: The resin from the trunk is applied to wounds to help the healing process (Chnacerel, 1920).

Threat status: Vulnerable A1cd+2cd, B1+2c ver 2.3

D. turbinatus Gaertn., Suppl. Carp. 51. 1805. *Dipterocarpus jourdainii* Pierre, Pl. Util. Col. Franc. 298. 1886; et Fl. For. Cochinch. fasc. 14. t. 220. 1889.

Vernacular Name: Gurjun kuroilsal (A)

Trees. *Stipules* 2 – 6 cm, puberulous; *petiole* puberulous or glabrescent. *Leaf blade* ovate-oblong, 18 – 25 × 6 – 10 cm, leathery, rounded at the base, margin entire, acuminate or acute at the apex. *Inflorescence* axillary racemes. *Calyx* 5-lobed, 2 linear, 3 shorter. *Stamens* many; *anthers* linear-lanceolate. *Ovary* thickly tomentose; *style* terete. *Fruit* a nut, ovoid, tomentose.

Flowering & Fruiting: March – August

Habitat: Mixed forest

*Specimen Examined:*Included after Dutt *et al.* 1974, *D.* 443.

Distribution: India, Bangladesh, Cambodia, China, Laos, Myanmar, Thailand, Vietnam.

Note: The oleo-resin of the trunk is stimulant to the mucous surfaces and diuretic; used as an external application for ulcers, ringworms and other cutaneous affections. It has been used in gonorrhoea, gleet and rheumatism (Yusuf *et al.* 2009).

*Threat status:*Critically Endangered A1cd+2cd ver 2.3

Shorea Roxb. ex Gaertn.f.

S. robusta C. F. Gaertn., Suppl. Carp. 48. 1805.

Vernacular Name: Sal (A)

Semi-deciduous *trees.* *Stipules* lanceolate, small; *petiole* 2 – 2.5 cm. *Leaf blade* 10 – 30 × 5 – 15 cm, ovate to oblong, cordate at the base, acuminate at the apex. *Inflorescence* panicles or racemose. *Flowers* subsessile; *bracts* minute. *Calyx* ovate, 2 mm in bud, subequal, pubescent. *Corolla* creamy-yellow 1cm, linear. *Stamens* many. *Ovary* ovoid, densely pubescent. *Fruit* a nut, ovoid.

Flowering & Fruiting: January – July

Habitat: common, roadside, cultivated

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11746 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Nepal

Note: As domestic timber it is used for beams, scantlings, rafters, and floors, also used for piles, mine work and pit-props, bridges, dug-out boats, carriage and wagon buildings, spokes, fellows, and hubs of wheels, agricultural implements, tool handles, tent pegs, liquid storage vats and beer and oil casks. Seeds eaten after roasting; yield fatty oil, Sal butter, used for cooking and lighting and as an adulterant of ghee; also suitable as a substitute for cocoa butter in the manufacture of chocolates. Tree yields an oleoresin called Sal Dammar or Bengal Dammar (*Laldhuna ral, dhup, guggal*) used as incense and also employed in paints and varnishes, and for caulking boats (Website: <http://greencleanguide.com/economic-importance-of-shorea-robusta/>).

Threat status: Lower Risk/least concern ver 2.3

86. MORINGACEAE Martinov

Moringa Adans.

M. oleifera Lam., Encycl. 1 (2): 398. 1785; Lu & Olson in Fl. China 8: 196. 2001.

Vernacular Name: Drum Stick tree (E), Sojina (A)

Trees. Leaves petiolate, 3-pinnate; *leaflets* ovate, elliptic or oblong, 1 – 2 × 0.5 – 1.2 cm, rounded to cuneate at base, rounded to emarginated at apex. *Inflorescence* a panicle, 10 – 30 cm; *bractsc.* 1 mm. *Flowers* white to cream, aromatic. *Calyx* lanceolate to linear-lanceolate, 0.7 – 1.4 mm, usually puberulent. *Corolla* spatulate, 1 – 2 cm, glabrous or puberulent at base. *Stamens* hairy at base. *Ovary* hairy. *Fruit* tri-lobed capsule, 3-valved, 20 – 50 × 1 – 3 cm, dehiscent. *Seeds* subglobose, 3-angled, 8 – 15 mm in diam.; *wings* 0.5 – 1 cm wide.

Flowering & Fruiting: Throughout the year

Habitat: common, roadside, cultivated

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Balacherra, roadside, 24.04.2014, A. Bora & D. Bhattacharyya 11725, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: native to India, grown widely in tropical and sub-tropical regions.

Note: Fruit and tender pods used as vegetable (local use).

Threat status: Not Evaluated

87. CARICACEAE Dumort.

Carica L.

C. papaya L., Sp. Pl. 2: 1036. 1753; Masters in Hook.f., Fl. Brit. India 2: 599. 1879; Deb, Fl. Tripura 1: 270. 1981.

Vernacular Name: Papaya (E), Omita (A)

Trees or shrubs. Leaf blade palmate, c. 60 cm. *Male inflorescence* pendulous. *Male flowers:* corolla tube creamy yellow, lobes lanceolate, c. 1.8×0.45 cm; *stamens* 5 longer and 5 shorter; *filaments* white. *Female flowers* usually solitary or corymbose cymes; *calyx* lobes c. 1 cm; *corolla* lobes creamy yellow, oblong-lanceolate, $5 - 6.2 \times 1.2 - 2$ cm; *ovary* ovoid. *Bisexual flowers:* corolla lobes oblong, c. 2.8×0.9 cm; *stamens* 5 or 10; *ovary* smaller than in female flowers. *Fruit* orange-yellow at maturity, ovoid-cylindric. *Seeds* numerous.

Flowering & Fruiting: March – December

Habitat: Common, roadside, cultivated

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11578, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: originally cultivated in Central America; widely introduced and cultivated in tropical areas of the world

Note: Used as a vegetable. Is is also used for treating digestive problems and intestinal worms. The leaves of papaya tree are used for treating nervous pains and elephantoid growths. The infusion of its roots is said to reduce urine concretions (Website: <http://www.iloveindia.com/indian-herbs/carica-papaya.html>).

Threat status: Not Evaluated

88. CAPPARACEAE Juss.

- 1a. Stamen 8 – many..... *Capparis*
1b. Staemen 11 – 17..... *Crateva*

Capparis L.

- 1a. Stamens 8 – 12..... *C. multiflora*
1b. Stamens many..... 2
2a. Leaf blade oblong-lanceolate or ovate, $5 - 12 \times 1.5 - 4$ cm..... *C. cantoniensis*
2b. Leaf blade elliptic-ovate, $4 - 7 \times 1.8 - 4$ cm..... *C. tenera*

C. cantoniensis Lour., Fl. Cochinch. 1: 330. 1790. *Capparis ambigua* Kurz, Forest Fl. Burma i. 65. 1877. *Capparis pumila* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 3: 260. 1851; Kanjilal *et al.*, Fl. Assam 1 (1): 76. 1934; Deb, Fl Tripura 1: 243. 1981.

Vernacular Name: Not known

Shrubs, scandent. *Leaf blade* oblong-lanceolate or ovate, $5 - 12 \times 1.5 - 4$ cm, leathery, cuneate at base, acuminate at apex. *Inflorescences* axillary and terminal, panicle; *bracts* deciduous. *Flowers* fragrant; *Calyx* c. $4 - 5 \times 3$ mm; *Corolla* white, obovate to oblong, $4 - 6 \times 1.5 - 2.5$ mm. *Stamens* many; *filaments* c. 0.8 – 1.5 cm; *anthers* 0.7 – 0.8 mm. *Ovary* ellipsoid, c. 1.5×1 mm, glabrous. *Fruit* spheroid.

Flowering & Fruiting: throughout the year

Habitat: Wet places, open forests

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 114.

Distribution: India, Bhutan, China, Indonesia, Myanmar, S Philippines, Thailand, Vietnam; Indian Ocean islands

Threat status: Not Evaluated

C. multiflora Hook.f. & Thomson, *Fl. Brit. India* 1 (1): 178. 1872.

Vernacular Name: Not known

Climbing *shrubs*, erect or twining, small *trees*. *Leaf blade* lanceolate to oblong, 5 – 10 × 2.5 – 3.5 cm, cuneate at the base, acuminate at the apex. *Calyx* 3 – 4 × 2 mm, slightly unequal; outer whorl slightly larger; inner whorl short and narrow. *Coroall* white, oblong, c. 5 × 1.5 – 2 mm, glabrous. *Stamens* 8 – 12. *Ovary* c. 1.2 × 1 mm, glabrous or pubescent. *Fruit* globose.

Flowering & Fruiting: June – December

Habitat: tropical and subtropical moist forest

Specimen Examined: India, Assam, Cachar dist., s.d. 1890, *J. C. Prazer* 28914 (CAL); Included after Dutt *et al.* 1974, *D.* 112.

Distribution: NE India, Bhutan, China, Myanmar, Nepal, Vietnam

Note: According to the Unani system of medicine the plant has been used as a carminative, tonic, emmenagogue, aphrodisiac, alexipharmic; improves the appetite; good for rheumatism, lumbago, hiccough, cough and asthma (Chopra *et al.*, 2006).

Threat status: Not Evaluated

C. tenera Dalzell, *Hook. J. Bot. Kew Gard. Misc.* 2: 41. 1850; Hook.f., *Fl. Brit. India* 1: 179. 1872; Kanjial *et al.*, *Fl. Assam* 1: 78. 1934; P. J. Bora & Y. Kumar, *Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary* 51. 2003.

Vernacular Name: Not known

Shrubs or *vines*, with stipular spines. *Petiole* slender; *leaf blade* elliptic-ovate, 4 – 7 × 1.8 – 4 cm, cuneate to rounded at base, acute to subacuminate at apex. *Inflorescences* superaxillary; pedicel 1.5 – 2.5 cm. *Calyx* 4 – 5 × 2 – 3 mm. *Corolla* white; tomentose. *Stamens* 8 – 21; *filaments* c. 1.5 cm; *anthers* c. 1.3 mm. *Ovary* 1 – 1.5 mm, *style* beak-like; *ovules* several. *Fruit* red when mature, globose.

Flowering & Fruiting: February – August

Habitat: Common, hilly forests

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 211.

Distribution: NE India, China, Myanmar, Sri Lanka, N Thailand; Africa, Indian Ocean islands

Threat status: Not Evaluated

Crateva L.

Crateva religiosa G.Forst., Fl. Ins. Austr. 35. 1786. *Capparis magna* Lour., Fl. Cochinch. 1: 330. 1790. *Crateva macrocarpa* Kurz in J. Bot. 12: 195. 1874.

Vernacular Name: Barun Gach (A)

Trees or shrubs 4 – 17 m tall. Petiole 5 – 10 cm; leaves ovate-lanceolate, 7 – 16 × 3 – 6 cm, slightly leathery, midvein light red, acuminate at apex. Inflorescences racemes; peduncle *c.* 6 – 11 cm but 12-25 cm after anthesis. Pedicel 4 – 6 cm. Sepals lanceolate, 4 – 8 × 1 – 1.3 mm. Petals white, 1.4 – 2.3 cm long, acuminate at apex. Stamens 11 – 17; filaments 2.5 – 5 cm. Ovary oblong-ellipsoid, terete, 5 × *c.* 2 mm. Fruit oblong-ellipsoid, 2.5 – 4.5 cm,

Flowering & Fruiting: March – September

Habitat: Along lakes, open forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 18.05.2013, A. Bora & D. Bhattacharyya 11771, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Thailand, Sri Lanka

Note: In India, young fruits are eaten. Leaves and root bark are used for medicinal purpose (Web Site: <http://tropical.theferns.info/viewtropical.php?id=Crateva+magna>).

Threat status: NE

89. CLEOMACEAE Horan.

Cleome L.

- 1a. Leaves 3 foliolate.....*C. rutidosperma*
1b. Leaves 3 – 5 foliolate.....2
2a. Corolla white or light rose pink.....*C. gynandra*
2b. Corolla yellow.....*C. viscosa*

C. gynandra L., Sp. Pl. 2: 671. 1753. *Gynandropsis penttaphylla* (L.) DC., Prodr. 1: 238. 1824; Hook.f. & Thomson in Hook.f., Fl. Brit. India 1:171. 1872; Kanjilal *et al.*, Fl. Assam 1: 73. 1934; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 51. 2003.

Vernacular Name: Bhutmulla (A), Hurhuria, Shulte (B)

Herb, annual. *Leaves* palmately compound, with 3 – 5 leaflets, *petiole* *c.* 20 – 50 mm long, hairy. *Leaflets* *c.* 20 – 100 × 8 – 40 mm. *Inflorescence* terminal raceme, many flowered; the *bract* present. *Flowers* bisexual, white or tinged with purple; *corolla* white or light rose pink, 10 – 20 × 3 – 5 mm, rounded at the apex, narrow to a basal claw. *Fruit* a capsule, linear.

Flowering & Fruiting: June – September

Habitat: Occasionally, wastelands, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11577, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Sri Lanka, Malaysia, Java, Malaysia, Moluccas, Philippines, Sumatra, Sulawesi, Thailand

Note: The leaves have various medicinal uses everywhere the plant occurs, mainly being applied externally. They are considered to be antirheumatic, disinfectant, rubefacient and vesicant. The leaves are probably most commonly as a counter-irritant to relieve local pain, being either rubbed on to the affected area or used as a poultice. (Burkil, 1985 – 2004).

Threat status: Not Evaluated

C. rutidosperma DC., Prodr. 1: 241. 1828; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 52. 2003.

Vernacular Name: Fringed spider flower (E)

Erect herb. Stem sparsely pubescent. Leaves digitate, 3 foliolate; leaflets 3, oblong-ovate, acute at apex, pubescent, petiolate. Inflorescence in racemes, terminal. Flowers bluish pink; calyx hairy; corolla 1 – 1.5 cm long. Stamen 6. Fruit a capsule, linear, c. 5 – 8 cm long.

Flowering & Fruiting: August – November

Habitat: Common, in moist places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11530, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, pantropical

Note: The plant is appetizer, laxative. A decoction is used to treat malaria. The leaf-sap is used in ear-instillations to treat earache, inflammation and deafness (Website: <http://tropical.theferns.info/viewtropical.php?id=Cleome+rutidosperma>).

Threat status: Not Evaluated

C. viscosa L., Sp. Pl. 2: 672. 1753; Hook.f. & Thomson in Hook.f., Fl. Brit. India 1: 170. 1872; Datar *et al.*, Fl. Bhagwan Mahavir (Molem) Park and Adjoining, Goa. 46. 2013.

Vernacular Name: Wild mustard, Dog mustard, Yellow Spider Flower (E)

Herb, erect, woody, annual. Leaves 3 – 5 foliolate; leaflets subsessile, 0.6 – 3.5 × 0.3 – 2 cm, elliptic to oblong, cuneate at the base, margins ciliate, obtuse at the apex; petiole c. 5 cm long. Inflorescence terminal racemes or corymbiform. Flowers 1 – 1.5 cm across; calyx 4 lobed, 4 – 8 × 2 – 3 mm, lanceolate; corolla 4 lobed, yellow, 6 – 12 × 3 – 5 mm. Stamens 12 – 18. Ovary sessile, 5 – 7 mm long; stigma capitate. Fruit a capsule, densely hairy.

Flowering & Fruiting: March – July

Habitat: Weed among cultivated plants, wastelands and roadsides

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, Nalapara, 10.09.2011, S. R. Talukdar 85290 (CAL).

Distribution: India, Native to tropical Africa, south Arabia, tropical Australia and Malaysia

Note: The leaves are diaphoretic, rubefacient and vesicant. The juice of the leaves has been used to relieve earache. The seeds are anthelmintic, carminative, rubefacient, stimulant and vesicant (Chopra et al., 1986).

Threat status: Not Evaluated

90. BRASSICACEAE Burnett

- 1a. Corolla white.....*Cardamine*
1b. Corolla yellow.....*Rorippa*

Cardamine L.

C. trichocarpa Hochst. Ex. A. Rich., Tent. Fl. Abyss. 1: 18. 1847. *Cardamine belgaumensis* Dalzell ex Hook., Hooker's J. Bot. Kew Gard. Misc. 4: 294. 1852. *Cardamine subumbellata* Hook. ex Hook.f. & T. Anderson, Fl. Brit. India 1 (1): 138. 1872.

Vernacular Name: Not known

Erect annual *herb*, branched from the base. *Leaves* alternate, oblong, up to 15 cm long, imparipinnate, hairy; *leaflets* ovate, apex acute, margin serrate. *Inflorescence* raceme, terminal, densely flowered. *Flowers* bisexual, actinomorphic, small; *calyx* 4-lobed oblong, c. 2 mm long, hairy; *corolla* 4-lobed, white; *stamens* 4; ovary superior, 2-celled; *stigma* sessile. *Fruit* a linear silique.

Flowering & Fruiting: December – February

Habitat: moist places and along roadsides

Specimens Examined: Included after Dutt *et al.*, 1974, D. 355.

Distribution: central and eastern Africa, Cameroon and Angola to Ethiopia and Tanzania, Madagascar, India

Note: The crushed leaves are used as a dressing on wounds for 2 – 3 days to improve healing. They also make a good herbal bath for babies. The vegetable is considered useful in the treatment of kwashiorkor (Website: <http://tropical.theferns.info/viewtropical.php?id=Cardamine+trichocarpa>).

Threat status: Not Evaluated

Rorippa Scop.

R. indica (L.) Hiern., Cat. Afr. Pl. 1: 26. Addit. & Corr. 1896. *Sisymbrium indicum* L., Sp. Pl., ed. 2, 2: 917. 1763. *Nasturtium indicum* (L.) DC., Syst. Nat. 2: 199. 1821; Hook.f. & Th. in Hook.f., Fl. Brit. India 1: 134. 1872; Kanjilal *et al.*, Fl. Assam 1: 70. 1934.

Vernacular Name: Indian field cress (E), Chamsuru (H)

Herbs. Basal leaves dry up while flowering. *Leaf blade* obovate, oblong or lanceolate, 3.5 – 12 × 1.5 – 4 cm, margin entire, crenate or serrate, apex obtuse or subacute. *Inflorescence* racemes, *bract* absent. *Calyx* oblong to ovate, c. 2 – 3 × 0.8 – 1.5 mm. *Corolla* yellow, obovate to spatulate, 3 – 4 × 1 – 1.5 mm, sometimes absent. *Anthers* oblong, 0.5 – 0.8 mm. *Ovules* many. *Fruit* linear.

Flowering & Fruiting: throughout the year

Habitat: Roadsides, field margins, Roadsides

Specimens Examined: Included after Dutt *et al.*, 1974, *D.* 165.

Distribution: India, Bangladesh, China, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sikkim, Thailand, Vietnam; naturalized in North and South America

Note: The plant is used medicinally. Tender shoots and young leaves are cooked as a vegetable (Manandhar and Manandhar 2002).

Threat status: Not Evaluated

91. BALANOPHORACEAE Rich.

Balanophora J.R.Forst. & G.Forst.

B. dioica R.Br. ex Royle, Ill. Bot. Himal. Mts. t. 99 or 78a (fig. 2). 1839; Huang & Murata in Fl. China 5: 274. 2003.

Vernacular Name: Not known

Dioecious annual roots parasite. Rootstock tuberous, lobed, 4 – 6 cm in diameter. Leaves absent, Stem glabrous, fleshy, yellowish-white, unbranched, 10 – 15 cm long, stout, covered with lax imbricated scaly leaves. Male flowers densely crowded in an ovoid or club shaped head or inflorescence at the top of stem. Flower head, 5 – 7 cm long. Flowers unisexual, small. Perianth up to 0.7 cm long, 3-lobed. Staminal column short, anthers bursting by curved slit.

Flowering & Fruiting: November – April

Habitat: Common, dense forest, parasitic on root; 1100-2600 m

Specimens examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, 15 No Hill, 12.11.2011, H. A. Barbhuiya85155 (ASSAM).

Distribution: NE India, Bhutan, China, Myanmar, Nepal, Sikkim

Note: This species is used medicinally.

Threat status: Not Evaluated

92. OLACACEAE Juss. ex R.Br.

- 1a. Climbers or lianas.....*Erythralum*
1b. Shrubs.....2

- 2a. Calyx and corolla distinct.....*Olax*
2b. Calyx and corolla not distinct; perianth present.....*Lepionurus*

Erythralum Blume

E. scandens Blume, Bijdr. Fl. Ned. India 15: 922. 1826; Hook. f., Fl. Brit. India 1: 578. 1875; Qiu & Gilbert in Fl. China 5: 202. 2003. *Erythralum vagum* Mast., Fl. Brit. India 1 (3): 578. 1875.

Vernacular Name: Not known

Lianas, 5 – 10 m tall, glabrous. *Branchlets* with axillary tendrils. *Petiole* 3 – 10 cm; *leaf blade* oblong-ovate or triangular-ovate, 8 – 20 × 4 – 15 cm, papery to leathery, obtuse, truncate or cordate at base, acuminate at apex. *Inflorescence* in cymes, 6 – 18 cm, many-flowered. *Pedicel* filiform, 2 – 5 mm. *Calyx* cupular, 5-lobed, *c.* 1 mm. *Corolla* white, 1.5 – 2 mm. *Stamens* with tufts of hair. *Disk* elevated. *Drupe* ellipsoid to obovoid, 1.5 – 2.5 × 0.8 – 1.2 cm. *Seeds* broadly ellipsoid.

Flowering & Fruiting: March – September

Habitat: riverine forests; 100 – 1500 m

Specimens Examined: Included after Dutt *et al.* 1974, *D.* 216.

Distribution: India, Bangladesh, Brunei, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam

Note: *Erythralum scandens* is one of the fundamental herbs used in Traditional Chinese Medicine, also achieve fame in India, and has been widely used in Asian for over 1000 years as rheumatic pain relief (Website:

<http://www.genabolix.com/news/Erythralum%20scandens%20extraction%20%E2%80%93%20New%20Pre-work%20product%20from%20GENABOLIX/Erythralum%20scandens%20extraction%20%E2%80%93%20New%20Pre-work%20product%20from%20GENABOLIX.html>).

Threat status: Not Evaluated

Lepionurus Blume

L. sylvestris Blume, Bijdr. Fl. Ned. India 17: 1148. 1827; Qiu & Gilbert in Fl. China 5: 206. 2003.

Vernacular Name: Not known

Shrubs. *Branchlets* glabrous. *Petiole* 3 – 7 mm; *leaf blade* variable, lanceolate to oblong, 8 – 17 × 1.5 – 4 cm, papery, cuneate at base, acuminate at apex. *Inflorescence* in racemes, 2 – 2.5 cm; *bracts* greenish, 5 – 7 mm, acute at apex. *Flowers* on tubercle. *Pedicel* *c.* 1 mm. *Perianth* yellowish, 1.5 – 2 mm, tube *c.* 0.5 mm; 4-lobed, ovate, acute at apex. *Stamens* 4; *filament* *c.* 0.3 mm; *anther* *c.* 0.5 mm. *Disk* cupular. *Ovary* *c.* 1 mm. *Fruit* a drupe, orange, ellipsoid, 1.5 – 1.8 × *c.* 1 cm.

Flowering & Fruiting: July – November

Habitat: mountain valleys; 300 – 1000 m.

Specimens Examined: India, Assam, NC Hills dist., Halflong, 16.01.1915, U. Kanjilal 5131 (CAL).

Distribution: India, Bhutan, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Sikkim, Thailand, Vietnam

Note: The roots are used as a remedy against fever. A poultice of the plant, or of the root, is used as a treatment for headache (Website: <http://tropical.theferns.info/viewtropical.php?id=Lepionurus+sylvestris>).

Threat status: Not Evaluated

Olox L.

O. acuminata Wall. ex Benth., Proc. Linn. Soc. 1: 89. 1840; Qiu & Gilbert in Fl. China 5: 201. 2003.

Vernacular Name: Not known

Shrubs, to 5 m tall. *Branchlets* yellow. *Petiole* 3 – 7 mm; *leaf blade* oblong to ovate-lanceolate, 6 – 10 × 2.5 – 3.5 cm, papery, glabrous, cuneate to rounded at base, acuminate at apex. *Inflorescences* unbranched, 1 – 1.5 cm; *peduncle* 4 – 6 mm. *Pedicel* 2 – 3 mm. *Calyx* small, truncate. *Corolla* yellowish, 3 – 4 mm, oblong-lanceolate. *Fruit* a drupe, orange, ellipsoid to ovoid.

Flowering & Fruiting: March – September

Habitat: Rain forests; below 500 m.

Specimens Examined: Included after Dutt *et al.* 1974, D. 322.

Distribution: India, Bhutan, China, Myanmar

Threat status: Not Evaluated

93. LORANTHACEAE Juss.

- 1a. Bracts solitary.....*Dendrophthoe*
1b. Bracts forming large, campanulate, toothed involucre.....*Tolypanthus*

Dendrophthoe Mart.

D. falcata (L.f.) Ettingsh. in Denkschr. Kaiserl. Akad. Wiss., Wien. Math.-Naturwiss. K l. 32: 52 1871; Kanjilal *et al.*, Fl. Assam 4: 123. 1940.

Vernacular Name: Baramanda (B), Banda Patha (H), Bajrangi (Sylh.)

An evergreen parasitic *subshrub*, upto 1m. *Leaves* simple, thick, coriaceous, opposite, lanceolate or elliptic-ovate, 7.5 – 18 × 2 – 10 cm, *petiolate*, *stipule* absent, obtuse at apex, margin entire, acute to cuneate at base. *Inflorescence* axillary racemes. *Flowers* yellow turning red, *pedicel* short, *bract* 1.6 mm long, orange red. *Calyx* 4 mm long, snow-white. *Corolla* pink, 2.5 – 5 cm long, split at the back; *tube* curved, slightly widened upwards. *Fruit* a berry, 8 – 13 mm long, ovoid-oblong, pink. *Seed* one.

Flowering & Fruiting: November – Throughout the year

Habitat: foothill, deciduous forests; from plains to 1000 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11752, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Sri Lanka, Thailand, Indo-China and Australia

Note: The bark has narcotic and astringent properties. It is used in wounds and menstrual troubles and also useful in consumption, asthma and mania (Yusuf *et al.*, 2009).

Threat status: Not evaluated

Tolypanthus (Blume) Blume

T. involucratus (Roxb.) Tiegh. in Bull. Soc. Bot. France 42: 248, in obs. 1895; Deb, Fl. Tripura 1: 402. 1981; P. J. Bora & Y. Kumar, Florist. Diversity Assam 294. 2003. *Loranthus involucratus* Roxb., Fl. India 2: 208. 1824; Hook. f., Fl. Brit. India 5: 218. 1886; Kanjilal *et al.*, Fl. Assam 4: 126. 1940.

Vernacular Name: Not known

Stem parasite, *shrub*. *Leaves* elliptic-ovate or lanceolate, acute or obtuse at the apex, cordate or rounded at the base. *Inflorescence* sessile fascicles. *Flowerc.* 1 cm long, *bracts* present; *corolla* 5-lobed, linear. *Fruit* small.

Flowering & Fruiting: November – March

Habitat: Common

Specimens Examined: India, Assam, Cachar dist., Gormura, 08.04.1940, R. N. De & D. C. F. 25856, 25857, Fl. (ASSAM).

Distribution: India, Bangladesh.

Threat status: Not evaluated

94. POLYGONACEAE Juss.

1a. Stamens 7 or 8, rarely 4.....*Polygonum*

1b. Stamen 8.....*Persicaria*

Persicaria (L.) Mill.

P. chinensis (L.) H. Gross, Bot. Jahrb. Syst. 49(2): 269. 1913. *Polygonum chinense* L., Sp. Pl. 1: 363. 1753; Li *et al.* in Fl. China 5: 300. 2003.

Vernacular Name: Not known

Herbs perennial. *Stems* erect, 70 – 100 cm tall, glabrous or hispid. *Petiole* 1 – 2 cm, upper leaves sessile; *leaf blade* ovate, elliptic, or lanceolate, 4 – 16 × 1.5 – 8 cm, both surfaces glabrous or hispid, truncate or broadly cordate at base, margin entire, shortly acuminate at apex. *Inflorescence* terminal or axillary, capitate, 3 – 5 mm, panicle-like; *peduncle* densely hairy; *bracts* broadly ovate. *Perianth* white or pinkish, 5-parted; *tepals*

ovate, fleshy. *Stamens* 8, included. *Styles* 3, connate to below middle. *Achenes* included in persistent perianth, black, broadly ovoid.

Flowering & Fruiting: July – December

Habitat: Wet areas, mountain slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11686; SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11520, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Japan, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam

Threat status: Not evaluated

Polygonum L.

P. perfoliatum L., Syst. Nat., ed. 10. 2: 1005. 1759; Kanjilal *et al.*, Fl. Assam 4: 20. 1940.

Ampelgynonum perfoliatum (L.) Roberty & Vautier, Boissiera x. 31. 1964.

Persicaria perfoliata (L.) H.Gross in Bot. Jahrb. Syst. 49(2): 275. 1913.

Vernacular Name: Asiatic tearthumb (E)

Herbs annual. *Stems* trailing, red-brown, 0.8 – 2 m, branched, angulate, with retrorse prickles along angles. *Petiole* 3 – 8 cm, sparsely retrorsely prickly; *leaf blade* triangular-peltate, 4 – 6 × 5 – 8 cm, abaxially usually sparsely retrorsely prickly along veins, adaxially glabrous, base truncate or subcordate, apex subacute; *ocrea* tubular, with green herbaceous orbicular wing at apex, 1.5 – 3 cm in diam. *Inflorescence* terminal or axillary, spicate, 1 – 3 cm; *bracts* ovate-orbicular, each 2 – 4-flowered. *Perianth* white or pinkish, 5-parted; *tepals* elliptic, c. 3 mm, in fruit dark blue, accrescent, fleshy. *Stamens* 8, in 2 whorls, included. *Styles* 3, connate at middle. *Achenes* included in persistent perianth, black, shiny, globose, 3 – 4 mm in diam.

Flowering & Fruiting: June – October

Habitat: Near fields and roads, wet valleys; 100 – 2300 m.

Specimen Examined: Included after Medhi *et al.* 2012

Distribution: India, Bangladesh, Bhutan, China, Indonesia, Japan, Korea, Malaysia, Nepal, New Guinea, Philippines, Russia (Far East), Sikkim, Thailand, Vietnam; SW Asia; introduced in North America

Threat status: Not evaluated

95. DROSERACEAE Salisb.

Drosera L.

D. burmanni Vahl., Symb. Bot. 3: 50. 1794; Clarke in Hook. f., Fl. Brit. India 2: 424. 1878; Kanjilal *et al.*, Fl. Assam 2: 234. 1938.

Vernacular Name: Not known

Herbs annual or biennial. *Leaves* sessile; *stipule* 3 – 7 mm, 3-fid; *petiole* short or absent. *Leaf blade* cuneate to obovate-spatulate, 6 – 10 × 5 – 7 mm, attenuate at the base, fimbriate at the apex. *Inflorescence* racemes, 6 – 22 cm; bracts simple. *Calyx* 5-lobed, united at base, oblong, 2 – 3 mm. *Corolla* white to light red, obovate, c. 4 × 2 – 3 mm. *Stamens* 5, c. 3 mm. *Ovary* subglobose, filiform, 2 – 3 mm; *stigma* toothlike. *Fruit* a capsule.

Flowering & Fruiting: October – January

Habitat: Shaded or wet places; 70 m to higher altitude.

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 592.

Distribution: India, East and South-east Asia, Australia, West Africa

Note: It is a carnivorous plant.

Threat status: Least Concern ver 3.1

96. CARYOPHYLLACEAE Juss.

- 1a. Stamens 3 – 5.....*Polycarpon*
1b. Stamens 5 or 10.....2
2a. Stipules small, bristly, often fugacious.....*Drymaria*
2b. stipules absent.....*Stellaria*

Drymaria Willd. ex Roem. & Schult.

D. cordata (L.) Willd. ex Schult., Syst. Veg., ed. 15 bis 5: 406. 1819. *Holosteum cordatum* L., Sp. Pl. 1: 88. 1753.

Vernacular Name: Laijabori (A), Tandal pambi (M)

Annual *herbs*. *Stems* straggling, usually rooting at lower nodes. *Stipules* present. *Leaf blade* ovate-cordate, 0.5 – 3.5 × 0.6 – 3 cm. *Bracts* lanceolate. *Calyx* lanceolate-ovate, c. 2 – 5 mm. *Corolla* white, obovate-cuneate, c. 2.5 mm, 2-cleft. *Stamens* 2 – 5, shorter than calyx. *Styles* 3, connate at base. *Fruit* a capsule.

Flowering & Fruiting: April – December

Habitat: shaded areas, near streams

Specimen Examined: India, Assam, Cachar dist., NC Hills, 01. 08. 1908, W. G. Craib 43173, 43171 (CAL).

Distribution: native to Central and South America

Note: The pounded leaf is applied to snake bites in China. The plant is appetizer, depurative, emollient, febrifuge, laxative and stimulant. Widely used in traditional African medicine for the treatment of diverse ailments including painful and febrile conditions (Website: <http://www.flowersofindia.net/catalog/slides/Tropical%20Chickweed.html>).

Threat status: Not Evaluated

Polycarpon Loefl.

P. prostratum (Forssk.) Asch. & Schweinf., Oesterr. Bot. Z. 39: 128, in obs. 1889.

Vernacular Name: Not known

Annual *herbs*. *Stems* prostrate. *Leaf blade* obovate or spatulate, 5 – 15 × 1.5 – 2.5 mm, attenuate at the base, acute at the apex. *Inflorescence* axillary cymes; *bracts* stipulelike. *Pedicel* present or absent. *Calyx* lanceolate, 2.5 – 3mm. *Corolla* oblong, entire. *Stamens* 3, shorter than calyx. *Fruit* a capsule, ovoid.

Flowering & Fruiting: February – June

Habitat: Farmland

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 7, 107.

Distribution: tropical regions of Asia and Africa

Note: Infusion of the roasted leaves is given for cough following fevers, particularly after measles (Gupta & Mukherjee, 2015).

Threat status: Not Evaluated

Stellaria L.

1a. Leaves 1 – 2.5 × 0.3 – 0.5 cm, linear-lanceolate, glabrous or ciliate at the base.....*S. uliginosa*

1b. Leaves c. 0.8 – 4 × 0.4 – 1.3 cm, ovate, acuminate at apex, cordate at base.....*S. wallichiana*

S. uliginosa Murr., Prodr. Strip. Gott. 55. 1770. Boiss., Fl. Or. 1:708. 1867; Edgew. & Hook. f., Fl. Brit. India 1:233.1874; Blatter, Beauti. Flow. Kashm. 1:50. 1928.

Vernacular Name: Bog Stitchwort, Bog chickweed (E)

Perennial *herb*. *Leaves* 1 – 2.5 × 0.3 – 0.5 cm, linear-lanceolate, glabrous or ciliate at the base. *Inflorescence* a many flowered dichasial cyme. *Bracts* present. *Pedicels* filiform, longer than the calyx. *Calyx* 3 – 4 mm, lanceolate, acuminate. *Corolla* 4, shorter than the calyx. *Fruit* a capsule.

Flowering: July

Habitat: wet and moist places

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 159.

Distribution: India, Temperate and alpine Himalaya, Most of Europe, Balkans, N. Armenia

Threat status: Not Evaluated

S. wallichiana Benth. ex Haines in Bull. Misc. Inf. Kew 1920: 66. 1920; P.J.Bora & Y.Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 56. 2003. *Stellaria media* (L.) Villars, Hist. Pl. Dauph. 3: 615. 1789; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1: 230. 1874.

Vernacular Name: Not known

Diffused herb. *Leaves* 0.8 – 4 × 0.4 – 1.3 cm, ovate, acuminate at apex, cordate at base. *Inflorescence* axillary. *Flower* white, c. 1 cm long. *Calyx* 0.3 cm long, ovate. *Corolla* 2 fid, c. 0.4 – 0.6 cm long. *Stamen* hypogynous. *Ovary* superior.

Flowering & Fruiting: March – September

Habitat: Common, shady places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11307; Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11624, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Through out India, Cosmopolitan.

Threat status: Not Evaluated

97. AMARANTHACEAE Juss.

- 1a. Leaves opposite.....*Achyranthes*
1b. Leaves alternate.....2
2a. Herbs annual.....*Amaranthus*
2b. Herbs annual or perennial, rarely subshrubs..... *Chenopodium*

Achyranthes L.

A. aspera L., Sp. Pl. 1: 204. 1753; Hook. f., Fl. Brit. India 4: 730. 1885; Bao *et al.* in Fl. China 5: 424. 2003.

Vernacular Name: Prickly chaff flower (E)

Herbs perennial, 20 – 120 cm tall. *Stem* quadrangular, pubescent; *branches* opposite. *Petiole* 0.5 – 1.5 cm, hairy; *leaf blade* broadly obovate or elliptic-oblong, 1.5 – 7 × 0.4 – 4 mm, papery, both surfaces hairy, cuneate or rounded at base, entire or undulate at margin, obtuse, at apex. *Spikes* terminal, erect, 10 – 30 cm; *rachis* angular, stout, densely hairy. *Bracts* lanceolate, 3 – 4 mm, apex acuminate; *bracteoles* spiny, shiny, 2.5 – 4.5 mm, rigid, base 2-winged. *Tepals* lanceolate, 3.5 – 5 mm, with a vein. *Stamens* 2.5 – 3.5 mm; *pseudostaminodes* truncate or crenate at apex, fimbriate and ciliate. *Utricles* ovoid, 2.5 – 3 mm. *Seeds* brown, ovoid, c. 2 mm.

Flowering & Fruiting: June – October

Habitat: Hillsides, waste places, roadsides, riverbanks; 800 – 2300 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11397, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Sri Lanka, Thailand, Vietnam; Africa, SW Asia, Europe

Note: Used in piles, boils, skin eruption and in colic pain, act as purgative and diuretic. Roots are astringent, seed ametic.

Threat status: Not Evaluated

Amaranthus L.

A. spinosus L., Sp. Pl. 2: 991. 1753; Hook. f., Fl. Brit. India 4: 718. 1885; Kanjilal *et al.*, Fl. Assam 4: 8. 1940; Deb, Fl. Tripura 2: 165. 1985; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 276. 2003.

Vernacular Name: Hati khutoria (A)

Erect *herb*. *Spine* present, axillary, paired. *Leaves* alternate, c. 1.5 – 8 cm long ovate-elliptic to ovate-lanceolate, petiolate. *Inflorescence* terminal and axillary, spikes paniced; *flower* sessile, dense, greenish white; *bract* and *bracteoles* present. *Perianth* 5 c. 0.4 cm long. *Stamen* 5, connate. *Stigma* 2 or 3; *Style* tomentose.

Flowering & Fruiting: through out the year

Habitat: common, road side, open areas

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11553, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Tropical countries

Note: Used as vegetable.

Threat status: Not Evaluated

Chenopodium L.

C. album L., Sp. Pl. 1: 219. 1753; Hook.f., Fl. Brit. India 5: 3. 1886; Kanjial *et al.*, Fl. Assam 4: 10. 1940; Deb, Fl. Tripura 2: 160. 1983. *Anserina candidans* Friche-Joset & Montandon, Syn. Fl. Jura 262. 1856.

Vernacular Name: Bhatua sak/Jilmil sak (A), Chandanbethu (B)

Herbs, annual. *Leaf blade* lanceolate to rhombic-ovate, 3 – 6 × 2.5 – 5 cm, reddish purple hairs on young leaves, cuneate at the base, margin irregularly serrate, acute at the apex. *Inflorescence* in panicles or spikelike panicles. *Flowers* bisexual; *perianth* 5-lobed, ovate-elliptic, acute at the apex. *Stamens* 5. *Stigma* 2. *Pericarp* adnate to seed.

Flowering & Fruiting: May – October

Habitat: Fields, roadsides, wet places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, way to Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11741, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, through out temperate and tropical regions of world

Note: The leaves and young shoots may be eaten as a leaf vegetable. It has some medicinal properties like anthelmintic, antiphlogistic, antirheumatic, contraceptive, laxative, odontalgic etc. *Chenopodium album* used in the treatment of rheumatism, bug bites, sunstroke, urinary problems, skin problems etc. (Website: <http://natureconservation.in/medicinal-uses-of-chenopodium-album-lambsquarters-bathua/>).

Threat status: Not Evaluated

98. AIZOACEAE Martinov

Trianthema L.

T. portulacastrum L., Sp. Pl. 1: 223. 1753; Lu *et al.* in Fl. China 5: 441. 2004.

Vernacular Name: Gadabani, Godabani, Kulphasag, Swetpunarnova (B)

Herbs perennial. *Petiole* 4 – 30 mm; *leaf blade* elliptic to ovate, 8 – 50 × 4 – 45 mm, fleshy, cuneate at base, obtuse, truncate or slightly acute at apex. *Flowers* solitary, sessile. *Perianth* 5-lobed, inside light pink, 4 – 5 mm; *perianth tube* a funnel; lobes obtuse. *Stamens* 10 – 25. *Stigma* 1, c. 3 mm. *Fruit* a capsule, 2-lobed.

Flowering & Fruiting: June – December

Habitat: Sandy places

Specimen Examined: Included after Dutt *et al.*, 1974, D. 129.

Distribution: Pantropical

Note: Leaves are eaten as a cooked vegetable or in soups. A decoction of the herb is used as a vermifuge and is useful in rheumatism. It is considered an antidote to alcoholic poisoning. The old leaves are also used in the treatment against gonorrhoea.

Threat status: Not Evaluated

99. MOLLUGINACEAE Bartl.

1a. Herbs annual, diffuse; leaves alternate or in pseudowhorls.....*Glinus*

1b. Herbs annual or perennial; leaves pseudoverticillate, opposite, or whorled.....*Mollugo*

Glinus L.

G. oppositifolius DC. in Bull. Herb. Boissier Ser. II, 1: 559
1901. *Mollugo oppositifolia* L., Sp. Pl. 1: 89. 1753.

Vernacular Name: Gima phul (B)

Herbs, much branched, pubescent or subglabrous. Leaves in pseudowhorls or opposite; *leaf blade* spatulate-oblongate or elliptic, 1 – 2.5 cm × 3 – 6 mm, attenuate at base, margin toothed, obtuse or acute at apex. *Pedice*l 5 – 14mm. *Flowers* usually in cyme. *Tepals* greenish white or yellowish, oblong, 3 – 4 mm, 3-veined. *Stamens* 3 – 5. *Styles* 3 – 4. *Fruit* a capsule, ellipsoid.

Flowering & Fruiting: almost throughout the year

Habitat: Riversides, rice fields; low elevations.

Specimens Examined: Included after Dutt *et al.* 1974, D. 37.

Distribution: Tropical Africa and Asia, N Australia

Note: The plant is stomachic, aperient and antiseptic; used in skin diseases and for suppression of the lochia. Warmed herb moistened with castor oil is a good cure for earache. The juice is applied to itch and other skin diseases (Yusuf *et al.*, 2009).

Threat status: Not Evaluated

Mollugo L.

M. pentaphylla L., Sp. Pl. 1: 89. 1753.

Vernacular Name: Khet papra (B)

Annual up to 24 cm tall. *Leaves* cauline, pseudo-verticillate, 1.2 – 4.0 × 1.5 mm, elliptic lanceolate. *Calyx* 1.5 – 2 mm long, elliptic ovate. *Stamens* 5, c. 1.2 mm long; *filaments* dilated at the base; *anthers* less than 1 mm long, basifixed. *Ovary* sub-globose, c. 1.5 mm broad. *Fruit* membranous. *Seed* granulate, dark brown.

Flowering & Fruiting: September – October

Habitat: Fairly common; ascends to c. 2300 m

Specimens Examined: Included after Dutt *et al.* 1974, D. 50.

Distribution: India, Malayan Peninsula, Fiji, Ceylon, China, Japan, W. Pakistan

Note: The plant is antipyretic, antiseptic, appetizer, emmenagogue, laxative and stomachic. The leaves are used to make a soup that is said to promote the appetite. They are also used to treat sprue and mouth infections. The leaves are used externally as a poultice for sore legs (Website: <http://tropical.theferns.info/viewtropical.php?id=Mollugo+pentaphylla>).

Threat status: Not Evaluated

100. PORTULACACEAE Juss.

Portulaca L.

1a. Leaves alternate or occasionally subopposite; petiole short.....*P. oleracea*

1b. Leaves opposite; petiole absent.....*P. quadrifida*

P. oleracea L., Sp. Pl. 1: 445. 1753; Lu & Gilbertin Fl. China 11: 443. 2003; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 56. 2003.

Vernacular Name: Purslane (E), Nunia sag (B), Malbhuk sag (A)

Herbs annual. *Leaves* alternate or occasionally subopposite; *petiole* short; *leaf blade* flat, obovate, 10 – 30 × 5 – 15 mm, cuneate at base, obtuse, rounded or retuse at apex. *Flowers* in clusters of 3 – 5, 0.4 – 0.5 cm in diam., surrounded by involucre of 2 – 6 bracts. *Calyx* green, helmeted, c. 4 mm, apex acute, keeled. *Corolla* 5 – lobed, yellow, obovate, 3 – 5 mm, slightly connate at base, retuse at apex. *Stamens* 7 – 12, c. 12 mm; anthers yellow. *Ovary* glabrous. *Stigma* 4 – 6 – lobed. *Fruit* a capsule ovoid, c. 5 mm. *Seeds* glossy black when mature.

Flowering & Fruiting: May – September

Habitat: Cultivation, disturbed urban sites

Specimen Examined: Included after Dutt *et al.* 1974, D. 150.

Distribution: India, tropical and temperate regions worldwide

Threat status: Not evaluated

P. quadrifida L., Mant. Pl. 73. 1767; Lu & Gilbertin Fl. China 11: 443. 2003.

Vernacular Name: English small-leaved purslane (E)

Herbs annual. *Leaves* opposite; petiole absent; *leaf blade* flat, obovate or ovate-elliptic, 4 – 8 × 2 – 5 mm, slightly narrowed toward base, obtuse or acute at apex. *Flowers* solitary, surrounded by involucre of 4 or 5 bracts, tomentose. *Calyx* obovate-oblong, 2.5 – 3 mm. *Corolla* 4-lobed, yellow, oblong or broadly elliptic, 3 – 6 mm, connate at base, mucronate at apex. *Stamens* 8 – 10. *Ovary* ovoid. *Stigma* 3- to 4-lobed. *Fruit* a capsule, globose, c. 2.5 mm. *Seeds* gray, subglobose.

Flowering & Fruiting: Through out the year

Habitat: Disturbed grounds, sandy soils

Specimen Examined: Included after Dutt *et al.* 1974, D. 9.

Distribution: India, probably native to Africa, now pantropical

Note: The leaves and young shoots are collected from the wild and are eaten raw. They have a mild pleasant flavour and are frequently used in salads. In India boiled leaves are mixed with sorghum or pearl millet flour in preparing a kind of bread (Website: <http://tropical.theferns.info/viewtropical.php?id=Portulaca+quadrifida>).

Threat status: Not evaluated

101. CORNACEAE Bercht. & J.Presl

- 1a. Shrubs, trees, or herblike shrubs; corolla 4 or 4 – 10.....2
1b. Trees, dioecious; corolla 4 or 5.....*Nyssa*
2a. Corolla lobes 4-10, valvate, linear to lorate, sometimes basally coherent.....*Alangium*
2b. Corolla 4, free, spreading, oblong to orbicular, valvate.....*Cornus*

Alangium Lam.

A. barbatum (R.Br. ex C. B. Clarke) Baill. ex Kuntze, Revis., Gen. Pl. 1: 273. 1891; Kanjilal *et al.*, Fl. Assam 2: 369. 1938.

Vernacular Name: Not known

Small *tree* or large shrub, bark smooth. *Inflorescence* shaggy and hairy. *Leaves* 12.5 – 22 × 7.5 – 11 cm, sub-ovate, papery, acuminate at the tip, entire, thinly pubescent above and densely beneath specially along the veins, lateral veins 5 – 7 pairs. *Inflorescence* cymose; *bract* present. *Calyx* tomentose with golden hair, lanceolate, 4 – 7 lobed. *Corolla* 4 – 7 lobed, pubescent outside, glabrous inside, linear-oblong. *Stamens* 5 – 7, pubescent. *Stylec.* 7 mm long, glabrous.

Flowering & Fruiting: December – May (round the year)

Habitat: Forests

Specimens Examined: Included after Kanjilal *et al.* 1938.

Distribution: India (Assam), Myanmar, Thailand, Vietnam, China

Threat status: Not Evaluated

Cornus L.

C. capitata Wall. in Roxburgh, Fl. India 1: 434. 1820; *Benthamia capitata* var. *khasiana* (C. B. Clarke) H.Hara in J. Arnold Arbor. 29: 115 1948.

Vernacular Name: Not known

Trees or shrubs. Flower buds globose, bracts present. Leaf blade elliptic or oblong-lanceolate, 5 – 12 × 2–3.5 cm, leathery, abaxially pubescent, cuneate at the base, acuminate at the apex. Inflorescence cymes, globose; bracts obovate, 3.5 – 6 × 1.5 – 5 cm. Calyx tube c. 1.2 mm, 4-lobed. Corolla oblong, c. 3 – 4 mm. Styles cylindrical, c. 1.5 mm, densely pubescent. Fruit compressed, pubescent.

Flowering & Fruiting: May – November

Habitat: mixed forests

Specimen Examined: Included after Dutt *et al.* 1974, D. 537.

Distribution: India, Bhutan, China, Myanmar, Nepal

Note: Pulp is sweet and eaten as raw and can be made into jam (website: <http://theindianvegan.blogspot.in/2012/10/all-about-benthams-cornel.html>).

Threat status: Not Evaluated

Nyssa L.

N. javanica Wangerin, Pflanzenr. Nyssac. 15. 1910; Xiang & Boufford in Fl. China 13: 302. 2007. *Agathisanthes javanica* Blume, Bijdr. 645. 1826.

Vernacular Name: Chilauni (H)

Trees, deciduous. Leaves packed near ends of branches; petioles 1.5 – 3.5 cm; leaf blade oblanceolate or oblong-obovate, 10 – 15 × 3 – 5 cm, leathery, slightly cuneate or acute at base, margin entire, acute at apex. Flowers axillary heads, globose; peduncle 1 – 3.5 cm. Calyx campanulate, abaxially hairy; lobes c. 4 – 5 × 1 – 1.5 mm. Corolla 4 – 5 lobed, yellowish or greenish, ovate to obovate, 3 – 5 × 1.5 – 3 mm, tomentose on both surface. Male heads 20 – 40 flowered; pedicels 1 – 4 mm, pubescent. Stamens 8 – 10, in 2 series. Female heads with 3 – 8 sessile flowers; staminodes 8 – 10. Styles 1.5 – 2 mm, 2-lobed at apex. Fruit a drupe, purple, ellipsoid, 1.4 – 2.6 cm.

Flowering & Fruiting: April – October

Habitat: Evergreen forests; 100 – 2500 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 516.

Distribution: Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Vietnam

Note: Fruit is used as raw or cooked. A sweet aroma, but a bitter, acid taste. The juicy flesh surrounding the single seed is eaten. It is sometimes cooked in syrup before consumption (Website: <http://tropical.theferns.info/viewtropical.php?id=Nyssa+javanica>).

Threat status: Not Evaluated

102. BALSAMINACEAE A.Rich.

Impatiens L.

I. tripetala Roxb. ex DC., Prodr. 1: 687. 1824; Hook. f., Fl. Brit. India 1: 470. 1874; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 80. 2003. *Impatiens multiflora* Wall., Numer. List n. 4742. 1831.

Vernacular Name: Not known

Herb, erect. *Stem* swollen at nodes. *Leaves* ca 3 – 10 × 1.5 – 5.0 cm, elliptic – lanceolate, acuminate, cuneate at base, margin serrate. *Flower* pinkish, solitary, axillary. *Calyx* 3 lobed. *Corolla* free. *Capsules* linear – ellipsoid, 5 valved, loculicidal.

Flowering & Fruiting: February – August

Habitat: Common, in moist areas

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11399; Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11465, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Tropical and subtropical India, China, Malaysia

Note: Used to promote appetite and also act as digestive enzyme.

Threat status: Not Evaluated

103. LECYTHIDACEAE Poiteau

1a. Inflorescences erect or pendulous racemes or spikes; petals 4(or 6).....*Barringtonia*

1b. Inflorescence in racemes or interrupted spikes; petals 4.....*Careya*

Barringtonia J.R.Forst. & G.Forst.

B. acutangula (L.) Gaertn., Fruct. Sem. Pl. 2: 97, t. 101. 1791; Clarke in Hook.f. Fl. Brit. India 2: 508. 1878; Kanjilal *et al.*, Fl. Assam 2: 289. 1938; Deb, Fl. Tripura 1: 374. 1981; P. J. Bora & Y. Kumar, Florist. Diversity Assam 155. 2003.

Vernacular Name: Hijal (A)

Evergreen *trees*. *Leaves* simple, alternate, clustered at the tip of branches; *stipules* present; *petiole* 6 – 12 mm long, glabrous; *leaflets* 7 – 18 × 2.5 – 7 cm, oblanceolate, obovate or elliptic-obovate, cuneate or attenuate at base, obtuse or round at apex, margin serrate, glabrous. *Inflorescence* terminal, pendulous racemes. *Flowers* bisexual, 6 – 8 mm across, red; *bracts* deciduous; *calyx tube* campanulate; *calyx* 4-lobed, ovate, acute, imbricate; *corolla* 4-lobed, ovate, imbricate, basally connate. *Stamens* many; *filaments* exerted, filiform, 1.5 cm long, connate at the base. *Ovary* inferior, 2 mm; *style* to 2 cm, filiform; *stigma* small. *Fruit* a berry, 2.5 – 3.8 cm long, oblong-ovoid; *seed* one, ovoid.

Flowering & Fruiting: March – October

Habitat: Along riverbanks

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari, 05.04.2012, A. Bora & D. Bhattacharyya 11729, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Indo-Malesia to Australia.

Note: The scraped bark is squeezed with coconut meat and the juice is drunk daily for treating pneumonia, diarrhoea and asthma. Externally, it is used for poulticing wounds, ulcers, sores, itches etc. The root is considered aperient. The leaves are used to treat diarrhoea

(Website:

<http://tropical.theferns.info/viewtropical.php?id=Barringtonia+acutangula>).

Threat status: Not evaluated

Careya Roxb.

C. arborea Roxb., Pl. Coromandel 3: 14. t. 218. 1811; Clarke in Hook.f. Fl. Brit. India 2: 511. 1878; Kanjilal *et al.*, Fl. Assam 2: 280. 1938; Deb, Fl. Tripura 1: 375. 1981; P. J. Bora & Y. Kumar, Florist. Diversity Assam 155. 2003.

Vernacular Name: Kum, Godhajam (A), Khumbi (H)

Tree, deciduous. *Leaves* simple, glabrous, broadly ovate, in clusters at the end of branches, turns red in winter season. *Inflorescence* terminal spikes. *Flowers* yellowish-white. *Calyx* 4-lobed. *Corolla* 4-lobed. *Stamens* many, connate at the base. *Ovary* inferior, 4 – 5 locular, style 1. *Fruits* large, fleshy, green, glabrous, rounded. *Seeds* several.

Flowering & Fruiting: April – July

Habitat: moist deciduous forest; upto 1600 m

Specimen Examined: Included after Dutt *et al.* 1974, D. 410.

Distribution: India, Sri Lanka, Malaya Peninsula

Note: The fibrous bark has been applied medicinally for relieving body swellings. The juice of the bark and the calices of the flowers are astringent and mucilaginous. They are often used internally in India for treating coughs and colds, and are applied externally as an embrocation. An astringent gum exudes from the fruit and stem (Website: <http://tropical.theferns.info/viewtropical.php?id=Careya+arborea>).

ulcers, sores, itches etc. The root is considered aperient. The leaves are used to treat diarrhoea

(Website:

<http://tropical.theferns.info/viewtropical.php?id=Barringtonia+acutangula>).

Threat status: Not evaluated

104. SAPOTACEAE Juss.

- 1a. Trees with latex.....*Palaquium*
- 1b. Trees or shrubs; without latex2
- 2a. Stamen 8.....*Mimusops*
- 2b. Stamen 5 – 10.....3
- 3a. Leaves alternate; staminodes absent.....*Chrysophyllum*

3b. Leaves alternate or opposite, sometimes closely clustered at end of branchlets; staminodes present.....*Planchonella*

Chrysophyllum L.

C. roxburghii G. Don, *Gen. Hist. 4: 33 1837*; Kanjilal *et al.*, *Fl Assam 3: 189. 1939.*
Chrysophyllum bancanum Miq., *Fl. Ned. Ind., Eerste Bijv. 3: 579. 1861.*

Vernacular Name: Not known

Evergreen *trees*, to 30 m high. *Leaves* simple, alternate, spreading distichously, estipulate; *petiole* 3 – 10 mm long, pubescent; *leaflets* 4 – 17 × 2 – 5 cm, elliptic, oblong, elliptic-oblong, oblong-lanceolate, acute at base, caudate-acuminate at apex, margin entire, glabrous when mature, shiny. *Flowers* bisexual, greenish-white, in axillary fascicles, *pedicels* 3 – 5 mm long, pubescent; *calyx lobes* 5 – 6, 2 × 1.5 mm, imbricate, obtuse; *corolla* campanulate, lobes 5 – 6 tube, 1 mm long, 1.5 mm wide, pubescent at margin; *stamens* 5 – 6, included; *filaments* subulate; *anthers* ovate; *ovary* densely hairy, 5 – 6 locular, superior; *style* short, 1 mm long, glabrous; *stigma* blunt. *Fruit* a berry, globose.

Flowering & Fruiting: April – November

Habitat: wet evergreen forests; up to 1400 m

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Tropical Asia

Note: The roots and leaves are used medicinally (Anonymous, 1994).

Threat status: Not Evaluated

Mimusops L.

M. elengi L., *Sp. Pl. 1: 349. 1753*; Clarke in Hook. f., *Fl. Brit. India 3: 548. 1882*; Kanjilal *et al.*, *Fl Assam 3: 197. 1939.*

Vernacular Name: Bakul (A)

Evergreen *trees*, to 20 m high. *Leaves* simple, alternate, spiral; *stipules* lanceolate, caducous; *petiole* 15 – 40 mm long, pubescent; *leaflet* 4 – 12 × 3.5 – 7.5 cm, elliptic-oblong, round or obtuse at base, obtuse to acuminate at apex, margin entire, glabrous. *Flowers* bisexual, white, fragrant, 1 – 3 in axillary fascicles, *pedicel* 1 cm long; *calyx lobes* 8 in 2 series of 4 each, thick, outer lanceolate, pubescent; *corolla* 9 mm long, lobes with 2 dorsal appendages, corolla 1 cm across; lobes 24, acuminate; *stamens* 8, alternating with pilose staminodes; *filaments* 1 mm, anthers oblong, cordate, 3 mm; *staminodes* lanceolate, acuminate, fimbriate, pilose; *ovary* 0.1 – 0.15 cm long, void; *style* columnar, 5 mm; *stigma* minutely fimbriate. *Fruit* a berry, yellow, ovoid.

Flowering & Fruiting: May – September

Habitat: roadside; up to 1200 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11596, Fl. (Herbarium of Department of Life

Science & Bioinformatics, Assam University, Silchar); also included after Kanjilal *et al.* 1939.

Distribution: India to Hawaii, N. Australia and New Caledonia

Note: The bark, flowers, fruits and seeds are astringent, cooling, anthelmintic, tonic, and febrifuge. It is mainly used in dental ailments like bleeding gums, pyorrhea, dental caries and loose teeth. Extract of flowers used against heart diseases and leucorrhoea (Website: <http://www.motherherbs.com/mimusops-elengi.html>).

Threat status: Not Evaluated

Palaquium Blanco

P. polyanthum Engl., Bot. Jahrb. Syst. 12 (3 – 4): 511. 1890; Kanjilal *et al.*, Fl Assam 3: 195. 1939. *Bassia polyantha* Wall., Numer. List n. 4166. 1831. *Dichopsis polyantha* Benth. & Hook.f., Gen. Pl. 2 (2): 658. 1876.

Vernacular Name: Kurta (A)

Medium-sized tree. *Leaf blades* 6 – 12; *petiole* stout, 2.5 cm long. *Flower* fragrant, cream-coloured, in axillary fascicles; *pedicel* 3.8 cm. *Calyx* 0.8 cm. *Corolla* slightly longer than calyx. *Fruit* obovoid.

Flowering & Fruiting: May

Habitat: Common, forest

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India (Assam), China, Myanmar

Threat status: Not Evaluated

Planchonella Tiegh.

P. grandifolia Pierre, Notes Bot. Sapot. 36.1890. *Lucuma grandifolia* Dubard, Ann. Mus. Colon. Marseille sér. 2, 10: 19. 1912. *Sideroxylon grandifolium* Wall. in Roxb. Fl. India, ed. Carey & Wall. ii. 348. 1824; Kanjilal *et al.*, Fl Assam 3: 191. 1939.

Vernacular Name: Not known

Trees to 40 m tall. *Leaves* alternate; *petiole* 1.4 – 4 cm, glabrous; *leaf blade* oblong-obovate, 10 – 30 × 6 – 10 cm, thin leathery, both surfaces glabrous, cuneate at base, obtuse-acuminate to rounded to obtuse at apex. *Flowers* axillary in clusters of 3 – 10. *Pedicel* 2 – 3 mm, pale yellow pubescent. *Calyx* rounded to broadly ovate, 2.5 – 3 mm, outside pale yellow pubescent, inside glabrous, inner calyx with membranous and fimbriate margin. *Corolla* green, becoming white, 2.5 – 4.5 mm. *Stamens* 1 – 1.5 mm; *staminodes* linear, c. 1 mm, pale yellow pubescent. *Disk* densely pale yellow villous. *Style* c. 2.8 mm. *Fruit* green to greenish brown, globose, glabrous; 2 – 5-seeded

Flowering & Fruiting: Throughout the year

Habitat: rain forests, thickets; 500 – 1200 m

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: NE India, Myanmar, Thailand

Threat status: Not Evaluated

105. EBENACEAE Gürke

Diospyros L.

- 1a. Corolla yellow, urceolate; stamens many.....*D. racemosa*
1b. Corolla white, creamy white or greenish-white; stamen not as above.....2
2a. Leaves oblong-lanceolate or lanceolate, acuminate at the apex.....*D. cacharensis*
2b. Leaves elliptic, usually ovate-oblong, acute or obtuse at the apex.....*D. montana*

D. cacharensis (Das & P. C. Kanjilal) H.B.Naithani, Indian Forester 106 (8): 583. 1980.
Maba cacharensis Das & P. C. Kanjilal, *Assam Forest Rec., Bot. 1: 15* 1934; Kanjilal *et al.*, Fl. Assam 3: 207. 1939.

Vernacular Name: Not known

Small tree. Leaves oblong-lanceolate or lanceolate, acuminate at the apex, margin entire, both surface ciliate, rounded at the base. Flower unisexual, 3-merous. Male flower: inflorescence axillary cymes; bracts present, linear; bracteoles present, smaller than bracts; calyx 3-lobed, ovate; corolla 3-lobed, subequal, abaxially pilose; stamen 6 – 9. Female flower: inflorescence racemes, rarely solitary; bracts present; corolla white, c. 0.5 cm long, 3-lobed, staminodes 3; ovary tomentose, 0.4 cm long; stigma 3-fid. Fruit glabrous, ovoid.

Flowering & Fruiting: April – September

Habitat: Evergreen forest

Specimens examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, East Block, Mamtripahar, 17.07.2011, H. A. Barbhuiya85988 (ASSAM); Included after Kanjilal *et al.* 1939.

Distribution: India (Arunachal Pradesh, Assam, Meghalaya)

Note: Endemic taxa

Threat status: Not Evaluated

D. montana Roxb., Plants of the Coast of Coromandel 1: 37. 1796.
Diospyros auriculata Wight ex Hiern, Trans. Cambridge Philos. Soc. xii. 188. 1873.
Diospyros bracteata Roxb., Hort. Bengal. 93; Fl. Ind. ii. 539. 1832.

Vernacular Name: Kala dhao (H), Tamal (B)

Deciduous tree. Leaves simple, alternate, distichous; petiole to 0.5 – 1.0 cm long, elliptic, usually ovate-oblong, acute or obtuse at the apex, truncate to subcordate or rounded at the base. Flowers unisexual, dioecious, creamy white or greenish-white. Male flowers greenish, in axillary cymes, stamens longer than the flower tube. Female solitary, axillary. Fruit a berry, globose, spherical.

Flowering & Fruiting: March – June

Habitat: in dry to disturbed evergreen forests

Specimen Examined: India, Assam, Cachar dist., April 1877, G. Mann 17558 (CAL).

Distribution: Indian subcontinent, Myanmar, Thailand, Cambodia, Laos, Vietnam, Malaysia, Indonesia, Philippines to Australia

Note: The fruits are applied externally to treat boils (Chopra *et al.*, 1986).

Threat status: Not Evaluated

D. racemosa Roxb., *Fl. India ed. 2: 536 1832*. *Diospyros toposioides* King & Gamble in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 74 (1): 223. 1906.

Vernacular Name: Thing-bong (A)

Dioecious trees. Leaves simple, alternate, stipule absent; petiole 5 – 12 mm long; lamina 10 – 25 × 2 – 8 cm, elliptic or oblong-lanceolate, acute or round at the base, acuminate at the apex. Flowers unisexual, pale yellow. Male flowers: inflorescence cymes; pedicel upto 5 mm long; bract present; bracteole present; calyx rough; corolla yellow, urceolate; stamens many. Female flowers: usually solitary, axillary, pedicel 6 – 10 mm; calyx 4-lobed; corolla yellowish-white, urceolate; 4-lobed; staminodes 12; ovary densely pubescent, 4 – 6-celled; stigma short. Fruit a berry, ovoid-ellipsoid.

Flowering & Fruiting: February – May

Habitat: Semi-evergreen forests

Specimen Examined: India, Assam, Cachar dist., March 1875, G. Mann 41856 (CAL).

Distribution: India and Sri Lanka

Threat status: Not Evaluated

106. PRIMULACEAE Batsch ex Borkh.

Trees, shrubs or rarely herbs; fruit drupaceous.....*Ardisia*

Shrubs or rarely small trees; fruit globose or ovoid berries or drupes.....*Maesa*

Ardisia Sw.

1a. Shrub up to 1.5 m high.....*A. keenanii*

1b. Shrubs or small trees.....2

2a. Leaf blade narrowly elliptic to oblanceolate, 12 – 20 × 2 – 4.5 cm.....*A. neriifolia*

2b. Leaves whorled or crowded at the apex of branchlets, oblanceolate, c. 15 – 29 × 5 – 10 cm.....*A. paniculata*

A. keenanii Clarke in Hook.f., *Fl. Brit. India* 3: 526. 1882; Kanjilal *et al.* *Fl. Assam* 3: 536. 1939.

Vernacular Name: Not known

Shrub up to 1.5 m high; branches densely rusty-villous round. Petiole 0.5 – 0.7 cm long, pubescent; leaf blade oblong 10 – 18 × 2.8 – 5.0 cm, glabrous above, rusty villous beneath, narrowed at both ends, margin slightly dentate or wavy, acute at apex. Inflorescence in lax

pedunculate elongated racemes. *Peduncle* 2.5 – 5.0 cm pubescent, on one branchlet divaricate from near its apex, on the other ascending from a lower axil. *Flowers* 1.3 – 1.4 cm in diam., *budc.* 0.8 × 0.4 cm, *pedicels* 1.8 – 2.5 cm, pubescent. *Calyx* 5, contorted, orbicular, 1.8 – 2 mm, glabrous, green. *Corolla* 5, pink, connate at base ovate, 7 – 8 × 3 – 3.2 mm, apex acute. *Stamens* subequalling corolla; *filamentsc.* 1/5 anther length; *anthers* oblong-lanceolate, glabrous, apex acute. *Carpelc.* 7 – 8 mm, green, ovary glabrous, ovoid, *c.* 1.8 × 1.5 mm, *style* filiform, 5.5 – 6.0 mm.

Flowering & Fruiting: April – September

Habitat: Terrestrial; *c.* 77 m

Specimen Examined: India, Assam, Cachar dist., Barail Wild Life Sanctuary, near Kalaincherra area, 09.04.2011, *H. A. Barbhuiya* 653 (ASSAM).

Distribution: INDIA [Assam (Cachar), Manipur]

Note: Endemic (*Barbhuiya et al.*, 2012).

Threat status: Not Evaluated

A. depressa C.B. Clarke, Fl. Brit. India 3 (9): 522. 1882. *A. neriifolia* Wall. & A. DC., Trans. Linn. Soc. London 17 (1): 118, descr. 1834. *Ardisia floribunda* Roem. & Schult., Syst. Veg., ed. 15 bis 4: 804. 1819; Kanjilal *et al.* Fl. Assam 3: 179. 1939. *Ardisia thyrsoiflora* D. Don, Prodr. Fl. Nepal 148. 1825; Chen & Pipoly, III in Fl. China 15: 17. 1996.

Vernacular Name: Not known

Shrubs or small trees. *Petiolec.* 1 cm; *leaf blade* narrowly elliptic to oblanceolate, 12 – 20 × 2 – 4.5 cm, papery, glossy, cuneate or narrowly decurrent at base, margin entire, long acuminate at apex. *Inflorescences* terminal or subterminal, paniculate, corymbose, 10 – 20 cm. *Flowers* papery, pink or purplish red, *c.* 4 mm. *Pedicele* erect, *c.* 5 mm. *Calyx* ovate to elliptic, 1.3 – 1.5 mm, margin ciliate. *Corolla* free, ovate, 3.8 – 4 mm, margin entire. *Stamens* subequal to corolla; *filamentsc.* 1.5 mm; *anthersc.* 1.5 mm. *Ovary* glabrous; *ovules* numerous. *Fruit* purplish red, globose, often 5-angled.

Flowering & Fruiting: January – December

Habitat: broad-leaved forests, damp places; 200 – 1500 m.

Specimen Examined: India, Assam, Cachar dist., May 1989, *J. C. Prazer* 278538 (CAL); Included after Kanjilal *et al.* 1939.

Distribution: India, China, Myanmar, Nepal, Vietnam

Note: Young leaves eaten as vegetable (Quattrocchi, 2012).

Threat status: Not Evaluated

A. paniculata Roxb., Fl. India, ed. Carey, 1: 580. 1824; Clarke in Hook. f., Fl. Brit. India 3: 519. 1882; Kanjilal *et al.*, Fl. Assam 3: 181. 1939. *Ardisia colorata* Link, Enum. Hort. Berol. Alt. 1: 194. 1821.

Vernacular Name: Not known

Large shrub or small tree. Leaves c. 15 – 29 × 5 – 10 cm, whorled or crowded at the apex of branchlets, oblanceolate, entire, sub-acuminate, glabrous, narrow at the base. Inflorescence terminal. Bracteole present. Flower pinkish, almost glabrous, in panicles terminal. Calyx 5 lobed, c. 0.2 cm long, acute, united. Corolla lobes 5, c. 0.5 cm long, acuminate, united at the base, red dots on the outer side. Stamen 5, filament very short. Ovary superior, 1-celled.

Flowering & Fruiting: Throughout the year

Habit: hill slopes roadside; 70 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11683; Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11605; 11611, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Pantropic

Note: To treat madness, extract of roots of both the plants is given to drink three times a day (Rahman *et al.*, 2007).

Threat status: Not Evaluated

Maesa Forssk.

1a. Scandent shrubs, 1 – 3 m tall.....*M. indica*

1a. Shrubs or rarely trees.....*M. ramentacea*

M. indica (Roxb.) A.DC., Trans. Linn. Soc. London 17 (1): 134. 1834. *Baeobotrys indica* Roxburgh, Fl. India 2: 230. 1824.

Vernacular Name: Awuapat, Machhpora (A)

Shrubs, 1 – 3 m tall, scandent. *Petiole* slightly canaliculate, 1 – 1.8 cm; *leaf blade* broadly ovate to oblong, 8 – 17 × 5 – 9 cm, papery, obtuse or subrounded at base, margin serrate-dentate, acute or acuminate at apex. *Inflorescences* axillary or subterminal, racemose or paniculate; *bracteoles* broadly ovate. *Flowers* white or light yellow-green, c. 2 mm. *Pedicel* 1 – 2 mm. *Calyx* lobes broadly ovate. *Corolla* campanulate. *Stamens* inserted at middle of corolla tube, included; *anthers* rounded. *Pistil* included. *Style* short; *stigma* lobed. *Fruit* globose or subglobose.

Flowering & Fruiting: April – November

Habit: Hillsides, streambanks, damp places; 500 – 2000 m.

Distribution: India, China, Vietnam

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11440; Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11603, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Note: Poultice of the leaf is used to eject pus from boils by the Marma in Chittagong Hill Tracts. Fruits are considered anthelmintic. The roots are given in syphilis (Yusuf *et al.*, 2009).

Threat status: Not Evaluated

M. ramentacea Wall., Fl. India 2: 230. 1824; Chen & Pipoly, III in Fl. China 15: 7. 1996. *Baeobotrys ramentacea* Roxb., Fl. India 2: 231. 1824.

Vernacular Name: Not known

Shrubs or rarely *trees*. *Petiolec.* 1 cm; *leaf blade* ovate to elliptic-lanceolate, 8 – 16 × 2.5 – 5.5 cm, papery, glabrous, rounded, obtuse, to broadly cuneate at base, margin entire or undulate, acute or long acuminate at apex. *Inflorescences* axillary or sometimes subterminal, paniculate, many branched, 4 – 10 cm; *bracts* present; *bracteoles* sparsely ciliate. *Flowers* white, *c.* 2 mm. *Pedicel* 1 – 2 mm. *Calyx lobes* ovate or broadly so, glabrous, ciliate, obtuse or rounded at apex. *Corolla lobes* united, *c.* 1.5 mm, glabrous, reniform, rounded, margin undulate. *Stamens* included, rudimentary in pistillate flowers; *anthers* reniform. *Style* very short; *stigma* minutely 4-lobed. *Fruit* yellowish, globose, 2 – 3 mm.

Flowering & Fruiting: January – December

Habitat: Mountain slopes, stream banks, shady places, along trails; 300 – 1700 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Ditekcherra (on the way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11376, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Vietnam

Note: Leaf juice is given to children with symptoms of diarrhoea by the Marma and Chakma in Chittagong Hill Tracts. Juice is also used in cuts by the Marma (Yusuf et al. 2009).

Threat status: Not Evaluated

107. THEACEAE Mirb. ex Ker Gawl.

- 1a. Trees, evergreen.....*Schima*
- 1b. Shrubs or small trees, rarely large trees, evergreen.....2
- 2a. Bracteoles 2 – 10.....*Camellia*
- 2b. Bracteoles 2.....3
- 3a. Stamens 5 – 35, in 1 whorl.....*Eurya*
- 3b. Stamens 30 – 50, in 1 or 2 whorls.....*Ternstroemia*

Camellia L.

C. oleifera C. Abel, Narr. Journey China 174, 363. 1818; Min & Bartholomew in Fl. China 12: 411. 2007. *Camellia drupifera* Lour., Fl. Cochinch. 2: 411. 1790.

Vernacular Name: Tea-oil camellia (E)

Shrubs or trees, 1 – 8 m tall. *Petiole* 5 – 10 mm, pubescent; *leaf blade* elliptic, oblong-elliptic or obovate, 3 – 10 × 2 – 4 cm, leathery, broadly cuneate to cuneate at base, margin serrate to serrulate, acute to acuminate at apex. *Flowers* axillary or subterminal, solitary or paired, subsessile. *Bracteoles* and *calyx* 8 – 11, caducous. *Corolla* 5 – 7, white, nearly distinct, oblong-obovate, 2.5 – 4.5 × 1.5 – 3 cm, apically 2-parted. *Stamens* 1.5 cm, glabrous. *Ovary* globose, 2 – 3 mm in diam., white tomentose, 3 – loculed; *style* 0.8 – 1.2 cm, glabrous or base tomentose. *Capsule* globose to ellipsoid. *Seeds* brown to reddish brown, globose to semiglobose.

Flowering & Fruiting: December – October

Habitat: on hill slopes; 200 – 1800 m.

Specimens Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, Kalain Range, 17.02.2012, H. A. Barbhuiya 85205 (ASSAM); also included after Dutt *et al.* 1974, D. 237.

Distribution: India (Assam and Manipur), N Laos, N Myanmar, N Vietnam

Note: Oil obtained from the seed is used in cooking (Website: <http://www.pfaf.org/user/Plant.aspx?LatinName=Camellia+oleifera>).

Threat status: Least Concern ver 3.1

Eurya Thunb.

- 1a. Small erect shrub.....*E. stenophylla*
- 1b. Shrubs or trees.....2
- 2a. Petiole 3 – 6 mm, pubescent.....*E. acuminata*
- 2b. Petiole 2 – 5 mm, glabrous.....*E. nitida*

E. acuminata Candolle, Mém. Soc. Phys. Genève. 1: 418. 1822. *Diospyros serrata* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 143. 1825. *Eurya acuminata* var. *wallichiana* Steud., *Fl. Brit India* 1: 285. 1874; Kanjilal *et al.*, *Fl. Assam* 1 (1): 125. 1934.

Vernacular Name: Murmura (A)

Shrubs or small trees. *Petiole* 3 – 6 mm, pubescent; *leaf blade* lanceolate, oblong-lanceolate, or ovate-oblong, 5.5 – 9.5 × 1.5 – 2.5 cm, papery to leathery, cuneate, obtuse or rounded at base, margin serrulate, caudate-acuminate at apex. *Flowers* axillary, solitary or to 3 in a cluster. *Pedicel* 2 – 3 mm, pubescent. *Male flowers*: bracteoles orbicular, c. 1 mm; calyx 2 – 2.5 mm, subleathery, outside pubescent, apex obtuse; corolla oblong to ovate, 3.5 – 4 mm; stamens 15 – 20. *Female flowers*: bracteoles, calyx, and corolla similar to those of male flowers but slightly smaller; ovary globose, glabrous, 3 – loculed; style 2 – 3 mm. *Fruit* globose.

Flowering & Fruiting: November – June

Habitat: Hill slopes; 700 – 3000 m

Specimens Examined: India, Assam, NC Hills dist., Haflong, 30.08.1908, W. G. Craib 48585, Fl. (CAL); included after Dutt *et al.* 1974, D. 341; included after Kanjilal *et al.* 1934.

Distribution: India, Bhutan, China, Indonesia, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Note: A decoction of the leaves is used as a treatment for cholera, diarrhoea and other stomach-diseases. The leaves are applied as a poultice on skin eruptions. (Website: <http://tropical.theferns.info/viewtropical.php?id=Eurya+acuminata>).

Threat status: Not Evaluated

E. nitida Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 4: 115, t. 7. 1841.
Eurya aurescens (Rehder & E.H.Wilson) Hand.-Mazz., Symb. Sin. Pt. VII. 400.1931.
Eurya japonica Thunb. var. *nitida* (Korth.) Dyer, Fl. Brit. India 1(2): 284. 1874.

Vernacular Name: Shining Eurya (E)

Shrubs or trees, 2-5 m tall. *Petiole* 2 – 5 mm, glabrous; *leaf blade* elliptic, oblong-elliptic or obovate-oblong, 3 – 7 × 1.5 – 2.5 cm, leathery, cuneate to rounded at base, margin closely serrulate, crenulate or subentire, obtuse, acute or shortly acuminate at apex. *Flowers* axillary, solitary or to 4 in a cluster. *Pedicel* 2 – 3 mm, slender, glabrous. *Male flowers:* bracteoles suborbicular, c. 1 mm, glabrous; calyx suborbicular to ovate, 1.5 – 2.5 mm, glabrous, apex rounded; corolla obovate, 3.5 – 4 mm; stamens 14 – 20; anthers not locellate; pistillode glabrous. *Female flowers:* bracteoles and calyx similar to those of male flowers; corolla oblong, 2 – 2.5 mm; ovary ovoid, glabrous, 3-loculed; style 1.5 – 3 mm, apically 3-lobed. *Fruit* bluish black when mature, globose. *Seeds* brown.

Flowering & Fruiting: November – January

Habitat: forests, thickets; 500 – 1500 m.

Specimen Examined: Included after Kanjilal *et al.* 1934, N. C. Hills, Dehingi Bank, 25th June 1915, U. N. Kanjilal No. 6780.

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

Threat status: Not Evaluated

E. stenophylla Merr. in Philipp. J. Sci. 21: 502. 1922. *Eurya longistyla* Hung T.Chang in Acta Phytotax. Sin. iii. 53. 1954; Min & Bartholomew in Fl. China 12: 469. 2007.

Vernacular Name: Not known

Small erect shrub. Branchlets and terminal buds glabrous. Petioles, pedicels and calyx glabrous. Petiole 3 – 4 mm; leaf blade 7 – 11 × 1 – 1.5 cm, caudate-acuminate at the apex. Fruits bluish in colour.

Flowering & Fruiting: February – August

Habitat: Abundant, occurring along the stream side

Specimens examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, Kalain Range, 16.02.2012, H. A. Barbhuiya 86008 (ASSAM).

Distribution: India (Assam), China, N Vietnam

Threat status: Not Evaluated

Schima Reinw. ex Blume

S. wallichii (DC.) Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 5: 143. 1842; Min & Bartholomew in Fl. China 12: 422. 2007. *Gordonia wallichii* Candolle, Prodr. 1: 528. 1824.

Vernacular Name: Makria/Noga-bhe (A), Chilauni (B)

Trees 10 – 15 m tall. *Young branches* grayish brown, glabrous. *Petiole* 1 – 2 cm, villous; *leaf blade* elliptic to broadly elliptic, 8 – 17.5 × 4 – 7.5 cm, leathery, broadly cuneate at base, margin entire, bluntly acute at apex. *Flowers* axillary, solitary or to 3 in a cluster, white, fragrant. *Pedicel* 1 – 1.5 cm, pubescent; *bracteoles* 2, caducous. *Calyx* semiorbicular, 1.5 – 2 × 3 – 3.5 mm, outside basally glabrous or puberulent. *Corolla* white, obovate, 1.5 – 2 × c. 1.5 cm, outside basally puberulent, apex rounded. *Stamens* 8 – 10 mm; *filaments* basally adnate with corolla. *Ovary* globose, tomentose but apically glabrous; *stylec.* 7 mm, glabrous; *stigma* 5, capitate. *Capsule* brown, subglobose. *Seeds* reniform with wing.

Flowering & Fruiting: April – December

Habitat: Forests; 300 – 1800 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11422, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

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

Note: Bark is used as fish poison. Wood is used for building purpose.

Threat status: Not Evaluated

Ternstroemia Mutis ex L.f.

T. gymnanthera (Wight & Arn.) Bedd., Fl. Sylv. S. India t. 91. 1871; Min & Bartholomew in Fl. China 12: 432. 2007.

Vernacular Name: False Japanese Cleyera (E)

Shrubs 1.5 – 10 m tall. *Bark* grayish brown, smooth. *Petiole* 0.7 – 1.3 cm, glabrous; *leaf blade* obovate, oblong-obovate or broadly elliptic, 3 – 12 × 1.5 – 5.5 cm, leathery, both surfaces glabrous, cuneate at base, margin entire or apically sparsely serrate, acute to shortly acuminate at apex. *Flowers* axillary, solitary or several clustered on leafless branchlets. *Pedicel* 1 – 1.5 cm, recurved. *Male flowers* similar to bisexual flowers but ovary reduced to a pistillode. *Bisexual flowers:* bracteoles triangular-ovate, 1.5 – 2.5 mm; *calyx* ovate to long ovate, 4 – 7 × 3 – 4 mm, glabrous; *corolla* pale yellow, obovate, 6 – 9 × 4 – 6 mm; *anthers* oblong, longer than filaments; *ovary* ovoid; *style* 1 – 3 mm, apically 2-lobed. *Fruit* purplish red when mature, globose. *Seeds* reniform.

Flowering & Fruiting: May – November

Habitat: Forests, thickets; 200 – 2800 m.

Specimens Examined: Included after Dutt *et al.* 1974, D. 399.

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

Note: Plant is used as ornamental flower.

Threat status: Not Evaluated

108. SYMPLOCACEAE Desf.

Symplocos Jacq.

S. cochinchinensis S. Moore, J. Bot. 52: 148. 1914; Wu & Nooteboom in Fl. China 15. 248. 1996. *Symplocos ferruginea* Roxb., Hort. Bengal. 40; Fl. India ii. 542.1832; Kanjilal *et al.*, Fl. Assam 3: 217. 1934.

Vernacular Name: Garo-bhangra/Mota-bhomlati (A)

Shrubs or trees. *Branchlets* glabrous, puberulent, pubescent or reddish brown tomentose. *Petiole* 0.4 – 2.5 cm; *leaf blade* narrowly elliptic, elliptic or obovate-elliptic, 6 – 27 × 0.9 – 10 cm, abaxially glabrous, pubescent or tomentose, cuneate to rarely rounded at base, margin subentire to glandular dentate, acuminate to acute at apex; *lateral veins* 6 – 14 pairs. *Spikes* 3 – 15 cm, 3 – 5-branched from base; axes, bracts, and bractlets, glabrous, pubescent or tomentose; *bracts* 1 – 3 mm; *bractlets* 1 – 2 mm. *Ovary* 0.5 – 2 mm, glabrous. *Calyx lobes* 1 – 3 mm, glabrous or pubescent. *Corolla* 3 – 5 mm. *Drupes* ampulliform to subglobose 4 – 7 × 4 – 5 mm.

Flowering & Fruiting: November – June

Habitat: margin of evergreen forests; 200 – 3000 m

Specimens Examined: India, Assam, NC Hills dist., Haflong, 24.08.1908, W. G. Craib 283824, Fl. (CAL).

Distribution: India, Australia, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Pacific Islands.

Note: The very young growth is sometimes eaten as a lalab (a vegetable salad) (website: <http://tropical.theferns.info/viewtropical.php?id=Symplocos%20cochinchinensis>)

Threat status: Not Evaluated

109. STYRACACEAE DC. & Spreng.

Styrax L.

S. serrulatus Roxb., Fl. India 2: 415. 1832; Kanjilal *et al.*, Fl. Assam 3: 219. 1939; Huang & Grimes in Fl. China 15. 261. 1996.

Vernacular Name: Not known

Trees 4 – 12 m tall. *Leaves* alternate; *petiole* 3 – 5 mm; *leaf blade* ovate, oblong or ovate-lanceolate, 5 – 14 × 2 – 4 cm, papery, sparsely pubescent or glabrous, broadly cuneate to rounded at base, margin serrate or rarely entire, acuminate to shortly acuminate at apex, *Inflorescences* racemes or panicles, many-flowered, 3 – 10 cm. *Pedice*l 3 – 8 mm. *Flowers* 1 – 1.3 cm. *Calyx* 3 – 4 × 3 – 4 mm, densely pubescent, 5-lobed. *Corolla* outside

puberulous, inside glabrous, tube 2 – 3 mm; lobes oblong-lanceolate, 7 – 9 × 2 – 3 mm. *Stamens* shorter than corolla; *filaments* expanded. *Fruit* ellipsoid to ellipsoid-ovoid. *Seeds* dark brown, smooth.

Flowering & Fruiting: March – November

Habitat: sparse forests; 500 – 1700 m

Specimens examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, Near Bihara area, 09.10.2011, H. A. Barbhuiya 84918 (ASSAM); Included after Kanjilal *et al.* 1939.

Distribution: India, Bhutan, China, Laos, W Malaysia, Myanmar, Nepal, Thailand, Vietnam

Threat status: Not Evaluated

110. ACTINIDIACEAE Engl. & Gilg

1a. Climbing shrubs; stamens numerous.....*Actinidia*

1b. Trees or shrubs; Stamens 15 – 130.....*Saurauia*

Actinidia Lindl.

A. callosa Lindl., Intr. Nat. Syst. Bot., ed. 2. 439. 1836; Li *et al.* in Fl. China 12: 342. 2007.

Vernacular Name: Kiwi vine (E)

Climbing *shrubs*, large, deciduous. *Petiole* reddish, 2 – 8 cm, glabrous; *leaf blade* ovate to broadly ovate to obovate or elliptic, 5 – 12 × 3.5 – 8.5 cm, broadly cuneate to rounded at base, margin serrate to undulate-serrate, acute to acuminate or rounded at apex. *Inflorescences* cymose, 1 – 3-flowered, glabrous or slightly puberulent; *peduncles* 0.7 – 1.5 cm; *pedicels* 1.1 – 1.7 cm. *Flowers* white. *Calyx* 5-lobed, ovate, 4 – 5 mm. *Corolla* 5-lobed, obovate, 8 – 10 mm. *Filaments* 3 – 5 mm; *anthers* yellow, ovoid, 1.5 – 2 mm. *Ovary* subglobose, densely white pubescent; *styles* slightly longer than ovary. *Fruit* subglobose to ovoid.

Flowering & Fruiting: April – October

Habitat: forest margins, slopes, streamsides, moist places; 400 – 2600 m.

Specimens Examined: Included after Dutt *et al.* 1974, D. 187.

Distribution: India, Bhutan, China, Nepal

Note: Fruit is eaten as raw or cooked (Manandhar and Manandhar 2002).

Threat status: Not Evaluated

Saurauia Willd.

1a. Styles 4 or 5, distinct.....*S. cerea*

1b. Style 5, united towards the base.....*S. roxburghii*

S. cerea Griff. ex Dyer, Fl. Brit. India 1 (2): 288. 1875.

Vernacular Name: Not known

Trees 5 – 15 m tall. Branchlets stout. Petiole 1.1 – 3.5 cm, stout, with subulate scales; leaf blade obovate, 17 – 36 × 12 – 20 cm, leathery, abaxially yellowish tomentose when young, glabrous when old, unguiculate-scaly on midvein and lateral veins on both surfaces, lateral veins 23 – 29 pairs, base cuneate, rarely obtuse, margin densely setose-serrate, apex acute. Inflorescences 1-flowered, fascicled on old branches; pedicels to 1.5 cm, somewhat thick, with yellowish indumentum and scales, with 2 bracts below middle; bracts ovate, 5-7 mm, abaxially hairy and scaly. Flowers large, 3.5-4 cm in diam. or larger. Sepals *c.* 1 cm, outer 3 elliptic, inner 2 orbicular, abaxially yellowish tomentose and scaly, adaxially yellowish white puberulent at base. Petals white to pink, purple at base, oblong, *c.* 1.9 × 1.2 cm. Stamens many. Ovary subglobose, yellowish brown tomentose; styles 4 or 5, distinct. Fruit greenish white, depressed-globose, ca. 8 mm in diam., 5-ribbed, yellowish brown tomentose.

Flowering & Fruiting: July – November

Habitat: Along stream bank

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11479, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Myanmar

Threat status: Not Evaluated

S. roxburghii Wall., Pl. Asiat. Rar. (Wallich). 2: 40. 1831; Dyer in Hook. f., Fl. Brit. India 1: 287. 1874; Kanjilal *et al.*, Fl. Assam 1: 128. 1934.

Vernacular Name: Arbeng-thing (B)

Tree small. Tree canopy narrow. *Leaves* 15 – 30 × 7 – 12 cm, elliptic-oblong, acute to acuminate, serrate, glabrous, petiole 2.5 – 4.5 cm long, base rounded, midrib stout. *Flowers* urceolate, *c.* 0.5 cm long, peduncle 0.5 cm long. *Inflorescence* paniced cyme from the axillary part of the fallen leaves. *Calyx* 5 imbricate, *c.* 0.4 cm long; *corolla* 5, connate at the base, *c.* 0.4 cm long. *Flower* pinkish-white. *Stamens* many, filaments attached to the corolla base. *Style* 5, united towards the base.

Flowering & Fruiting: March – August

Habitat: Forest, riverbank; 50 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11606, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, East Himalaya to Myanmar, Bangladesh, Thailand, Cambodia, Vietnam

Note: A leaf infusion is used in baths to treat boils (Rahman, 2007).

Threat status: Not Evaluated

111. ICACINACEAE Miers

Apodytes E.Mey. ex Arn.

A. dimidiata E.Mey. ex Bernh., *Linnaea* 12: 136. 1838; Chen *et al.* in *Fl. China* 11: 508. 2008. *Apodytes benthamiana* Wight, *Icon. Pl. India Orient.* t. 1153 1846.

Vernacular Name: White pear (E)

Shrubs or trees. *Petiole* 1 – 2.5 cm, densely puberulent when young; *leaf blade* elliptic, 6 – 15 × 3 – 7.5 cm, glabrous, cuneate at base, acute or shortly acuminate at apex. *Inflorescence* terminal panicles, densely puberulent. *Flowers* light yellow or white, pubescent. *Calyx* yellow-green, *c.* 0.5 mm. *Corolla* yellow-green, oblong, *c.* 4 × 1 mm. *Filaments* purple-green; *anthers* yellow-green. *Ovary* 1.5 mm, pubescent; *style* 2.5 mm, glabrous. *Fruit* a drupe, green when young, red to black-red when mature, oblong.

Flowering & Fruiting: all seasons

Habitat: dense forests; 500 – 1900 m

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 488.

Distribution: India, China, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand; tropical and subtropical Africa

Threat status: Not evaluated

112. RUBIACEAE Juss.

- 1a. Herbs, subshrubs or herbaceous climbers.....2
- 1b. Shrubs, lianas or trees.....8
- 2a. Corollalobes 5 (or 6).....3
- 2b. Corolla lobes 4 – 5.....4
- 3a. Fruit a capsule.....*Ophiorrhiza*
- 3b. Fruit a berry.....*Massaenda*
- 4a. Ovary 1-celled.....*Acranthera*
- 4b. Ovary 2-celled.....5
- 5a. Fruit schizocarpous or capsular.....6
- 5b. Fruit a capsule.....7
- 6a. Corolla lobes 4, white, pink, lilac or violet.....*Knoxia*
- 6b. Corolla lobes (2-)4(or 5) purple or blue.....*Hedyotis*
- 7a. Inflorescences terminal or sometimes pseudoaxillary, fasciculate, cymose-corymbiform or umbelliform.....*Argostemma*
- 7b. Inflorescences terminal or axillary, sometimes fasciculate or solitary at nodes.....*Oldenlandia*
- 8a. Trees, leaves opposite.....9
- 8b. Plants otherwise.....12
- 9a. Corolla lobes 4 or 5, imbricate in bud.....*Nauclea*
- 9b. Corolla lobes 5, bud not as above.....10

10a. Flowers sessile.....	11
10b. Flowers pedicellate.....	<i>Tarennoidea</i>
11a. Fruit drupaceous.....	<i>Neolamarckia</i>
11b. Fruit capsular.....	<i>Metadina</i>
12a. Stamens 3 – 7.....	<i>Morinda</i>
12b. Stamens not as above.....	13
13a. Ovary 1-celled.....	<i>Ceriscoides</i>
13b. Ovary 2-celled, 2 – 5-celled or 4 – 5-celled.....	14
14a. Stigma variously loded or 4 – 5-lobed.....	15
14b. Stigma 2-lobed.....	16
15a. Ovary 2 – 5-celled.....	<i>Canthium</i>
15b. Ovary 4 – 5 celled.....	<i>Meyna</i>
16a. Shrubs or trees, often armed with spines or spinescent short shoots.....	<i>Catunaregam</i>
16b. Shrubs or trees, unarmed.....	17
17a. Stamen 5.....	18
17b. Stamen 4 or 5.....	20
18a. Fruit drupaceous.....	<i>Chassalia</i>
18b. Fruit capsular.....	19
19a. Calyx deeply 5(or 6)-lobed.....	<i>Hymenodictyon</i>
19b. Calyx limb deeply 5-lobed.....	<i>Neonauclea</i>
20a. Leaves mostly in whorls or opposite.....	21
20b. Leaves not as above.....	25
21a. Ovary 2 or 3-celled.....	22
21b. Ovary 2-celled.....	23
22a. Leaves opposite or occasionally in whorls of 3, without or rarely with domatia.....	<i>Wendlandia</i>
22b. Leaves opposite or infrequently in whorls of 3 or 4, without or sometimes with pubescent domatia.....	<i>Paederia</i>
23a. Ovules 1 or 2 in each cell.....	<i>Pavetta</i>
23b. Ovules 1 in each cell.....	24
24a. Flowers sessile, monomorphic.....	<i>Cephalanthus</i>
24b. Flowers sessile to pedicellate, usually distylous.....	<i>Psychotria</i>
25a. Ovary 2-celled.....	26
25b. Ovary 2 or 3-celled.....	<i>Aidia</i>
26a. Stamen 4.....	27
26b. Stamen 5 (or 6).....	<i>Prismatomeris</i>
27a. Inflorescences terminal on principal stems, cymose to corymbiform or paniculiform, few to many flowered.....	<i>Ixora</i>
27b. Inflorescences axillary, consisting of several- to many-flowered fascicles.....	<i>Discospermum</i>

Acranthera Arn. ex Meisn.

A. tomentosa Hook.f., Fl. Brit. India 3 (7): 92. 1880; Kanjilal *et al.*, Fl. Assam 3: 48. 1939.

Vernacular Name: Not known

Hirsutely tomentose *epiphyte*. *Leaves* 10 – 25 cm, black when dry, rugose; *stipules* broad, acute. *Stem* short cylindrical, very stout, *leaves* elliptic or oblanceolate acute hirsute on both surfaces, *cymes* short-peduncled subtenuinal, *calyx* lobes linear-lanceolate, 1.5 – 2.5 cm. *Corolla* villous, tube funnel-shaped, lobes short rounded, 3.8 cm long, blue, densely villous, *Ovary* long, fusiform. *Berry* 3.8 cm with persistent calyx lobes.

Flowering & Fruiting: July – October

Habitat: Occasionally, forest

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India [Assam (Cachar), Arunachal Pradesh, Meghalaya, Nagaland]; Bangladesh

Note: Endemic taxa

Threat status: Not evaluated

Aidia Lour.

A. densiflora (Benth.) Masam. in Sci. Rep. Kanazawa Univ. iv. 85. 1955.
Randia densiflora Benth., Fl. Hongk. 155. 1861; Kanjilal *et al.*, Fl. Assam 3: 60. 1939.

Vernacular Name: Wild Randa (E), Parsura (Kuki)

Trees. *Leaves* simple, opposite; *stipules* triangular; *petioles* 5 – 12 mm long, glabrous; *leaf blade* 7 – 19 × 1.8 – 6 cm, elliptic, lanceolate, elliptic-oblong, acute at base, acuminate at apex, margin entire. *Flowers* bisexual, white, 6 – 8 × 5 – 6 mm, in leaf opposed cymes; *peduncles* and *pedicels* hairy; *bracts* scaly; *calyx tube* short, lobes 5; *corolla tube* 2 – 2.5 mm long, lobes 5, 8 mm long, lanceolate, tube longer than lobes; *stamens* 5; *anthers* 5 mm long, linear; *ovary* 2-celled, inferior, *ovules* many; *style* slender, hairy; *stigma* bifid. *Fruit* a berry, 6 – 8 mm across, globose.

Flowering & Fruiting: February – August

Habitat: sub-montane forests up to 1200 m altitude

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Andaman Islands, Myanmar, Thailand, Peninsular Malaysia, Sumatra, Borneo

Threat status: Not Evaluated

Argostemma Wall.

A. sarmentosum Wall., Roxb. Fl. Ind., ed. Carey & Wall. ii. 324. 1824.

Vernacular Name: Not known

Succulent *herb*, creeping. *Leaves* opposite decussate, ovate elliptic or rounded, entire, obtuse, smaller 1 – 2 cm and larger up to 10 cm long, adaxially puberulous, abaxially villous on nerves; *petiole* 2 – 3 mm. *Inflorescence* terminal umbel or corymbiform

raceme, 6 – 10-flowered. *Peduncle* 3 – 6 cm long, fleshy, glabrous; *bracts* 3.5 – 4 mm long. *Flowers* white. *Pedicel* 8 – 9 mm long. *Hypanthium* c. 1.5 mm long, 4-lobed, c. 2 mm, ovate, acute, pubescent. *Corolla* 4-lobed, valvate in bud, 7 – 8 × 2.5 – 3 mm, lanceolate, acute, greenish at the base; tube short, *filaments* short, c. 2.5 mm, bent downwards, *anthers* c. 6 mm long. *Ovary* 2-locular, many ovuled; *style* filiform; *stigma* fleshy.

Flowering: August

Habitat: grows on moist shady rocks (Lithophytic)

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Near Bihara, 06.10.2011, H. A. Barbhuiya85184 (ASSAM).

Distribution: India, Bhutan, Pakistan, Sub-Tropical Himalayas

Threat status: Not evaluated

Canthium Lam.

C. glabrum Blume in Cat. Gew. Buitenzorg 45. 1823; Kanjilal *et al.*, Fl. Assam 3: 65. 1939. *Plectronia glabra* Benth. & Hook.f. ex Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 46 (2): 153. 1877.

Vernacular Name: Not Known

Understorey tree up to 18 m tall. *Stipules* c. 3 mm long, pointed triangular. *Leaves* opposite, simple, penni-veined, glabrous. *Flowers* c. 6 mm diameter, white-purplish, with short corolla tube, placed in axillary bundles or small panicles. *Fruits* c. 27 mm long, green-white or yellow-reddish, often 2 – 3-lobed drupe.

Flowering & Fruiting: July – March

Habitat: Occasionally, undisturbed to slightly disturbed mixed forests up to 1700 m altitude.

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, China, Thailand, Peninsular Malaysia, Sumatra, Java, Lesser Sunda Islands, Borneo, Philippines, Celebes

Threat status: Not evaluated

Catunaregam Wolf

C. spinosa (Thunb.) Tirveng. in Bull. Mus. Natl. Hist. Nat., Sér. 3, Bot. 35: 13. 1978. *Randia dumetorum* (Retz.) Poir. in Encycl. Suppl. 2 (2): 829. 1812; Kanjilal *et al.*, Fl. Assam 3: 59. 1939.

Vernacular Name: Mainphal (H), Behmona (A)

Small trees with axillary spines. *Leaves* opposite, upto 4.5 × 2 cm, obovate, obtuse, tomentose below, petiolate; *stipule* ovate, cuspidate. *Flowers* solitary, terminal on lateral branches, pedicellate; *calyx* tube 5 mm long, lobes obovate, hispid; *corolla tube* 6 mm long, broad, densely villous at the base inside; lobes 5 – 12 mm long, obovate, twisted,

white; *stamens* 5, *anthers* sessile at the mouth of the corolla; *ovary* 2 – 6-celled; *ovules* many; *style* 12 mm long, stout; *stigma* fusiform. *Fruit* an obovoid berry; *seeds* many.

Flowering & Fruiting: April – December

Habitat: moist places, Moist deciduous forests

Specimen Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, near Kalaincherra, 08.10.2011, H. A. Barbhuiya85170 (ASSAM); Included after Kanjilal *et al.* 1939.

Distribution: India, Tropical Asia and Africa.

Note: The skin and fruit have useful emetic, diaphoretic and antispasmodic properties. The fruit is useful in cases of acute bronchitis and asthma. (Kapoor, 2001).

Threat status: Not Evaluated

Cephalanthus L.

C. occidentalis L., Sp. Pl. 1: 95. 1753; Kanjilal *et al.*, Fl. Assam 3: 17. 1939. *Cephalanthus pubescens* Raf., New Fl. iii. 5. 1838. *Cephalanthus angustifolius* Lour., Fl. Cochinch. 1: 67. 1790.

Vernacular Name: Common buttonbush, Buttonbush, Button willow (E)

Perennial, *shrub*. *Trunks* are often twisted. *Leaves* in pairs or in threes, petiolate; *leaf blade* up to 8 inches long, ovate to narrower, pointed tip and rounded to tapered at base, smooth margins. *Flowers* small, borne in distinctive, dense, spherical clusters (heads).

Flowering & Fruiting: June – September

Habitat: swamps, around ponds and margins of streams

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, USA, Canada

Note: Common buttonbush is used for erosion control along shorelines. It forms dense stands and its swollen plant base stabilizes the plant. Native Americans used common buttonbush medicinally. Decoctions of the bark were used as washes for sore eyes, antidiarrheal agents, anti-inflammation and rheumatism medications, skin astringents, headache and fever relievers, and venereal disease remedies. The bark was also chewed to relieve toothaches. Roots were used for muscle inflammation and as blood medicines (Website: https://plants.usda.gov/plantguide/pdf/pg_ceoc2.pdf).

Threat status: Not evaluated

Ceriscoides (Hook.f.) Tirveng.

C. campanulata (Roxb.) Tirveng. in Bull. Mus. Natl. Hist. Nat., Sér. 3, Bot. 521, Bot. 35: 16. 1978. *Gardenia blumeana* DC., Prodr. 4: 383. 1830. *Genipa campanulata* Baill., Hist. Pl. 7: 371. 1880; Kanjilal *et al.*, Fl. Assam 3: 54. 1939.

Vernacular Name: Not Known

Deciduous *shrub*, upto 6 m tall. *Leaves* elliptic-ovate or oblanceolate. *Flower* white, dimorphic. *Flowers* of two types apparently confined to separate plants. *Femal sterile flowers* in clusters; *pedicels* to 1 mm; *calyx* cupuliform, glabrous, tube 3 × 3 mm, lobes obsolete; *corolla* narrowly campanulate, yellowish green, tube 8 – 9 × 3 – 4 mm, lobes transversely oblong, 2.2 – 3.6 × 1.8 – 2.3 mm; *Anthers* subsessile, c 4.3 mm, tip exerted; *ovary* abortive; *style* 4.5 mm with fusiform head opposite lower part of anthers. Perfect flowers solitary, differing in prominent, *calyx lobes* oblong to spatulate, 5 × 2.3 mm, *anthers* shorter c. 3.3 mm, though tips exerted; *longer style* with head opposite the whole of the anthers. *Fruit* a berry, subglobose, fleshy, ridged.

Flowering: March

Habitat: Subtropical forest on river banks

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: NE India, Bhutan

Threat status: Not evaluated

Chassalia Comm. ex Poir.

1a. Shrubs, subshrubs or small trees.....*C. curvifloravar. longifolia*

1b. Erect shrub.....*C. staintonii*

C. curviflora (Wall.) Thwaites var. **longifolia** Hook.f., Fl. Brit. India. 3: 177. 1880; Chen & Taylor in Fl. China 19: 88. 2011. *Chassalia longifolia* (Dalz.) K.M.Wong, Tree Fl. Malaya 4: 344. 1989.

Vernacular Name: Not Known

Shrubs, subshrubs or small *trees*. *Leaves* opposite or in whorls of 3, linear, 10 – 30 cm long, 1.5 – 3.5 cm broad, tip long-pointed, glabrous. *Stipules* persistent. *Inflorescence* thyriform to cymose, many flowered, bracteate. *Flowers* bisexual. *Calyx* 5-lobed, truncate or denticulate. *Flowers* white to pink or pale yellow, tubular to funnellform. *Stamens* 5, inserted in corolla tube. *Filaments* short or absent. *Ovary* 2-celled; *stigmas* 2, linear. *Fruit* purple to black, drupaceous, fleshy.

Flowering & Fruiting: May – July

Habitat: forest; et places, forest understories; 100 – 2000 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11477, 11491, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: E and NE India (including Andaman Islands), Bangladesh, Bhutan, Borneo, Cambodia, China, Indonesia, Malaysia, Philippines, Singapore, Sri Lanka, Thailand, Vietnam

Notes: Endemic

Threat status: Not evaluated

C. staintonii (H.Hara) Deb & Mondal in J. Jap. Bot. 57(5): 160. 1982; S. N. Das & S.C. Roy in J. Econ. Taxon. Bot. 5(2): 473. 1984. *Ophiorrhiza staintonii* H.Hara in J. Jap. Bot. 52(12): 358. 1977.

Vernacular Name: Not Known

Erect *shrub*, c. 1 m tall. *Leaves* oblong-lanceolate, 16 – 24 × 3.6 – 5.2 cm, glabrous, cuneate at base, abruptly acuminate at apex; *petiole* 1.5 – 3 cm long. *Stipules* ovate-triangular with bifid apex. *Inflorescence* terminal or axillary, many flowered cymes. *Flowers* whitish-pink, 5-merous. *Calyx* 0.5 – 1 mm long, with prominent nerves; lobes 5, subulate. *Corolla* tubular, 12 – 15 mm long; lobes 5, c. 3 mm long with incurved apex. *Stamens* 5; *filaments* 2 – 3 mm long; *anthers* 3 – 4 mm long. *Ovary* 2-locular; *style* 5 – 15 mm long; *stigma* bifid.

Flowering & Fruiting: May – November

Habitat: Moist places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, West Block, Near Kalaincherra, 08.10.2011, H. A. Barbhuiya 701 (ASSAM).

Distribution: India [Assam (Cachar), Sikkim, West Bengal]; Nepal

Threat status: Not evaluated

Discospermum Dalzell

D. abnorme (Korth.) S. J. Ali & Robbr. in Blumea 35 (2): 300. 1991. *Tricalysia singularis* K.Schum. in Nat. Pflanzenfam. iv. 4. 82. 1891; Kanjilal *et al.*, Fl. Assam 3: 62. 1939.

Vernacular Name: Kakoi-chira (A)

Tree with resin. *Leaves* 7.5 – 17.5 × 2.5 – 6.3 cm, oblong or elliptic-oblong, entire at margin, acuminate at apex, cuneate or acute at base, shining above, pale below. *Petiole* 0.5 – 1.2 cm long. *Stipules* long, acuminate. *Flower* 4-merous, greenish-white, 1.5 cm across; *bracts* present. *Calyx lobes* enlarged after flowering. *Corolla* green, salver-shaped, 4 – 5-lobed, linear-oblong, throat villous. *Stamen* at the mouth of corolla tube; *anthers* exerted. *Ovary* 2-celled; *stigma* spatulate. *Fruit* cherry-like.

Flowering & Fruiting: April – Cold season

Habitat: forest; 1200 m

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India (Assam) to Borneo.

Note: Wood is used as posts (Kanjilal *et al.*, 1939).

Threat status: Not Evaluated

Hedyotis L.

H. scandens Roxb., Fl. Ind. 1: 369. 1820; Hook.f., Fl. Brit. India. 3: 57. 1880; Kanjilal *et al.*, Fl. Assam 3: 37. 1939; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 181. 2003; Chen & Taylor in Fl. China 19: 169. 2011. *Oldenlandia scandens* Kuntze, Revis. Gen. Pl. 1: 292. 1891.

Vernacular Name: Bhedeli-lot (A), Jarmadawai (Jaintia)

Shrubs or herbs, climbing. *Leaves* subsessile to petiolate; *petiole* to 5 mm, glabrous; *blade* drying papery to subleathery, oblong-lanceolate, elliptic-oblong, 5 – 10 × 1.5 – 4 cm, glabrous, acute to cuneate at base, long acuminate at apex; *stipules* fused to petiole bases, 2.5 – 4 mm. *Inflorescences* terminal and usually also in axils of uppermost leaves, cymose to compound-cymose, 2 – 15 cm, densely pilosulous, pedunculate; *peduncles* 2 – 3 cm; *bracts* triangular, 0.3 – 6 mm; *pedicels* 1 – 3 mm. *Flowers* pedicellate, distylous. *Calyx* glabrous; hypanthium portion obconical, *c.* 1 mm; limb 1 – 2 mm, lobed for 1/3 – 1/2. *Corolla* white or yellow, tubular-funnelform to funnelform, outside glabrous or puberulent, inside densely villous in throat and throughout lobes; tube 1 – 2 mm; lobes narrowly spatulate-oblong, 3 – 4 mm, acute. *Anthersc.* 1.2 mm. *Stigmas* 0.3 – 1 mm. *Fruit* capsular, subglobose, ellipsoid. Seeds several, black, angled.

Flowering & Fruiting: July – September

Habitat: Common, shady hill slopes; *c.* 700 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, 15 No. Hill, 12.10.2011, H. A. Barbhuiya 85784, 85783 (ASSAM).

Distribution: India, Bangladesh, Bhutan, China, Myanmar, Nepal, Vietnam

Note: Root used in the treatment of malaria (Jaintia), fever (Vaiphei & Hmar) and leaves are used to remove kidney stone.

Threat status: Not evaluated

Hymenodictyon Wall.

H. orixense (Roxb.) Mabb. in Taxon 31 (1): 66. 1982; Chen & Taylor in Fl. China 19: 176. 2011. *Cinchona orixensis* Roxburgh, Bot. Descr. Swietenia, 21. 1793. *Hymenodictyon excelsum* Wall., Roxb. Fl. India ed. Carey ii. 149. 1824; Kanjilal *et al.*, Fl. Assam 3: 26. 1939.

Vernacular Name: Latikarum (B), Paroli, Bhurkhundi (A)

Trees, deciduous. *Leaves* often grouped near ends of branches; *petiole* 2 – 17 cm; *leaf blade* ovate-elliptic or broadly elliptic, 9 – 22 × 6 – 14 cm, both surfaces pilosulous, acute to obtuse at base, margins entire, shortly acuminate or acute at apex; *stipules* ovate or lanceolate, 5 – 20 mm, densely pilosulous. *Inflorescences* terminal and axillary in uppermost leaves; *basal bracts* 2 – 4. *Flowers* subsessile or pedicels upto 2 mm. *Calyx* densely puberulent; *ovary* subglobose, 1 – 1.5 mm; lobes triangular to elliptic, 1 – 1.5 mm. *Corolla* white or brown; tube 2.5 – 3.5 mm; lobes ligulate to lanceolate, 2 – 2.5 mm, acute. *Style* exerted. *Fruit* a capsule, brown, 1.2 – 3 × 0.5 – 1.1 cm; *seeds* winged.

Flowering & Fruiting: May – December

Habitat: forests at riversides, at field edges, and in valleys; 100 – 1700 m

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Cambodia, China, Indonesia (Java), Kashmir, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam

Note: The bitter bark is used in local medicine as an antiperiodic, astringent and febrifuge. It contains scopoletin and a very bitter glycoside (Website: <http://tropical.theferns.info/viewtropical.php?id=Hymenodictyon+orixense>).

Threat status: Not evaluated

Ixora L.

- 1a. Small tree.....*I. malabarica*
1b. Shrub up to 1m high.....*I. rangonensis*

I. malabarica (Dennst.) Mabb. in Taxon 26 (5 – 6): 539. 1977; T. Hussain & S. R. Paul in J. Econ.Taxon.Bot.,Addit.Ser. 6. 144. 1989.
Chiococca malabarica Dennst., Schlüssel Hortus Malab. 37. 1818. *Ixora lanceolaria* Colebr., Fl. India 1: 397. 1820.

Vernacular Name: Not Known

Small tree, c. 6 m tall. Branches slender, pendulous. Leaves linear-lanceolate, 20 – 22 × 3.5 – 4.5 cm, acuminate at apex, pale beneath; petiole short 0.8 – 1.3 cm long. Stipules adpressed, lanceolate, 6 – 7 mm long. Bracts supporting inflorescence sessile, ovate, 2 – 2.5 × 1.2 – 1.5 cm, sub-acute at apex, cuneate at base. Cymes peduncled, pendulous, pubescent; bracts linear-lanceolate. Pedicels ternate, 1 – 2 mm long, pubescent especially at base. Flower not seen. Fruits greenish turn to reddish, globose, smooth.

Fruiting: June

Habitat: Forest margin

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, East Block, Nimatra Pahar, 04.06.2012, H. A. Barbhuiya 919 (ASSAM).

Distribution: India [Assam (Cachar), Meghalaya, West Bengal, Maharashtra, Karnataka, Tamil Nadu, Goa, Kerala]; Philippines

Threat status: Vulnerable

I. rangonensis Bremek. in Indian Forester lxxxv. 374. 1959; Barbhuiya *et al.* in Taiwania 57 (4): 413. 2012.

Vernacular Name: Not Known

Shrub up to 1m high. Leaves oblanceolate, 20 – 29 × 8 – 9.5 cm, cuneate at base, caudate at apex; petiole 1 – 1.2 cm long. Stipules linear-triangular, c. 1.5 cm long. Bracts supporting inflorescence sessile, ovate, 4 – 4.4 × 1.8 – 2.1 cm. Inflorescence cymose, c. 10 cm long, numerous flowered; bracts linear-lanceolate, 5 – 6 mm long, pubescent. Flowers sessile to pedicellate; pedicels to 2mm long, hispid. Calyx tubec. 2mm long; lobes 4, light brown, ovate, 1 – 2 mm, pubescent. Corolla white, tube 20 – 25 mm long, glabrous; lobes 4, oblong, 4.5 – 5 × 1 – 1.2 mm, rounded at apex. Stamens 4, 0.6 – 1 mm long, glabrous; anthers sub-basifixed. Ovary 2-celled; style slender. Fruit not seen.

Flowering: April – May

Habitat: Hill slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalain Range, Near Kalaincherra, 09.05.2011, H. A. Barbhuiya 659 (ASSAM).

Distribution: India [Assam (Cachar)]; Myanmar

Threat status: Not Evaluated

Knoxia L.

K. sumatrensis (Retz.) DC., Prodr. 4: 569. 1830; Chen & Taylor in Fl. China 19: 185. 2011. *Spermacoce sumatrensis* Retzius, Observ. Bot. 4: 23. 1786.
Knoxia corymbosa Willd., Sp. Pl., ed. 4. 1(2): 582 (–583). 1798.

Vernacular Name: Sumatra Knoxia (E)

Herbs or subshrubs. Leaves opposite, sessile or petiolate; blade elliptic, lanceolate or elliptic-oblong, 3 – 12 × 0.8 – 3.5 cm, both surfaces hispid, acute to cuneate at base, acuminate to cuspidate at apex; stipules persistent, deeply 3 – 5-lobed. Inflorescences congested-cymose to corymbiform, densely strigillose to villosulous, ebracteate. Calyx puberulent or glabrous; ovary ellipsoid, 0.5 – 0.8 mm. Corolla white or purplish red, funnelshaped, outside glabrous; tube 1.5 – 2 mm; lobes triangular. Schizocarps ovoid to ellipsoid.

Flowering & Fruiting: July – November

Habitat: Thickets in open fields of low elevations.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidaha, 03.03.2012, A. Bora & D. Bhattacharyya 11314, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar); India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11338, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar); India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11350, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia, Japan (Ryukyu Islands), Malaysia, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam; Australia

Threat status: Not Evaluated

Mussaenda L.

M. roxburghii Hook. f., Fl. Brit. India 3: 87. 1880; Kanjilal *et al.*, Fl. Assam 3: 46. 1939; Deb, Fl. Tripura 2: 69. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 184. 2003.

Vernacular Name: Wild mussanda (B)

Large erect shrub. Leavesc. 4.5 – 18 × 2.5 – 6.0 cm, oblong-lanceolate, entire, caudate at base, acuminate at apex, pubescent beneath; stipules ovate-lanceolate. Flower orange-

yellow in terminal, corymbose cymes. *Calyx* with one white petaloid sepal. *Corolla* tubec. 2 – 3 cm long, silky hairy outside. *Stamens* 5. *Berries* globose with persistent calyx.

Flowering & Fruiting: April – November

Habitat: In the hilly forest

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11301, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar);

Distribution: India (Arunachal Pradesh, Assam, Meghalaya, Tripura), Tropical Himalayas, Bangladesh, Myanmar, Nepal

Note: Confined to Indo-Nepal, Indo-Burmes and Indo-Bangladesh region. Ornamentally important wild plant (Bora and Kumar, 2003).

Threat status: Not Evaluated

Metadina Bakh.f.

M. trichotoma (Zoll. & Moritzi) Bakh.f. in Taxon 19 (3): 472. 1970; Chen & Taylor in Fl. China 19: 216. 2011. *Adina polycephala* Benth., Fl. Hongk. 146. 1861; Kanjilal *et al.*, Fl. Assam 3: 21. 1939. *Nauclea trichotoma* Zollinger & Moritzi, Syst. Verz. 61. 1846.

Vernacular Name: Not Known

Trees. *Petiole* 3 – 10 mm, glabrous; *leaf blade* lanceolate, elliptic-lanceolate or ovate-oblong, 6 – 20 × 2 – 7 cm, acute to obtuse at base, acute to caudate-acuminate at apex; *stipules* 5 – 8 mm. *Inflorescence* glabrous to densely puberulent; *peduncles* 1.5 – 3 cm. *Calyx* with ovary portion obconic, 0.5 – 1 mm; lobes 1 – 2 mm, narrowly elliptic-oblong, obtuse. *Corolla* outside glabrous; tube 3 – 3.5 mm; lobes triangular-spatulate, *c.* 1 mm. *Stigmas* obconic, *c.* 1 mm. *Fruit* a capsule, obovoid to obconic, *c.* 1.5 mm.

Flowering & Fruiting: April – December

Habitat: forest, streamside; 300 – 1400 m.

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam

Threat status: Not evaluated

Meyna Roxb. ex Link

M. spinosa Roxb. ex Link, Jahrb. Gewächsk. 1(3): 32. 1820. *Vangueria spinosa* Roxb., Fl. India, ed. Carey & Wall., ii. 172. 1824; Kanjilal *et al.*, Fl. Assam 3: 66. 1939.

Vernacular Name: Kutkura (A)

Large *shrub* or small *tree*, spiny. *Leaves* ovate-oblong, opposite or whorled, *c.* 4 – 15 × 2 – 7 cm; stipules connate. *Inflorescence* axillary, cymes, fascicled on a short peduncle. *Flowers* small, greenish-white. *Calyx* 5-toothed. *Corolla* 5-lobed. *Stamen* 5. *Stigma* is 4 – 5-lobed. *Fruit* a cherry, smooth, yellow when ripe, succulent.

Flowering & Fruiting: April – October

Habitat: Occasionally, roadside

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Bangladesh, China, Malaya, Myanmar

Note: The fruit is cholagogue and refrigerant. It is strengthening, helping to expel phlegm and bile. The powdered leaves are considered to be useful in the treatment of diphtheria (Chopra *et al.*, 1986).

Threat status: Not Evaluated

Morinda L.

M. angustifolia Roxb., Pl. Coromandel 3: 32. 1815; Chen & Taylor in Fl. China 19: 222. 2011.

VernacularName: Not known

Erect *shrubs* or small *trees*. *Leaves* opposite; petiole 0.5 – 1 cm; *blade* elliptic-oblong, elliptic or oblanceolate, 15 – 30 × 6 – 10 cm, acute to attenuate at base, acute to acuminate at apex; *stipules* interpetiolar, triangular, 4.5 – 5 mm. *Inflorescence* solitary and leaf-opposed; peduncle 1.5 – 4 cm; many flowered; *bracteoles* subulate. *Calyx* glabrous, c. 1 mm. *Corolla* white, salverform, outside glabrous; tube cylindrical to funnelform, 16 – 33 mm; lobes 5, ovate-lanceolate, 4 – 15 mm, acute. *Ovary* 4-celled. *Drupes* white or black, obovoid to subglobose, 10 – 15 mm.

Flowering & Fruiting: April – October

Habitat: sparse forests; 500 – 1400 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11627; Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11481, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Laos, Myanmar, Nepal, Thailand

Note: Chakma tribe of Tripura use to take decoction of the stem and root to treat urinary diseases. Leaves are used for treating jaundice. Marma tribe believes that root paste and juice is effective against insect bites and fever. In Myanmar leaves are cooked with fish.

Wood used for agricultural implements (Website: <http://indiabiodiversity.org/species/show/266700>).

Threat status: Not Evaluated

Nauclea L.

N. orientalis L., Sp. Pl., ed. 2. 1: 243. 1762. *Sarcocephalus cordatus* Miq., Fl. Ned. India ii. 133. 1856; Kanjilal *et al.*, Fl. Assam 3: 16. 1939.

Vernacular Name: Cheesewood (E), Thing-ka (Kuki)

Medium-sized to tall *tree*, upto 30 m. Stem is not buttressed. *Leaves* cordate, deep green, opposite, 10 – 27 × 6 – 17 cm, *petioles* 2 – 3.5 cm long. *Stipules* large and obovate. *Inflorescence* spherical heads, 3 – 5 cm in diameter. *Flowers* yellowish or orange, *calyx*

difficult to distinguish, *corolla tube* 0.7 – 1 cm long, lobes 5 – 6. *Stamens* 5 – 6, *anthers* sessile at the mouth of the corolla tube, *c.* 1.5 mm long. *Style* and *stigma* white, 1.5 – 1.7 cm long. *Fruit* fleshy, irregularly shaped, many seeds.

Flowering: July – January

Habitat: stream banks; 500 m

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Australia, Indonesia, Malaysia, Thailand

Note: The leaves and bark of *N. orientalis* are used medicinally against abdominal pain, animal bites and wounds. Controls soil loss on riverine areas (Website: http://www.worldagroforestry.org/treedb/AFTPDFS/Nauclea_orientalis.PDF).

Threat status: Not Evaluated

Neolamarckia Bosser

N. cadamba (Roxb.) Bosser in Bull. Mus. Natl. Hist. Nat., B, Adansonia Sér. 4, 6(3): 247. 1984; Chen & Taylor in Fl. China 19: 249. 2011. *Nauclea cadamba* Roxb., Fl. India 2: 121. 1824. *Anthocephalus cadamba* Miq., Fl. Ned. India ii. 135. 1856.

Vernacular Name: Kadam (A)

Trees, deciduous. *Petiole* 20 – 35 mm; *leaf blade* elliptic or oblong-elliptic, 15 – 25 × 7 – 12 cm, shallowly cordate at base on juvenile growth, rounded or truncate on adult growth,. *Calyx* acute at apex; *stipules* lanceolate, 12 – 20 mm, acute. *Inflorescences* with peduncle 2 – 4 cm; *ovary* portion ellipsoid to obovoid, *c.* 1.5 mm; *limb* 3 – 4 mm; lobes oblong to spatulate, obtuse to rounded. *Corolla* yellowish white, funnelform; tube *c.* 10 mm; lobes lanceolate, *c.* 2.5 mm. *Fruiting heads* yellowish green, cylindrical to ellipsoid or obovoid, 2 – 2.5 × *c.* 1 mm, glabrous.

Flowering & Fruiting: June – November

Habitat: broad-leaved forests, streamsides in valleys

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11704 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam

Note: The fruit and inflorescences are reportedly edible. The dried bark is used to relieve fever and as a tonic. An extract of the leaves serves as a mouth gargle. The plant is considered to be astringent, digestive, expectorant and febrifuge. It is used in the treatment of conditions such as ulcers, digestive problems, fevers and vomiting (Website: <http://tropical.theferns.info/viewtropical.php?id=Neolamarckia+cadamba>).

Threat status: Not evaluated

Neonauclea Merr.

N. sessilifolia Merr. in J. Wash. Acad. Sci. 5. 542. 1915; Chen & Taylor in Fl. China 19: 256. 2011. *Nauclea sessilifolia* Roxburgh, Fl. India 2: 124. 1824; Kanjilal *et al.*, Fl. Assam 3: 19. 1939.

Vernacular Name: Not known

Trees. Leaves sessile or subsessile; *petiole* to 5 mm, stout, glabrous; *blade* elliptic-oblong or suborbicular, 5 – 30 × 3 – 15 cm, both surfaces glabrous, rounded to truncate or cordulate at base, obtuse at apex; *stipules* elliptic to obovate, 10 – 30 × 5 – 10 mm. *Flowering heads* solitary; *bracteoles* linear, 1 – 2 mm. *Calyx* with ovary portion obconic, 1 – 1.5 mm; lobes densely pilosulous, 5 – 7 mm. *Corolla* color unknown; tube 5 – 6 mm; lobes deltoid to elliptic, 2 – 3 mm. *Stigma* subglobose, *c.* 0.8 mm. *Capsules* obconic, 8 – 10 mm.

Flowering & Fruiting: July – October

Habitat: thickets or broad-leaved forests on hills; 500 – 800 m.

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Cambodia, China, Laos, Myanmar, Thailand, Vietnam

Note: This plant is used for postpartum recovery in Cambodia (Menaut, 1930).

Threat status: Not Evaluated

Oldenlandia L.

- 1a. Flowers white or faintly pinkish-purplish or purple.....2
- 1b. Flowers white.....3
- 2a. Leaves sessile.....*O. corymbosa*
- 2b. Leaves subsessile to petiolate.....*O. vestita*
- 3a. Leaves sessile; flowers solitary or in pairs, axillary.....*O. diffusa*
- 3b. Leaves sessile to petiolate; flowers glomerulate to congested-cymose, axillary.....*O. verticillata*

O. corymbosa L., Sp. Pl. 1: 119. 1753. *Gerontogea biflora* Cham. & Schltld. in Linnaea 4: 155. 1829. *Gerontogea corymbosa* Cham. & Schltld. in Linnaea 4: 154. 1829. *Gerontogea herbacea* Cham. & Schltld. in Linnaea 4: 154. 1829.

Vernacular Name: Diamond Flower (E), Daman pappar (H)

Annual *herb* with ascending or erect stems, 4-angled. *Leaves* linear-oblong or narrowly elliptic, almost stalkless, 1 – 3.5 cm × 1.5 – 7 mm. Midrib of the leaf is prominently visible. *Inflorescence* cymes in leaf axils. *Flowers* white or faintly pinkish-purplish, slender stalks, 4 – 8 mm long. Flower tube *c.* 2 mm long; *corolla* 4 – lobed. *Stamens* inserted just above the base of the tube. *Capsule* flattened at apex, slightly compressed.

Flowering & Fruiting: August – November

Habitat: Grasslands, cultivated and disturbed ground; from sea level to 1500 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11318, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, widespread through tropical and subtropical Africa; Arabia, subtropical and tropical Asia to New Guinea.

Note: The tender young leaves and stems are cooked with other vegetables. The leaves are pounded, soaked in warm water and the liquid drunk to treat stomach disorders. They are used externally as a poultice to treat sores and sore eyes (Website: <http://tropical.theferns.info/viewtropical.php?id=Oldenlandia+corymbosa>).

Threat status: Not evaluated

O. diffusa (Willd.) Roxb., Hort. Bengal. 11. 1814, nomen; Fl. Ind., ed. Carey & Wall., i. 444. 1820; Fl. Ind., ed. Carey, i. 423. 1832. *Hedyotis diffusa* Willd., Sp. Pl., ed. 4. 1 (2): 566. 1798.

Vernacular Name: Snake-needle Grass, Spreading Hedyotis (E)

Herbs, annual, 50 cm or less. *Leaves* opposite, linear, sessile, 1 – 3 cm long. *Stipules* 2. Flowers solitary or in pairs, axillary, white, small, 3 mm long. *Pedicels* as long as the calyx. *Corolla lobes* are entire. *Ovary* 2-celled. *Fruits* in capsules, loculicidal, ovoid.

Flowering & Fruiting: August – November

Habitat: Common, roadside, moist places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11304, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Indonesia, Japan, Malaysia, Nepal, Philippines, Singapore, Sri Lanka, Taiwan, Province of China, Thailand

Note: The species is one of the herbs most commonly used in traditional Chinese medicine for treating cancer (Yadav and Lee 2006). The following medical uses are ascribed to the species (PFAF 2011); alterative, anodyne, antibacterial, antiinflammatory, antitumor, cardiotoxic, depurative, diuretic, febrifuge, and sedative.

Threat status: Least concern ver 3.1

O. verticillata L., Mant. Pl. 40. 1767. *Hedyotis verticillata* Lam., Tabl. Encycl. i. 271. 1792; Chen & Taylor in Fl. China 19: 172. 2011. *Hedyotis hispida* Roth, Nov. Pl. Sp. 95. 1821.

Vernacular Name: Shrubby false buttonweed (E)

Herbs, upto 30 cm tall. *Leaves* sessile to petiolate; *petiole* c. 2 mm; *leaf blade* narrowly elliptic or linear-lanceolate, 2.5 – 6 × 0.3 – 1.3 cm, adaxially glabrous or scaberulous, acute to obtuse at base, margins often revolute, acute or acuminate at apex; *stipules* triangular to subtruncate, 1 – 3 mm. *Inflorescences* axillary, glomerulate to congested-cymose; *bracts* linear to lanceolate, 1 – 4 mm. *Flowers* sessile to subsessile. *Calyx* densely hispidulous; *hypanthium* c. 1 mm. *Corolla* white, funnellform; *tube* c. 2 mm, glabrous inside. *Anthems* exserted, c. 1 mm. *Stigmatic*. 0.3 mm. *Fruit* capsular, ovoid; seeds numerous.

Flowering & Fruiting: March – November

Habitat: foothills, roadsides, sparse forests; 200 – 1600 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11644, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Indonesia, Japan (Ryukyu Islands), Malaysia, Myanmar, Nepal, Philippines, Singapore, Thailand, Vietnam

Note: A decoction of the plant is drunk as a treatment for dysentery. The aerial parts of the plant are made into poultices and applied for headache, and upon the abdomen of small children as a treatment for stomach-ache (Chopra *et al.*, 1986).

Threat status: Not evaluated

O. vestita Drake. in J. Bot. ix. 211. 1895. *Hedyotis vestita* R. Br. ex G. Don, Gen. Hist. 3: 526. 1834; Chen & Taylor in Fl. China 19: 173. 2011.

Vernacular Name: Hairy starviolet (E)

Herbs, annual or perennial, to 60 cm tall; *stems* flattened, densely villous. *Leaves* subsessile to petiolate; *petiole* 1 – 10 mm, densely villous; *blade* elliptic-lanceolate, 2 – 8 × 0.5 – 3 cm, cuneate to obtuse at base, acute to usually acuminate at apex. *Inflorescences* axillary, congested-cymose, 5 – 20 mm, hirsute, many flowered; *peduncles* 2 – 12 mm; *bracts* subulate, to 1 mm. *Flowers* sessile or subsessile. *Calyx* densely villosulous; *hypanthium* portion turbinate to obconic, c. 0.5 mm; lobes lanceolate to triangular, 0.3 – 1 mm. *Corolla* white or purple, funnellform, outside puberulent; tube 1.2 – 1.5 mm, pubescent in throat; lobes narrowly elliptic to triangular, 0.8 – 1.2 mm. *Anthers* 0.5 – 1 mm, exserted. *Stigma* 0.3 – 0.6 mm, exserted. *Fruit* indehiscent, subglobose.

Flowering & Fruiting: July – November

Habitat: Forest margins, open fields; 400 – 2000 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11439, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indochina, Indonesia, Malaysia, Philippines, Thailand.

Threat status: Not evaluated

Ophiorrhiza L.

O. succirubra King ex Hook.f., Fl. Brit. India. 3: 82. 1880; Deb, Fl. Tripura 2: 75. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 185. 2003; Chen & Taylor in Fl. China 19: 281. 2011.

Vernacular Name: Not Known

Herbs to subshrubs, 65 cm tall, while drying partly red; *stems* glabrous. *Petiole* 0.5 – 2 cm, glabrous to pubescent; *leaf blade* drying papery, lanceolate-elliptic or ovate-elliptic, 5 – 19 × 2.5 – 7 cm, base cuneate, margins entire or undulate, acuminate to caudate at apex; *secondary veins* 8 – 18 pairs; *stipules* caducous, not seen. *Inflorescence* congested-cymose, many flowered, hairy; *peduncle* 1 – 4 cm; *bracts* linear-lanceolate, 6 – 9 mm. *Flowers*

pediciliate, 1 – 1.5 mm. *Calyx* glabrous to pubescent; *hypanthium* c. 1.5 mm; lobes lanceolate-triangular, slightly unequal. *Corolla* pinkish white, tubular-funnelform and swollen at base, outside glabrous; tube 7 – 10 mm, inside glabrous; lobes ovate, c. 2.5 mm. *Fruit* a capsule, mitriform or obcordate, 2 – 3.5 × 6 – 9 mm, pubescent.

Flowering & Fruiting: July – April

Habitat: Moist areas, near the river bank; c. 100 m or more

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11619; Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11489 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Bhutan, China, Myanmar, Nepal

Note: Leaves eaten as vegetable (Bora and Kumar, 2003).

Threat status: Not evaluated

Paederia L.

P. foetida L., Mant. Pl. 52. 1767; Kanjilal *et al.*, Fl. Assam 3: 77. 1939. *Gentiana scandens* Lour., Fl. Cochinch. 1: 171. 1790. *Paederia chinensis* Hance in J. Bot. 16: 228. 1878. *Paederia dunniana* H.Lév., Repert. Spec. Nov. Regni Veg. 10: 146. 1911.

VernacularName: Gandhabhaduliya (B), Vedailota, Paduri-lata (A)

Vines, to 5 m; *stems* glabrous to densely puberulent. *Leaves* opposite or rarely ternate; *petiole* 0.5 – 9 cm, glabrous to densely pilosulous; *blade* drying papery to subleathery, ovate-oblong, lanceolate-elliptic or elliptic, 1 – 21 × 1 – 9 cm, cuneate, rounded or cordate at base, margins flat, acute or acuminate at apex; *stipules* triangular to ovate, obtuse or rarely bifid. *Inflorescences* axillary or terminal, paniculate, thyriform, corymbiform or cymose, pyramidal to rounded; *pedicels* to 1.5 mm. *Flowers* sessile to pedicellate in dichotomous to scorpioid. *Calyx* glabrous to densely puberulent; *hypanthium* ellipsoid, 0.8 – 2 mm; limb deeply lobed; lobes triangular, 0.4 – 1 mm. *Corolla* pale purple, grayish pink, lilac or grayish white, funnelform; tube 5 – 17 × 2 – 6 mm; lobes broadly triangular to ovate, 1 – 2 mm, acute. *Fruit* globose.

Flowering & Fruiting: May – December

Habitat: Forests, forest margins and on mountain slopes; 200 – 2000 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalain Range, 26.11.2014, A. Bora & D. Bhattacharyya 11703, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Borneo, Cambodia, China, Indonesia, Japan, N Korea, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam; also occasionally cultivated, and naturalized in United States (Florida) and perhaps Sri Lanka.

Note: Tender leaves boiled and made into stews or curries (local use).

Threat status: Not Evaluated

Pavetta L.

P. indica L., Sp. Pl. 1: 110. 1753; Kanjilal *et al.*, Fl. Assam 3: 72. 1939. *Ixora indica* Baill., Hist. Pl. 7: 278. 1880. *Ixora paniculata* Lam., Encycl. 3 (1): 344. 1789.

Vernacular Name: Sam-suku (A), Bisophal (B)

Large *shrub* or small *trees*. *Leaves* simple, opposite, decussate; *stipules* broadly lanceolate, intrapetiolar, caducous and leaving scar; *petioles* 0.6 – 1.5 cm long; *lamina* 8.5 – 16.5 × 2.6 – 5 cm, variable in shape, elliptic or obovate or oblanceolate, caudate-acuminate at apex, attenuate at base, margin entire. *Inflorescence* corymbose cymes, terminal; *flowers* white; *pedicel* c. 0.7 cm long. *Fruit* a berry.

Flowering & Fruiting: Not seen

Habitat: Undergrowth in disturbed evergreen to semievergreen forests; up to 900 m

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India and Sri Lanka

Note: Roots are aperient and tonic; frequently prescribed in visceral obstructions; along with ginger and rice water, useful in ascites and renal dropsy. Local fomentation with the leaves is useful in relieving the pain in haemorrhoidal piles (Yusuf *et al.*, 2009).

Threat status: Not Evaluated

Prismatomeris Thwaites

P. tetrandra K. Schum., Nat. Pflanzenfam. iv. 4. 138. 1891. *Octotropis terminalis* C.B. Clarke, J. Linn. Soc., Bot. xxv. 33 t. 17. 1889.

Vernacular Name: Not known

Shrubs or small *trees*. *Petiole* 4 – 15 mm, glabrous; *leaf blade* lanceolate, elliptic, elliptic-oblong, ovate, obovate or oblong-lanceolate, 4 – 18 × 2 – 6 cm, glabrous, cuneate to acute at base, acuminate or acute to obtuse at apex; *stipules* truncate, persistent or deciduous by fragmentation, bilobed, caducous. *Peduncles* fascicled or umbellate, at base with stipuliform bracts; *pedicels* when present 5 – 15 mm. *Flowers* pedunculate or pedicellate. *Calyx* glabrous or sparsely puberulent. *Corolla* white or pale purple, salverform, glabrous outside; tube 14 – 20 mm; lobes 4 or 5, lanceolate, 7 – 10 mm. *Drupe*s subglobose.

Flowering & Fruiting: May – December

Habitat: Forests, thickets; 300 – 2400 m.

Specimen Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, near Kalaincherra, 08.10.2011, H. A. Barbhuiya 85178 (ASSAM); Included after Kanjilal *et al.* 1939.

Distribution: North-Eastern India, Bangladesh, Cambodia, Myanmar, Southern China, South Laos, Sri Lanka, Thailand, Vietnam

Threat status: Not Evaluated

Psychotria L.

1a. Corolla greenish-white tube.....*P. erratica*
1b. Corolla yellow or red brown tube.....*P. monticola*

P. erratica Hook.f., Fl. Brit. India 3 (7): 168. 1880. *Uragoga erratica* Kuntze, Revis. Gen. Pl. 2: 960. 1891.

Vernacular Name: Not known

Shrubs, 1 – 2m tall; *stems* glabrous. *Leaves* oblong-lanceolate or narrowly oblong-elliptic, 6 – 19 × 1.5 – 6 cm, shortly acuminate, attenuate at base; *petioles* 1.5 – 2 cm; *stipules* narrowly ovate. Cymes terminal, subsessile, few flowered, puberulous; *peduncles* 0 – 1.2 cm; *bracteoles*, 1.5 – 2cm; *Calyx* teeth broadly triangular, acute, 1 mm. *Corolla* greenish-white tube, c. 1 mm, lobes ovate, c. 1.75 mm, reflexed. *Fruit* oblong.

Flowering & Fruiting: May – July

Habitat: In shady hilly slopes; 300 – 700 m

Specimen Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, 15 No. Hill, 10.11.2011, H. A. Barbhuiya85178 (ASSAM); Included after Kanjilal *et al.* 1939.

Distribution: India (Assam), Himalaya (Nepal to Bhutan)

Threat status: Not Evaluated

P. monticola Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 41 (4): 315. 1872. *Mapouria fulva* K.Schum., Revis. genr. pl. Neo-Caled. 11. 1894.

Vernacular Name: Not known

Small *shrub*. *Leaves* broadly elliptic, 12 – 25 × 5 – 11cm, acute or shortly acuminate, cuneate at base, pubescent beneath when young, eventually glabrescent; *petioles* 0.5 – 1 cm; *stipules* ovate, acuminate. Cymes usually terminal, compact and dense, 2 – 5cm in flower, densely pubescent; *peduncles* 2 – 4cm; bracteoles linear, obtuse, 4 – 5mm. *Calyx* teeth triangular, acute, 1mm. *Corolla* yellow or red brown; tube 1 – 1.5mm; lobes ovate, acuminate, c. 1.75 mm. *Fruit* oblong.

Flowering: November

Habitat: On hilly slopes

Specimen Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, near Kalaincherra, 08.10.2011, H. A. Barbhuiya85172 (ASSAM)

Distribution: India, Bangladesh, East Himalaya, Myanmar, Thailand, Vietnam

Threat status: Not Evaluated

Tarennoidea Tirveng. & Sastre

T. wallichii (Hook.f.) Tirveng. & Sastre in Mauritius Inst. Bull. 8 (4): 90. 1979; Chen & Taylor in Fl. China 19: 345. 2011. *Randia wallichii* Hook.f., Fl. Brit. India 3 (7): 113. 1880; Kanjilal *et al.*, Fl. Assam 3: 60. 1939.

Vernacular Name: Saphut (Kuki)

Trees. *Petiole* 1 – 3 cm, glabrous; *leaf blade* elliptic-oblong, oblanceolate-oblong or elliptic-lanceolate, 7 – 30 × 2.9 – 9 cm, cuneate to acute at base, margins revolute, obtuse

to acuminate with tip often ultimately obtuse at apex; *stipules* 4 – 10 mm. *Inflorescences* 4 – 12 × 8 – 13 cm; *bracts* lanceolate to spatulate, 1 – 3 mm; *pedicels* 1 – 5 mm. *Calyx* with ovary obconic, *c.* 1 mm, lobes linear to narrowly triangular, 0.5 – 0.7 mm, acute. *Corolla* yellow or white; tube 3 – 4 × *c.* 1.5 mm; lobes spatulate – oblong, 3 – 4 mm, obtuse to rounded. *Fruit* a berry, ovoid to subglobose.

Flowering & Fruiting: March – July

Habitat: Forests at streamsides in valleys or on hills or mountains; 400 – 2200 m.

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Bangladesh, Bhutan, China, Cambodia, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam

Threat status: Not Evaluated

Wendlandia Willd.

W. budleioides Wall. ex Wight & Arn., Prodr. Fl. Ind. Orient. 402 1834. *Wendlandia grandis* Cowan in Notes Roy. Bot. Gard. Edinburgh 16: 261. 1932; Chen & Taylor in Fl. China 19: 359. 2011. *Wendlandia tinctoria* (Roxb.) Candolle var. *grandis* Hook.f., Fl. Brit. India 3: 38. 1880.

Vernacular Name: Not known

Trees, 3 – 4 m tall. *Leaves* opposite; *petiole* 0.5 – 1.5 cm, strigillose; *blade* thickly papery, elliptic-oblong or obovate-oblong, 5 – 17 × 2.5 – 7 cm, cuneate or acute at base, acute or shortly acuminate at apex; *stipules* persistent, 9-12 mm. *Inflorescences* paniculate, ovoid, 9 – 17 × 5 – 15 cm, densely hirsute; *bracts* lanceolate, *c.* 5 mm. *Flowers* sessile. *Calyx* densely pubescent; *hypanthium* portion *c.* 1 mm; limb deeply lobed; lobes lanceolate, 0.5 – 1 mm. *Corolla* white, funnellform, glabrous outside; tube *c.* 4 mm, hirsute inside; lobes triangular, 1 – 1.2 mm. *Anthers* elliptic, *c.* 0.8 mm, partially exerted. *Stigma* 2-lobed. *Fruit* a capsule, subglobose.

Flowering & Fruiting: August – December

Habitat: secondary forests; 700-1300 m

Specimen Examined: *Specimens Examined*: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11424, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

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

Threat status: Not Evaluated

113. LOGANIACEAE R.Br. ex Mart.

Fagraea Thunb.

F. ceilanica Thunb., Kongl. Vetensk. Acad. Nya Handl. 132. 1782; Li *et al.* in Fl. China 15: 338. 2008. *Fagraea obovata* Wall., Roxb. Fl. Ind., ed. Carey & Wall. ii. 33. 1824; Kanjilal *et al.*, Fl. Assam 3: 318. 1939.

Vernacular Name: Perfume Flower Tree (E)

Shrubs or trees. *Stipules* scalelike, *c.* 1 × 4 mm. *Petiole* 1 – 5 cm; *leaf blade* elliptic, ovate or obovate, 5 – 25 × 2 – 10 cm, fleshy or leathery, glabrous, entire at margin. *Inflorescence* terminal, dichasial cymes. *Flowers* solitary. *Calyx* broadly campanulate; lobes ovate to rounded, *c.* 1 cm. *Corolla* white, funnellform; lobes obovate, 2.5 – 3 × *c.* 2 cm. *Stamens* included; *anthers* *c.* 5 – 7 mm. *Ovary* ellipsoid, glabrous, 2-locular. *Style* filiform; *stigma* slightly cup-shaped to peltate. *Fruit* a berry, ovoid or ellipsoid.

Flowering & Fruiting: April – Cold season

Habitat: dense forests; 500 – 1800 m

Specimen Examined: Included after Kanjilal *et al.* 1939.

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

Note: The latex found under the skin of the fruits is often used as an adhesive (Website: <http://tropical.theferns.info/viewtropical.php?id=Fagraea+ceilanica>).

Threat status: Not evaluated

114. APOCYNACEAE Juss.

- 1a. Woody lianas, trailing shrubs or subshrubs.....2
- 1b. Trees, shrubs or herbs.....4
- 2a. Leaves in whorls of 3 or 4.....*Alyxia*
- 2b. Leaves opposite.....3
- 3a. Corona lobes 5.....*Hoya*
- 3b. Corona absent.....*Anodendron*
- 4a. Herbs, erect, perennial and often woody at base, juice watery.....*Catharanthus*
- 4b. Tress, erect or scandent shrubs.....5
- 5a. Leaves alternate.....*Plumeria*
- 5b. Leaves whorled or opposite.....6
- 6a. Corona present.....7
- 6b. Corona absent.....9
- 7a. Trees or shrubs; Style head ovoid.....*Wrightia*
- 7b. Shrubs erect or scandent.....8
- 8a. Styles long; stigma head slightly convex.....*Calotropis*
- 8b. Style short; stigma head convex.....*Periploca*
- 9a. Leaves whorled, rarely opposite.....10
- 9b. Leaves opposite.....11
- 10a. Follicles 2, free or connate.....*Alstonia*
- 10b. Drupes 2, distinct or connate.....*Rauvolfia*
- 11a. Inflorescence cymes terminal or axillary, many flowered.....*Holarrhena*

11b. Inflorescence cymes corymbose or umbellate, many or rarely 1-flowered.....*Tabernaemontana*

Alstonia R.Br.

A. scholaris (L.) R.Br., On the Asclepiadeae 75. 1810; Hook.f., Fl. Brit. India 3: 642. 1882; Kanjilal *et al.*, Fl. Assam 3: 253. 1939; Deb, Fl Tripura 2: 12. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 121. 2003.

Vernacular Name: Sotiona (A)

Trees glabrous. *Leaves* in whorls of 3 – 10; *petiole* 1 – 3 cm. *Inflorescence* dense cyme, pubescent; *peduncle* 4 – 7 cm. *Pedicel* usually equal as calyx. *Corolla* white, tube 6 – 10 mm; lobes broadly ovate or broadly obovate, overlapping to left. *Ovaries* distinct, pubescent. *Seeds* oblong, margin ciliate.

Flowering & Fruiting: June – December

Habitat: Mixed forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, way to Jatinga, 28.02.2015, A. Bora & D. Bhattacharyya 11515, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Cambodia, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam, Australia

Note: Flowers yield an essential oil. Bark is used in the treatment of malaria and dysentery. Wood is used for furnitures, plywood and writing boards.

Threat status: Lower Risk/least concern ver 2.3

Alyxia Banks ex R.Br.

A. fascicularis (Wall. ex G.Don) Hook.f., Fl. Brit. India 3: 636. 1882; Kanjilal *et al.*, Fl. Assam 3: 250. 1939. *Gynopogon fascicularis* (Wall. ex G.Don) K. Schum, Nat. Pflanzenfam. 4 (2): 151. 1895. *Hunteria fascicularis* Wall. ex G.Don, Gen. Hist. 4: 105.1837. *Pulassarium fasciculare* (Wall. ex G.Don) Kuntze, Revis Gen. Pl. 2: 417.1891.

Vernacular Name: Not known

Woody *climber*, glabrous. *Leaves* opposite or in whorls of 3; *petiole* 3 – 5 mm, oblong-elliptic, oblong, or oblanceolate, 6 – 10 × 1.7 – 3 cm, base broadly cuneate, apex caudate-acuminate. *Inflorescence* cymes; *peduncle* short. *Flower* densely arranged; *calyx* ovate; *corolla* tube c. 3 mm, rounded. *Fruit* moniliform.

Flowering: September – November

Habitat: mixed forest

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: NE India, China, Thailand

Threat status: Not Evaluated

Anodendron A.DC.

A. paniculatum A.DC., Prodr. 8: 444. 1844; Hook.f., Fl. Brit. India 3: 668. 1882. *Anodendron lanceolatum* King & Gamble in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 74 (2): 490. 1908. *Anodendron manubriatum* Merr. in Philipp. J. Sci., C 7: 333. 1912.

Vernacular Name: Not known

Woody climber. Leaves opposite decussate, simple, *petiole* c. 1 – 1.5 cm long, leaf elliptic-oblong, ovate, leaf base cuneately round, leaf apex acuminate, leaf length c. 10 – 15 cm × 3.4 – 5.3 cm. *Inflorescence* cymose, terminal or axillary, *bracteoles* present. *Flower* bisexual, white, c. 0.5 – 1 cm long, 5-merous, actinomorphic. *Calyx* 5 lobed, c. 0.1 cm long, acute. *Corolla* lobes 5, overlapping towards left, twisted from right to left, salver-shaped, corolla tube c. 0.3 – 0.9 cm long, *pedicel* c. 0.2 – 0.3 cm long. *Stamen* 5, included, inserted at the base of the corolla tube, narrowly ovate. *Ovary* superior, 2-celled, pistil apex minute, 2 clefts.

Flowering & Fruiting: April – December

Habitat: hilly forests

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11612, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam, E. Africa, China

Note: A strong fibre is obtained from the bark and is used for making nets (Uphof, 1959).

Threat status: Not Evaluated

Calotropis R.Br.

C. gigantea (L.) W. T. Aiton, Hort. Kew., ed. 2. 2: 78. 1811; Hook.f. in Hook.f., Fl. Brit. India 4: 17. 1883; Kanjilal *et al.*, Fl. Assam 3: 282. 1939. *Asclepias gigantea* L. Sp. Pl. 214. 1753.

Vernacular Name: Aakanda (B), Akon, Madar (A)

Shrubs. *Petiole* 1 – 4 mm; *leaf blade* oblong, 7 – 30 × 3 – 15 cm, base cordate, obtuse at apex, tomentose when young, frequently glabrescent. *Inflorescence* umbel-like cymes, with woolly hairs. *Pedicel* c. 2 – 5 cm. *Calyx* flat, 1.2 – 1.5 cm in diam. *Corolla* usually purplish or lilac with pale greenish base, fleshy, glabrous; lobes ovate, 1 – 1.5 × 0.6 – 1 cm, spreading, margin revolute. *Corona* present, shorter than gynostegium. *Seeds* broadly ovate, 5 – 7 × 3 – 4 mm.

Flowering & Fruiting: almost throughout the year

Habitat: dry areas, stream banks

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11562, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam; tropical Africa

Note: A black resin called Madar fluavil, similar to gutta parcha-black acid resin is obtained.

Threat status: Not Evaluated

Catharanthus G. Don.

C. roseus (L.) G. Don, *Gen. Hist.* 4: 95 1837. *Vinca rosea* L. *Syst. Nat.* ed. 10. 944. 1759; Hook. f., *Fl. Brit. India* 3: 640. 1882; Kanjilal *et al.*, *Fl. Assam* 3: 252. 1939.

Vernacular Name: Madagascar Periwinkle (E), Nayantara (B)

Subshrubs or perennial *herbs* to 1 m tall, erect or decumbent. Young *stems* puberulent. *Leaves* obovate or elliptic, 2.5 – 9 × 1 – 3.5 cm, herbaceous, apex minutely apiculate; *lateral veins* 7 – 11 pairs. *Corolla* red to pink or white and then mostly with a pink or less often yellow eye; tube 2.5 – 3 cm, pilose inside, throat villous; lobes broadly obovate, 1.2 – 2 cm. *Follicles* 2 – 3.8 cm × c. 3 mm.

Flowering: Spring – Autumn

Habitat: Roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11557, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Native to Madagascar, cultivated or naturalized in all tropical countries.

Note: In traditional medicine, the periwinkle has been used for relieving muscle pain, depression of the central nervous system, also used for applying to wasp stings and to heal wounds. Its application ranges widely from the prevention of diabetes to treatment of stomach ache (Gajalakshmi *et al.*, 2013).

Threat status: Not Evaluated

Hoya R. Br.

1a. Inflorescence terminal, large umbels; corolla cream coloured, incurved. *H. globulosa*

1b. Inflorescence densely umbellate cymes; corolla white with pinkish centre..... *H. parasitica*

H. globulosa Hook. f. in *Gard. Chron.* I. 732. 1882.

Vernacular Name: Not known

A pendulous fleshy *climber*, stem woody. *Leaves* thick, with green spotted, veined with slight ripple edges. *Inflorescence* terminal, large umbels, 25 – 35 flowers. *Leaves* c. 7.2 – 15 × 4 – 6 cm, oblong-lanceolate, elliptic, apex acuminate, coriaceous, hairy, midvein stout, rounded at base. *Petiole* 1 – 1.5 cm long. *Flower* 3.7 cm long, *pedicel* c. 2.5 cm long. *Calyx* 5-lobed, overlapping, rounded, c. 0.2 cm long. *Corolla* 1.2 cm in across, cream

coloured, incurved. *Corona* 5-lobed, membranous, fleshy, adnate to the stamina column, concave to the upper side. 5 pairs of *pollinia* are present. *Ovary* with 2 carpels.

Flowering & Fruiting: April – July

Habitat: along stream banks

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11460, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (Himalayas, NE India, Darjeeling), Bhutan, Sikkim, Vietnam.

Note: Sometimes this plant is used for ornamental purpose.

Threat status: Not Evaluated

H. parasitica Wall. in Wight, Contrib. Bot. India 37. 1837; Hook.f., Fl. Brit. India 4: 57. 1883; Kanjilal *et al.*, Fl. Assam 3: 305. 1939; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 219. 2003.

Vernacular Name: Chera pata (B)

Epiphytic Climber. *Leaves* 8 – 15 × 5 – 8 cm, thick fleshy, elliptic or oblong, coriaceous, rounded at the base; *petiole* 1 – 1.5 cm long, stout. *Peduncle* 9 cm long stout. *Pedicels* about 2.5 cm long. *Inflorescence* densely umbellate cymes. *Flowers* white with pinkish centre. *Calyx* lobes c. 0.2 cm long, acuminate. *Corolla* rotate. *Follicles* lanceolate.

Flowering & Fruiting: March – October

Habitat: Hilly forest areas

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11516, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Sikkim, Vietnam

Note: Leaves are used for the treatment of Jundice; extract and paste is used to alleviate body pain. Leaves are also given to cows for diarrhoea in Rema-Kalenga (Yusuf *et al.* 2009).

Threat status: Not Evaluated

Holarrhena R.Br.

H. pubescens Wall. & G. Don, Gen. Hist. iv. 78. 1837; Li *et al.* in Fl. China 16: 180. 1995. *Holarrhena antidysenterica* (L.) Wall., Numer. List n. 1672. 1829; Kanjilal *et al.*, Fl. Assam 3: 254. 1939. *Chonemorpha antidysenterica* G. Don, Gen. Hist. iv. 76. 1836.

Shrubs or trees to 10 m tall. Branchlets with whitish, dotlike lenticels. *Petiole* 1 – 5 mm; leaf blade ovate or elliptic, 10 – 24 × 4 – 11.5 cm, membranous, pubescent, rounded at base, acute or obtuse at apex; lateral veins 10 – 15 pairs. *Cymes* 5 – 8 cm; *peduncle* 1 – 2 cm. *Pedicel* 0.3 – 3 cm. *Calyx* elliptic to linear, 2 – 12 mm. *Corolla* white, pubescent, tube 0.9 – 1.9 cm; lobes oblong, 1 – 3 cm. *Anthers* included, narrowly ovate, rounded at base. *Follicles* linear.

Vernacular Name: Dhulkari (A), Kurchi (B)

Flowering & Fruiting: April – December

Habitat: Montane forests; 500 – 1000 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Ditekcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11734, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Laos, Myanmar, Nepal, Thailand, Vietnam; Africa

Note: The bark and roots are used as a remedy for fever and dysentery.

Threat status: Least Concern ver 3.1

Periploca Tourn. ex L.

P. calophylla (Wight) Falc., Proc. Linn. Soc. Lond. 1: 115. 1841. *Streptocaulon calophyllum* Wight, Contr. Bot. India 65. 1834.

Vernacular Name: Pretty-Leaved Silkflower Vine (E)

Leafy twining *shrub*. *Leaves* linear-lanceolate, less than 6 mm broad, gradually acuminate with pointed tip. *Flowers* axillary, sessile in dichotomously branched cymes. *Calyx* five-lobed, lobes free. *Corolla* rotate, c. 5 mm across, 5-lobed. *Corona* corolline, uniseriate, 5-lobed, lobes filiform.

Flowering & Fruiting: March – October.

Habitat: Thickets, mixed forest; 0 – 2100 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, West Block, 15 No. Hill, 12.11.2011, H. A. Barbhuiya 833, 834 (ASSAM).

Distribution: India (Assam, Arunachal Pradesh, Manipur, Meghalaya, Uttar Pradesh, Himachal Pradesh, Jammu & Kashmir, Punjab), Bhutan, Nepal, Sikkim, Vietnam.

Threat status: Not Evaluated

Plumeria L.

P. rubra L., Sp. Pl. 209. 1753. *Plumeria acutifolia* Poir. in Lam., Encycl. Suppl. 2. 667. 1812; Hook.f., Fl. Brit. India 3: 641. 1875; Kanjilal *et al.*, Fl. Assam 3: 252. 1939.

Vernacular Name: Goalanchi (A)

Small *tree*, glabrous. *Branches* thick with tenacious white milky latex. *Leaves* alternate, lanceolate or oblanceolate, spirally arranged at the end of the branches. *Leaf blades* c. 15.2 – 38 cm long, petiole 2.5 – 5.5 cm long. *Inflorescence* compound pedunculate cyme. *Flower* large, fragrant, white with pale yellow centre.

Flowering & Fruiting: June – December

Habitat: roadside, often cultivated

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 24.09.2013, A. Bora & D. Bhattacharyya 11558, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Tropical

Note: Plants used for ornamental purpose. It contains resin guercitin which is used in pectoral syrups.

Threat status: Not Evaluated

Rauvolfia L.

R. serpentina Benth. ex Kurz, Forest Fl. Burma ii. 171. 1877; Li *et al.* in Fl. China 16: 158. 1995. *Ophioxylon album* Gaertn., Fruct. Sem. Pl. ii. 129. 1790. *Ophioxylon obversum* Miq., Fl. Ned. Ind. ii. 405. 1857. *Ophioxylon serpentinum* L., Sp. Pl. 2: 1043. 1753.

Vernacular Name: Indian Snakeroot (E), Sarpagandha (H, B, A), Argamgajao (Dimasa)

Shrubs to 1 m tall, erect, glabrous. *Leaves* grouped near stem apex, in whorls of 3 – 5; *petiole* 1 – 1.5 cm; *leaf blade* narrowly elliptic or obovate, membranous, 7 – 17 × 2 – 9 cm, cuneate at base, acuminate or rarely obtuse at apex; *lateral veins* 7 – 15 pairs. *Cymes* congested; *peduncle* 5 – 13 cm, red or reddish. *Pedicel* and *calyx* red or reddish. *Corolla* white, tube cylindric, 1 – 1.8 cm, inflated at middle and pilose inside distal half; lobes obliquely suborbicular, 1.5 – 3.5 mm. *Stamens* inserted at middle of corolla tube. *Ovaries* connate in basal half. *Drupes* ellipsoid, c. 8 mm.

Flowering & Fruiting: February – December

Habitat: Montane forests; 800 – 1500 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11559 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand

Note: The roots are used as a sedative and in the treatment of hypertension. The bark, leaves, and roots are used against snake and scorpion poisoning. Stem used in the treatment of stomach ache. (Dimasa/Hmar tribe)

Threat status: Not Evaluated

Tabernaemontana L.

T. divaricata (L.) R.Br. ex Roem. & Schult., Syst. Veg., ed. 15 bis 4: 427. 1819; Li *et al.* in Fl. China 16: 153. 1995. *Ervatamia coronaria* (Jacq.) Stapf, Fl. Trop. Afr. 4 (1): 127. 1902. *Ervatamia divaricata* (L.) Burkill in Rec. Bot. Surv. India x. 320. 1925. *Nerium divaricatum* L., Sp. Pl. 1: 209. 1753.

Vernacular Name: Crape Jasmine (E), Chandni (H)

Shrubs or *small trees* 0.5 – 5 m tall, glabrous. *Petiole* 3 – 10 mm; *leaf blade* elliptic, 3 – 18 × 1 – 6 cm, acuminate at apex; *lateral veins* 5 – 17 pairs. *Inflorescence* in cymes, dichotomous, 1 – 8-flowered; *bracts* scalelike. *Flower buds* with an ovoid head, acute or obtuse at apex. *Calyx* lobes ciliate. *Corolla* white, tube 1.5 – 2.7 cm; lobes simple or

double, obovate, $1.5 - 2.7 \times 0.8 - 2$ cm. *Stamens* inserted at basal third of corolla tube. *Follicles* obliquely and narrowly ellipsoid.

Flowering & Fruiting: April – November

Habitat: Sparse forests; 100 – 1600 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11443; Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11689, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Myanmar, Nepal, Thailand; cultivated in tropical and subtropical Asia

Note: The roots are astringent. A decoction is used in the treatment of diarrhoea and various abdominal complaints. An infusion is applied as a remedy for jungle fever. The roots are used in modern medicine to treat hypertension, headache, and scabies. The pounded roots are applied to sore eyes. The root is employed as a local anodyne and chewed for the relief of toothache. The roots, leaves, and flowers are all used in the treatment of snake and scorpion poisoning (Website: <http://tropical.ferns.info/viewtropical.php?id=Tabernaemontana+divaricata>).

Threat status: Not Evaluated

Wrightia R.Br.

W. coccinea Sims, Bot. Mag. 53: t. 2696. 1826; Kanjial *et al.*, Fl. Assam 3: 259. 1939. *Nerium coccineum* Roxb. ex Hornem., Suppl. Hort. Bot. Hafn. 126. 1819.

Vernacular Name: Not known

Trees; branchlets lenticellate, glabrous. *Leaves* elliptic to ovate, $5 - 17 \times 3 - 8$ cm, glabrous or puberulent, base obtuse to acute, apex caudate-acuminate. *Flowers* solitary or cymes; *calyx* broadly ovate, 5 – 9 mm; *corolla* reddish, funnel-shaped; *corona* crimson, cup-shaped. *Anthers* exerted. *Ovaries* connate. *Follicles* linear, connate.

Flowering & Fruiting: January – December

Habitat: dense forest

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, China, Myanmar, Pakistan, Thailand

Note: This plant has been extensively used in Indian systems of medicine such as Ayurveda, Siddha and Unani for the treatment of jaundice, malaria, psoriasis and many other ailments (Khyade and Vaikos, 2014).

Threat status: Not Evaluated

115. BORAGINACEAE Juss.

- 1a. Herbs rarely subshrubs.....*Heliotropium*
1b. Trees or shrubs.....2
2a. Ovary 4-loculed.....*Cordia*

2b. Ovary 2-loculed.....*Ehretia*

Cordia L.

1a. Leavesc. 3 – 18 × 3 – 20 cm, largely ovate to orbicular.....*C. myxa*

1b. Leaves 5 – 20 × 3.8 – 15 cm, ovate or orbicular.....*C. fragrantissima*

C. myxa L., Sp. Pl. 1: 190. 1753; in Hook.f., Fl. Brit. India 4: 136. 1883. *Cordia dichotoma* Forst. Ins. Austr. 18. 1786; Kanjial *et al.*, Fl. Assam 3: 330. 1939; P. J. Bora & Y.Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 222. 2003.

Vernacular Name: Indian cherry (E), Bowal (A)

Large *shrub* or small *tree*. Branches spreading. *Leaves* simpler, alternate; *petiolec.* 0.5 – 4.5 cm long, largely ovate to orbicular, *c.* 3 – 18 × 3 – 20 cm, base rounded, cordate or cuneate, apex rounded or acuminate, margins entire or toothed. *Inflorescence* panicle, terminal or axillary, 3 – 8.5 cm long; *bracts* absent. *Flowers* unisexual, actinomorphic, white to creamy; *male flowers:* calyx 3-lobed, *c.* 4.5 – 5.5 mm long, pubescent inside, glabrous outside, corolla tube 5-lobed, *c.* 3.5 – 5 mm long, elliptical, stamens inserted at corolla throat, ovary rudimentary; *female flower:* calyx *c.* 6 – 8.5 mm long, unequally 3 to 4-toothed, hairy inside, glabrous outside, *corolla tube* 4 – 6 lobed, *c.* 4.5 – 6.5 mm long, elliptical to obovate. *Staminodes* present; *ovary* superior, 4-celled; *stigma* 4, *c.* 4 – 5 mm long. *Fruit* a drupe, mucilaginous.

Flowering & Fruiting: May – December

Habitat: Commn, forest margin

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11777, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Eastern Mediterranean region to eastern India, tropical Africa, tropical Asia, Australia and America.

Note: The bark, leaves and fruit have medicinal properties; they are used variously as diuretics, demulcents and in the treatment of stomach aches, coughs and chest complaints (Uphof, 1959).

Threat status: Not Evaluated

C. fragrantissima Kurz, Prelim. Rep. Forest Pegu App. A. p. xcii.; App. B. 68, in clavi. 1875; Kanjial *et al.*, Fl. Assam 3: 331. 1939. *Cordia rotundifolia* Ruiz & Pav., Fl. Peruv. 2: 24, t. 148. 1799. *Gerascanthus fragrantissimus* (Kurz) Borhidi, Acta Bot. Hung. 34 (3 – 4): 404. 1988. *Lithocardium fragrantissimum* Kuntze, Revis. Gen. Pl. 2: 977. 1891.

Vernacular Name: Bahari (A), Mahidal (B)

Medium sized *tree*. *Leaves* 5 – 20 × 3.8 – 15 cm, ovate or orbicular, margin entire, sparingly hairy; cuneate or rounded at the base. *Petiolec.* 5 – 8.5 cm long. *Inflorescence*

racemes. *Flowers* white, sessile. *Calyx* and *corolla* 4-lobed each, corolla mouth hairy. *Fruit* ellipsoid-obtuse.

Flowering & Fruiting: November – April

Habitat: Occasionally

Specimens Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, Myanmar

Note: A methanol extract of the wood of *Cordia fragrantissima*, collected in Burma (Myanmar) was found to exhibit significant activity against *Leishmania major* (Mori, 2008).

Threat status: Not Evaluated

Ehretia P.Browne

E. acuminata R.Br., Prodr. Fl. Nov. Holland. 497. 1810. *Cordia thyrsoiflora* Siebold & Zucc., Fl. Jap. Fam. Nat. ii. 26. 1846. *Ehretia argyi* H.Lév., Repert. Spec. Nov. Regni Veg. 11: 67. 1912.

Vernacular Name: Koda Tree (E), Bowal gach, gual, pojhar (A)

Trees. *Petiole* c. 1.5 – 2.5 cm, glabrous; *leaves* elliptic to obovate, c. 5 – 13 × 4 – 6 cm, base broadly cuneate, margin serrate, apex acute, apiculate. *Inflorescence* paniculate cymes, 8 – 15 × 5 – 8 cm, short pubescent. *Flowers* packed, aromatic. *Calyx* lobes c. 1.5 – 2 mm, ovate, pubescent. *Corolla* lobes white, campanulate, oblong, c. 3 – 4 mm. *Stamens* exerted; *anthers* c. 1 mm. *Style* 1.4 – 2.5 mm. *Fruit* a drupe, yellow or orange.

Flowering & Fruiting: March – cold season

Habitat: Hills and slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11524, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, Japan, Vietnam; Australia

Note: The leaves and branchlets are used in Chinese medicine (website: <http://tropical.theferns.info/viewtropical.php?id=Ehretia+acuminata>).

Threat status: Not Evaluated

Heliotropium L.

H. indicum L., Sp. Pl. 130. 1753; Clarke in Hook. f., Fl. Brt. India 4: 152. 1883; Deb, Fl Tripura 2: 313. 1983; P. J. Bora & Y.Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 225. 2003.

Vernacular Name: Hatishuria bon (A)

Scabrous *herb* with woody base upto 1 m high. *Leaves* alternate, simple, ovate, serrate or crenate, c. 3 – 10 × 0.8 – 4.0 cm, sparsely hairy. *Flower* whitish blue, sessile in extra axillary spike like long scorpioid cymes. *Calyx* lobes linear, hairy. *Corolla* funnel shaped tube, hairy outside. *Stamens* 5. *Drupe*s ovoid, *Nutlets* compressed, 4-ribbed.

Flowering & Fruiting: April – December

Habitat: Common, along roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Maruwacherra, 24.04.2014, A. Bora & D. Bhattacharyya 11568 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Myanmar and Southeast Asia

Note: Used as an ornamental plant and often planted in gardens (Kissmann and Groth, 1992).

Threat status: Not Evaluated

116. CONVOLVULACEAE Juss.

- 1a. Herbs parasitic.....*Cuscuta*
- 1b. Scandent shrub, herb or lianas.....2
- 2a. Stem twining.....3
- 2b. Stem never twining.....*Evolvulus*
- 3a. Stamens included.....*Merremia*
- 3b. Stamens included or exerted.....4
- 4a. Corolla purple, red, pink or white.....*Argyreia*
- 4b. Corolla variously colored, rarely yellow.....*Ipomoea*

Argyreia Lour.

A. nervosa (Burm.f.) Bojer, Hortus Maurit. 224. 1837; Kanjial *et al.*, Fl. Assam 3: 342. 1939.

Vernacular Name: Bichtarak, Goguli (B), Jomang-pi-danok-soh-ring-kang (Mik.)

Large woody climber. Leaves 11.5 – 18 cm × 7.5 – 14 cm, ovate to sub-orbicular, cordate at base, acute at apex, chartaceous, glabrous adaxially, tomentose abaxially; *petiole* 5 – 11.5 cm long. *Inflorescence* axillary, capitate cyme; *peduncle* 2.5 cm or less. *Calyx* lobes 5 – 7.5 cm long, elliptic-oblong. *Corolla* whitish pink, c. 5 cm long.

Flowering & Fruiting: October – March

Habitat: forest margin, hilly slopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11687, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Pacific islands (Hawaii, New Caledonia, French Polynesia and Tonga), South-Eastern USA (i.e. Florida), Central America (Panama, Belize, Nicaragua and Puerto Rico), Mascarenes (La Reunion) and tropical Africa (Ghana)

Note: Traditionally the leaves are used to prevent conception and antiphlogistic. The leaves are used externally in the treatment of ringworm, eczema, itch and other skin diseases. Seeds are found to possess hypotension, spasmolytic. The root was also used in appetitiser, anaemia, aphrodisiac, anti-inflammatory, brain-tonic, cardiogenic, cerebral disorders,

diabetes, expectorant, obesity, syphilis, tuberculosis, digestive, carminative, emollient, rubifacient, ulcers and wounds (Padhi, 2013).

Threat status: Not Evaluated

Cuscuta L.

C. reflexa Roxb., Pl. Coromandel 2: 3 (t. 104). 1798; Kanjial *et al.*, Fl. Assam 3: 362. 1939.

Vernacular Name: Aakasi lota (A)

Stems yellow or yellowish green. *Inflorescences* many flowered, racemes or panicles, 1.5 – 3 cm; *bracts* and *bractoles* present. *Calyx* copular, 5 lobed, broadly ovate, 2 – 2.5 mm. *Corolla* white or creamy, tubular, 5 – 9 mm. *Stamens* inserted at throat; *filaments* present or absent; anthers elliptic-ovate. *Ovary* ovate-conical. *Style* 1; *stigma*, elongated. *Fruit* a capsule conical-globose.

Flowering & Fruiting: November – February

Habitat: on shrubs, roadside, mixed forest

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 12.12.2015, A. Bora & D. Bhattacharyya 11582, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Afghanistan, China, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Sikkim, Sri Lanka, Thailand

Note: Cuscuta has a high level of flavonoids giving it strong antioxidant properties. It has been found to have positive effects on reproductive health, osteoporosis and alopecia, which is hormonal-induced baldness (Website: <http://www.livestrong.com/article/378755-traditional-uses-of-cuscuta/>).

Threat status: Not Evaluated

Evolvulus L.

E. nummularius L., Sp. Pl., ed. 2. 1: 391. 1762. *Convolvulus nummularius* L., Sp. Pl. 1: 157. 1753.

Vernacular Name: Roundleaf bindweed (E), Bhui akra (B)

Herbs perennial. *Stems* several, rooting at nodes, villous or scabrous. *Leaves* distichous; petiole 2 – 4 mm; *leaf blade* nearly circular, 1.3 – 1.7 × 1.2 – 1.4 cm, glabrous or pilose abaxially, cordate to rounded at the base, rounded or emarginated at the apex. *Peduncle* very short. *Pedicel* densely villous. *Flowers* 1 or 2 per leaf axil. *Calyx* oblong-ovate to oblong, 3 – 4 × 2 – 3 mm, pilose abaxially. *Corolla* campanulate or subrotate, c. 6 mm, 5-lobed. *Stamens* inserted at middle of corolla tube; *filaments* glabrous at the base; *anthers* oblong. *Style* lobes linear. *Capsule* ovoid.

Flowering & Fruiting: Through out the year

Habitat: Roadsides, wastelands and grass fields from plains; upto 500 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11533, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Naturalized in India and Malaysia; Africa, native in North and South America

Note: Grown in gardens as ornamental plant. A good soil binder. Honey bees forage on the flowers. (Website: <http://indiabiodiversity.org/species/show/229742>)

Threat status: Not Evaluated

Ipomoea L.

- 1a. Corolla greenish white, white, pink or lilac.....2
- 1b. Corolla not as above.....3
- 2a. Stamens exerted.....*I. alba*
- 2b. Stamens unequal, included.....*I. aquatica*
- 3a. Corolla yellowish, throat purplish.....*I. obscura*
- 3b. Corolla pink to red, red or orange.....4
- 4a. Leaves 3.8 – 7.5 cm long.....*I. rubriflora*
- 4b. Leaves 7.5 – 12.5 cm long.....*I. quamoclit*

I. alba L., Sp. Pl. 1: 161. 1753; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 229. 2003. *Ipomoea bonanox* L., Sp. Pl. ed. 2: 228. 1762; Clarke in Hook. f., Fl. Brit. India 4: 197. 1883. *Calonyction bona-nox* (L.) Boj., Host. Maurit. 227. 1837; Clarke in Kanjilal *et al.*, Fl. Assam 2: 330. 1938.

Vernacular Name: Moon flower vine (E)

Twining *herbs* annual or perennial with milky sap. *Leaf blade* ovate, 10 – 20 × 5 – 16 cm, cordate base, entire at the margin, acuminate or mucronulate at the apex. *Inflorescences* cymes; *bracts* early deciduous, small. *Flowers* nocturnal, fragrant. *Calyx* elliptic to ovate, leathery. *Corolla* greenish white, salverform; tube 7 – 12 cm, 5-lobed. *Stamens* exerted. *Ovary* conical, glabrous. *Stigma* 2-lobed. *Fruit* a capsule, ovoid.

Flowering & Fruiting: February – August

Habitat: disturbed areas, road side

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11622; Kalaincherra, 26.11.2014, A. Bora & D. Bhattacharyya 11511, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: China, naturalized in Indonesia, Japan, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand; Pacific Islands, native in North and South America

Note: The whole herb is used in treating snakebite (Fang & Staples, 1995).

Threat status: Not Evaluated

I. aquatic Forssk., Fl. Aegypt.-Arab. 44. 1775; ed. 2: 228. 1762; Clarke in Hook. f., Fl. Brit. India 4: 210. 1883; Kanjilal *et al.*, Fl. Assam 3: 348. 1939; P. J. Bora & Y. Kumar, Fl. diversity of Assam: Study of Pabitora Wildlife Sanctuary 229. 2003.

Vernacular Name: Kalmou (A)

Herbs annual. *Leaf blade* ovate-lanceolate, oblong or lanceolate, 3.5 – 17 × 0.9 – 8.5 cm, cordate at the base, entire or undulate at the margin, acute or acuminate at the apex. *Inflorescences* 1 – 5 flowered; base pubescent; *bracts* present. *Corolla* subequal, glabrous; outer 2 ovate-oblong, 7 – 8 mm; inner 3 ovate-elliptic, c. 8 mm. *Corolla* white, pink, or lilac, *funnel* form, 3.5 – 5 cm, glabrous. *Stamens* unequal, included. *Ovary* conical. *Stigma* 2-lobed. *Fruit* a capsule, ovoid to globose.

Flowering & Fruiting: August – February

Habitat: Marshy habitats

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kayang River, 12.12.2013, A. Bora & D. Bhattacharyya 11583, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Australia, Pacific Islands, South America

Note: In India the fresh leaves and stems are a laxative (rich in iron) and are taken in gastric disorders of alimentary canals. It is commonly used as food plants in Asia (Gupta, 2013).

Threat status: Least concern ver 3.1

I. obscura (L.) Ker Gawl., Bot. Reg. 3: t. 239. 1817. *Convolvulus obscurus* L., Sp. Pl., ed. 2. 1: 220. 1762.

Vernacular Name: Chhagalkuri (B)

Slender twining herbs. Leaves 2.5 – 6 × 2 – 4 cm, ovate to cordate, base cordate, apex acuminate, pubescent or glabrescent on both surfaces; petiole to 3 cm long. Flowers solitary or in subumbellate cymes; pedicel to 1 – 1.5 cm long. Sepals 4 – 8 mm long, ovate-lanceolate, apex acute-apiculate. Corolla yellowish, throat purplish, 1.5 – 2.5 cm long, c. 2.5 cm across, campanulate. Stamens 5, villous at base. Ovary c. 1.5 mm long, conical; stigma capitate. Capsule 6-8 mm across, subglobose, apically beaked. Seeds c. 5 mm long, ovoid, black, thinly pubescent.

Flowering & Fruiting: October – March

Habitat: Degraded forest areas, plains; 1400 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, near Gumra, 11.09.2010, H. A. Barbhuiya 85065, Fl. (ASSAM).

Distribution: India, China, Tropical Asia, Africa

Note: Leaves cooked and eaten as a vegetable or added to soups. The leaves are mucilaginous, with a pleasant smell. A root decoction is drunk against dysentery (Website: <http://tropical.theferns.info/viewtropical.php?id=Ipomoea+obscura>).

Threat status: Not Evaluated

I. quamoclit L., Sp. Pl. 1: 159. 1753. *Convolvulus pennatifolius* Salisb., Prodr. Stirp. Chap. Allerton 124. 1796. *Convolvulus quamoclit* (L.) Spreng., Syst. Veg. (ed. 16) 1: 591. 1824.

Vernacular Name: Cypress vine (E), Kamalata/Kunja lota (B)

A slender annual, *twiner*. *Leaves* simple, alternate, 7.5 – 12.5 cm long, pinnately cut, up to the midrib into many pairs of linear to filiform patent segments. *Flowers* 1 to few in axillary cymes. *Calyx* 5-lobed. *Corolla* 5-lobed, pink to red, salver-shaped, red, tube 2.5 – 3.5 cm long. *Stamen* 5. *Capsule* ovoid c. 1 cm long.

Flowering & Fruiting: June – December

Habitat: forest margins; 1500 m

Specimens Examined: India, Assam, Cachar dist., Silchar neighbourhood, August 1903, A. T. Gage CAL 0000009781, Fl. (CAL).

Distribution: Native to Central America, probably Mexico, presently spreading all over the world in tropical and subtropical regions

Note: The plant is considered cooling and purgative; used in cancer and Brest pain. Pounded leaves are applied to bleeding piles and as a plaster to carbuncles (Yusuf *et al.* 2009).

Threat status: Not Evaluated

I. rubriflora O'Donnell in Lilloa 29: 79. 1959. *Convolvulus coccineus* Salisb., Prodr. Stirp. Chap. Allerton 124. 1796. *Ipomoea coccinea* L., Sp. Pl. 1: 160. 1753.

Vernacular Name: Not known

Herbaceous *climber*. *Leaves* 3.8 – 7.5 cm long, ovate-cordate, acute at the apex. *Corolla* large, salver-shaped, c. 3.5 cm long, red to orange. *Seeds* pubescent.

Flowering & Fruiting: July – November

Habitat: Hilly slopes

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11414; Bhaluknala, Durbintila, 26.02.2016, A. Bora & D. Bhattacharyya 11539, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Native to the southwestern U.S. and tropical America

Note: Cultivated as an ornamental plant.

Threat status: Not Evaluated

MerremiaDennst. ex Endl.

M. hirta (L.) Merrill, Philipp. J. Sci. 7: 224. 1912. *Convolvulus hirtus* L., Sp. Pl. 1: 159. 1753.

Vernacular Name: Not known

Herbs, twining. *Stems* rooting at nodes or internodes. *Petiole* 1 – 10 mm; *leaf blade* linear, oblong-lanceolate, ovate-oblong or ovate, 1.9 – 6 × 0.5 – 2.5 cm, truncate, rounded, at base, margin entire, obtuse and acute at apex. *Inflorescences* 1 – 8 flowered; *peduncle* filiform, 1.5 – 6 cm; *bracts* ovate, glabrous. *Pedicel* glabrous. *Calyx* elliptic-oblong, unequal. *Corolla* pale yellow or whitish, broadly funnelform, 1 – 1.8 cm. *Stamens* included. *Ovary* glabrous. *Capsule* broadly ovoid to globose.

Flowering & Fruiting: March – July

Habitat: Open grasslands, cultivated fields, roadsides, thickets, forest margins; 0 – 1000 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Tiprapunji, 11.03.2012, A. Bora & D. Bhattacharyya 11584, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam; N Australia

Note: Used medicinally to treat arthritis (Fang & Staple, 1995).

Threat status: Not Evaluated

117. SOLANACEAE Juss.

- 1a. Herbs annual or perennial.....*Physalis*
- 1b. Herbs, shrubs, climbers or small trees.....2
- 2a. Fruit a dry capsule; ovary 2 – 4-locular.....*Datura*
- 2b. Fruit a berry; Ovary 2 – 5-locular.....*Solanum*

Datura L.

- 1a. Undershrub; corolla white.....*D. metel*
- 1b. Herbs or subshrubs; Corolla white or pale purple, greenish at base.....*D. stramonium*

D. metel L., Sp. Pl. 179. 1753; Deb, Fl. Tripura 2: 238. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 235. 2003. *Datura fastuosa* L., Syst. Nat. ed. 10: 932. 1732; Hook. f., Fl. Brit. India 4: 242. 1883; Kanjilal *et al.*, Fl Assam 3: 373. 1939.

Vernacular Name: Dhutra (B)

Undershrub, stout. *Leaves* acute, ovate-lanceolate, sinuate or obtusely lobed or toothed.

Flower white, c. 17 cm long, solitary, axillary, erect. *Calyx* c. 6 cm long; lobes acuminate.

Corolla white; lobes with acuminate tips. *Capsule* globose, spinous.

Flowering & Fruiting: November – March

Habitat: Common, along roadside

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11647, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Malaya, Tropical Africa

Note: The leaves and roots are bruised, mixed with water and left to stand for several hours. The liquid is then drawn off and drunk. This is a highly narcotic drink, producing a stupefying effect that it is not easy to remove. The plant is widely used as a pesticide. The leaves are used to dye cloth green (Website: <http://tropical.theferns.info/viewtropical.php?id=Datura+metel>).

Threat status: Not Evaluated

D. stramonium L., Sp. Pl. 1: 179. 1753; Kanjilal *et al.*, Fl Assam 3: 373. 1939; Zhang *et al.* in Fl. China 17: 330. 1998.

Vernacular Name: Jimson Weed (E)

Herbs or subshrubs, 0.5 – 1.5 m tall. *Petiole* 3 – 5.5 cm; *leaf blade* broadly ovate, 8 – 17 × 4 – 14 cm, glabrescent, asymmetric, cuneate, dentate-lobed at base, acuminate at apex. *Flowers* erect. *Pedicel* 5 – 12 mm. *Calyx tubular*, 5 – angular, 3 – 5 cm. *Corolla* white or pale purple, greenish at base, funnelform; lobes 6 – 10 cm, mucronate at apex. *Filaments* 3 cm; *anthers* 3 – 4 mm. *Fruit* a capsule, erect, globose or ovoid, with copious prickles. Seeds black, ovate.

Flowering & Fruiting: June – November

Habitat: roadsides, grasslands; 600 – 1600 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalain Range, 26.11.2014, A. Bora & D. Bhattacharyya 11595, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, native of Mexico, now worldwide

Note: *D. stramonium* is now used to treat asthma, and gastrointestinal problems, also aches, abscesses, arthritis, boils, headaches, hemorrhoids, rattlesnake bites, sprains, swellings, and tumors (Sandoval, 1998).

Threat status: Not Evaluated

Physalis L.

P. minima L., Sp. Pl. 183. 1753; Clarke in Hook. f., Fl. Brit. India 4: 238. 1883; Deb, Fl. Tripura 2: 242. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 236. 2003. *Physalis minima* L. var. *indica* (Lamk.) Clarke in Hook. f., Fl. Brit. India 4: 238. 1883.

Vernacular Name: Rasbhari/Ban Tipariya/Chirpati (H), Bantepariya (B)

Erect branched *herb*, stem pubescent. *Leaves* membranous, ovate, acute or obtuse, rounded at the base, c. 1 – 12 × 0.5 – 6.0 cm. *Flowers* pale yellow, solitary, axillary, small. *Calyx*

pubescent, acute, campanulate. *Corolla* yellow, pubescent outside. *Stamens* 2 cm long. *Berries* globose.

Flowering & Fruiting: October – March

Habitat: Common, in moist shady places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11442, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Tropical Asia, Africa, Australia

Note: All parts of the plant are used as a diuretic and antipyretic. The fruit is said to be alterative, appetizer, bitter, diuretic, laxative and tonic (Parmar & Kaushal, 1982).

Threat status: Not Evaluated

Solanum L.

- 1a. Herbs, annual or perennial.....2
- 1b. shrubs, undershrubs or small trees.....3
- 2a. Corolla white.....*S. nigrum*
- 2b. Corolla blue.....*S. xanthocarpum*
- 3a. Flowers small, white, in clusters.....*S. torvum*
- 3b. Flowers violet, in axillary short cymes.....*S. violaceum*

S. nigrum L., Sp. Pl. 1: 186. 1753; Clarke in Hook. f., Fl. Brit. India 4: 229. 1883; Kanjilal *et al.*, Fl. Assam 3: 366. 1939; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 237. 2003.

Vernacular Name: Black-berry night shade (E), Mokoi (H)

Herbs annual, erect, pubescent. *Stems* angular, sparsely pubescent. *Petiole* 2 – 5 cm; *leaf blade* ovate, 4 – 10 × 3 – 7 cm, pubescent or glabrescent, cuneate, decurrent or entire at base, obtuse at apex. *Inflorescences* extra-axillary umbels. *Pedicel* 0.8 – 1.2 cm. *Calyx* cup-shaped, 2 – 3 × 2 – 3 mm; lobes subdeltate, 0.5 – 1 × 1 – 1.5 mm, ciliate. *Corolla* white, 8 – 10 mm; lobes ovate-oblong, 4 – 5 × 3 – 3.5 mm, pubescent abaxially. *Anthers* oblong, 2.5 – 3.5 mm. *Style* 5 – 6 mm. *Fruit* a berry, dull black, globose. *Seeds* discoid.

Flowering & Fruiting: May – November

Habitat: Roadside; 600 – 3000 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalain Range, 26.11.2014, A. Bora & D. Bhattacharyya 11594, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, SW Asia, Europe

Note: The plant is anti-inflammatory, antihepatic, antioxidant and anti-hyperlipidemic. It is proved that ancient people used this as medicine and drug. The herb is diuretic, diaphoretic, anodyne, expectorant alternative (Website: <http://www.homeremediess.com/solanum-nigrum-medicinal-uses-and-images/>).

Threat status: Not Evaluated

S. torvum Sw., Prodr. 47. 1788. *Solanum ficifolium* Ortega, Nov. Rar. Pl. Descr. Dec. 116. 1800. *Solanum mayanum* Lundell in Contr. Univ. Michigan Herb. no. 8: 85. 1942.

Vernacular Name: Bhi-tita (A), Tita bagoon (B)

Evergreen *shrub* or small *tree*, up to 16 ft tall. *Stem* armed, stout, straight or lightly curved prickles. *Leaves* alternate, elliptical, prickles along the midvein, unlobed to strongly lobed. *Flowers* small, white, in clusters. *Fruit* small yellow berries, seeds neumerous. *Seeds* ovate to broadly ovate.

Flowering & Fruiting: Through out the year

Habitat: Forest margin, roadside, wet places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11751, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Native of the Caribbean, widely naturalized in tropical regions

Note: The young fruits are edible after cooking and are used medicinally for improving eyesight; the leaves are used for treating skin diseases (Website: <http://www.efloras.org/>).

Threat status: Not Evaluated

S. violaceum Ortega, Nov. Pl. Descr. Dec. 56. 1798; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 238. 2003. *Solanum indicum* L., Sp. Pl. 1: 187. 1753; Clarke in Hook. f., Fl. Brit. India 4: 234. 1883; Kanjilal *et al.*, Fl. Assam 3: 369. 1939.

Vernacular Name: Brihoti (B)

Undershrub, mostly branched stallately (star-shaped) tomentose, prickly. *Leaves* c. 4 – 18 × 2 – 9 cm, ovate-oblong, acute, sinuate. *Flowers* violet, in axillary short cymes. *Calyx* c. 0.3 cm long, pubescent outside. *Corollac.* 1 cm long, violet, ovate. *Berriesc.* 0.5 – 0.8 cm in diameter, globose.

Flowering & Fruiting: May – November

Habitat: Common, along roadside

Specimens Examined: India, Assam, NC Hills dist., Haflong, 11.08.1908, W. G. Craib 316022, Fl. (CAL).

Distribution: Throughout tropical India, China to Malaya, Philippines

Note: The fruits are diuretic and expectorant. They are an effective treatment against diabetes, and even seem to be capable of curing it. They are also used for relieving cough and alleviating toothache (Website:

<http://tropical.theferns.info/viewtropical.php?id=Solanum%20violaceum>).

Threat status: Not Evaluated

S. xanthocarpum Schrad. & Wendl., Sert. 1: 8. t. 2. 1795; Clarke in Hook. f., Fl. Brit. India 4: 236. 1883; Kanjilal *et al.*, Fl. Assam 3: 371. 1939. *Solanum surattense* Burm. f. Fl. India 57. 1768; Deb, Fl. Tripura 2: 248. 1983.

Vernacular Name: Birkulitita (A)

Perennial *herb* with woody base and densely prickly all over. *Leaves* lobed or pinnatifid, stellate pubescent; lobes acute. *Flowers* blue, in extra-axillary cymes. *Calyx* lobes recurved. *Fruit* yellow when ripe, green when young.

Flowering & Fruiting: December – February

Habitat: Common, along roadside

Specimens Examined: *Specimens Examined:* India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11593, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: All over India, South-east Asia, tropical Australia, Polynesi

Note: The roots are used widely as a medical ingredient that has been used by Ayurvedic herbalists for relieving common ailments. This drug is bitter tasting and a mild purgative (Website: <http://www.alwaysayurveda.com/solanum-xanthocarpum/>).

Threat status: Not Evaluated

118. HYDROLEACEAE R.Br.

Hydrolea L.

H. zeylanica (L.) Vahl, Symb. Bot. 2: 46. 1791; Clarke in Hook. f., Fl. Brit. India 4: 133. 1883; Deb, Fl. Tripura 2: 310. 1983; P. J. Bora & Y. Kumar, Florist. Diversity Assam 220. 2003. *Nama zeylanica* L., Sp. Pl. 226. 1753.

Vernacular Name: Isa-langulia, Kasschra (B)

Erect *herb*, rooting at internodes. *Leaves* 1 – 5.5 × 0.4 – 0.8 cm, linear-lanceolate, acute at apex. *Inflorescence* in short racemes or cymes. *Flowers* blue. *Calyx* 0.4 cm long. *Corolla* 0.6 – 0.8 cm long; lobes ovate. *Fruit* a capsule, ovoid-oblong.

Flowering & Fruiting: November – March

Habitat: Common, in muddy or marshy places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11389, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Through out India, Malaysia, Sri Lanka.

Note: This plant is antibiotic and the extract of entire plants is applied externally in cutaneous affections. It has been reported to be used as antiseptic, against callus, poultice and sore. The leaves are beaten into pulp and applied as poultice as it is believed to have a cleansing and healing effect on neglected and callous ulcers. It is also used as food (leafy vegetables) by locals (Gupta, 2011).

Threat status: Least Concern ver 3.1

119. OLEACEAE Hoffmanns. & Link

- 1a. A scandent shrub.....*Jasminum*
1b. Trees, upto 10 m.....*Nyctanthes*

Jasminum L.

J. flexile Vahl., Symb. Bot. 3: 1. 1794. *Jasminum azoricum* L.
var. *travancorensis* (Gamble) M.Mohanan in J. Econ. Taxon. Bot. 6 (2): 480. 1985.
Jasminum burmannianum Blume in Mus. Bot. 1 (18): 279. 1851.

Vernacular Name: River Jasmine/Scrambling Vine (E)

A scandent *shrub*. *Leaves* opposite, trifoliolate, more or less chartaceous; *petioles* slender; *lateral leaflets* 2/3 to 3/4 the length of the terminal, apex acuminate to long-acuminate, rarely just acute, leaflets ovate to lanceolate. *Inflorescences* mostly axillary, sometimes terminal on side shoots, glabrous. *Calyx lobes* almost imperceptible to 0.25 mm long. *Corolla tube* 2 – 3 cm long, slender, lobes 1 – 1.5 cm long.

Flowering & Fruiting: November – March

Habitat: Evergreen, semi-evergreen, also in the plains

Specimen Examined: India, Assam, Cachar dist., Borail Wildlife Sanctuary, Near Sindhuri, 11.09.2010, H. A. Barbhuiya 123 (ASSAM).

Distribution: India (Assam, Arunachal Pradesh, Meghalaya, Uttar Pradesh, Karnataka, Tamil Nadu, Andaman & Nicobar Islands), China, Myanmar, Sri Lanka.

Threat status: Not Evaluated

Nyctanthes L.

N. arbortristis L., Sp. Pl. 1: 6. 1753. *Bruschia macrocarpa* Bertol., Mem. Acad. Sc. Bologna viii. 238 (Misc. Bot. xviii. 17). 1857. *Nyctanthes dentata* Blume, Mus. Bot. 1 (18): 282. 1851. *Nyctanthes tristis* Salisb., Prodr. Stirp. Chap. Allerton 11. 1796.

Vernacular Name: Sewali (A), Shephalika (B)

Trees, upto 10 m. *Branches* quadrangular; *bark* grey or greyish-green. *Leaves* c. 10 × 5 cm, coriaceous, stiffly pubescent; *petiole* c. 1 cm long. *Flowers* aromatic, in 3 – 7 flowered pedunculate heads. *Corolla tube* c. 1 cm long, orange red; *corolla lobes* 5 – 7 mm long, whitish.

Flowering & Fruiting: August – cold season

Habitat: Common, roadside, cultivated; 300 – 1000 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11720, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Central India and Sub-himalayan tract

Note: Crude extracts of different parts of the plant has been used as traditional medicine for treatment of various diseases. Juice of the leaves is used as digestives, antidote to reptile venome, tonic, laxative, diaphoretic and diuretic (Kirtikar and Basu, 1991).

Threat status: Not Evaluated

120. GESNERIACEAE Dumort.

1a. Shrubs small.....*Rhynchocheum*

1b. Herbs, perennial.....*Stauranthera*

Rhynchocheum Blume

R. ellipticum (Wall. ex D.Dietr.) A.DC., Prodr. 9: 285, adnot. 1845.

Corysanthera elliptica Wall. ex D.Dietr., Syn. Pl. 3: 582. 1842.

Rhynchocheum latifolium Hook.f. & Thomson ex C.B.Clarke, Commelyn. Cyrtandr. Bengal t. 93. 1874.

Vernacular Name: Not known

Undershrub. Leaves opposite; petiole 0.8 – 5 cm; leaf blade oblanceolate to obovate or elliptic, 9.5 – 32 × 3 – 10 cm, cuneate to attenuate, rarely nearly rounded at base, margin denticulate to serrate, acute to acuminate at apex. Cymes 15 – 70-flowered; peduncle 0.9 – 4 cm, densely woolly to pubescent; bracts 3 – 13 mm. Pedicel 2 – 13 mm. Calyx lobes lanceolate, 2.2 – 5 mm, inside glabrous. Corolla white or tinged pink, 3.5 – 6 mm; tube 1.5 – 2.5 mm. Stamens adnate to corolla near base, 0.5 – 1.1 mm; staminode 0.2 – 0.3 mm. Pistil glabrous; ovary 1 – 2 mm. Berry white, 2 – 6 mm, glabrous.

Flowering & Fruiting: June – January

Habitat: On hill slopes; 100 – 1800 m.

Specimen Examined: India, Assam, Cachar dist., Borail Wildlife Sanctuary, 15 No Hill, 12.11.2011, H. A. Barbhuiya 85776, Frt (ASSAM).

Distribution: NE India, Bhutan, Cambodia, China, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam

Threat status: Not Evaluated

Note: Leaf extract alleviates coughs in children. (Yusuf *et al.* 2009).

Stauranthera Benth.

S. grandifolia Benth., Scroph. Ind. 57. 1835.

Vernacular Name: Not known

A succulent herb, up to 40 cm high; dusky pubescent. Leaves opposite, broadly elliptic *c.* 25 × 11 cm, margin obscurely toothed; petiole 1 – 2.5 cm. Flowers in axillary cymes, pendent, blue, spurred at base. Corolla blue, with yellow marks in the tube within. Ovary thinly pubescent or glabrous. Capsule *c.* 8 mm, depressed globose.

Flowering & Fruiting: June – September

Habitat: Damp places in lowland rain forest.

Specimen Examined: India, Assam, Cachar dist., Borail Wildlife Sanctuary, Near Bihara, 09.10.2011, H. A. Barbhuiya 756 (ASSAM).

Distribution: India (Assam, Arunachal Pradesh, Meghalaya, Mizoram), Myanmar.

Note: Roots are applied on snakebite (Quattrocchi, 2106).

Threat status: Not evaluated

121. SCROPHULARIACEAE Juss.

- 1a. Shrubs, subshrubs, less often lianas, trees or suffrutescent herbs2
- 1b. Herbs.....3
- 2a. Leaves opposite, rarely alternate.....*Buddleja*
- 2b. Leaves opposite or whorled.....*Scoparia*
- 3a. Leaves usually petiolate.....4
- 3b. Leaves petiolate or sessile.....*Lindernia*
- 4a. Plants glabrous.....*Mecardonia*
- 4b. Plant glabrous or villous, rarely hispidulous.....*Torenia*

Buddleja L.

B. asiatica Loureiro, Fl. Cochinch. 1: 72. 1790. *Buddleja acuminatissima* Blume, Bijdr. Fl. Ned. Ind. 14: 743. 1826. *Buddleja arfakensis* Kaneh. & Hatus., Bot. Mag. (Tokyo) Ivi. 157. 1942.

Vernacular Name: White Butterfly Bush, Winter Lilac (E)

Shrubs or small trees, 1 – 8 m tall; young branchlets, leaves abaxially, petioles, and inflorescences densely stellate pubescent. Branchlets terete or subterete. Leaves opposite. Petiole 2 – 15 mm; leaf blade narrowly elliptic, 6 – 30 × 1 – 7 cm, cuneate to decurrent at base, subentire or remotely serrate-dentate at margin, acuminate at apex. Inflorescences terminal or axillary, 1 – 3 or more seemingly racemose cymes together, 5 – 25 × 0.7 – 2 cm; bracteoles linear. Pedicel to 2 mm. Calyx campanulate, 1.5 – 4.5 mm; lobes triangular, outside stellate pubescent or tomentose, inside glabrous. Corolla white, rarely pale violet or greenish; tube 2.5 – 4.8 mm; lobes suborbicular, 1 – 1.7 × 1 – 1.5 mm, spreading. Stamens inserted above middle of corolla tube to nearly at mouth, included; anthers oblong. Ovary ovoid to narrowly ovoid, 1 – 1.5 × 0.8 – 1 mm, glabrous or scaly. Style short; stigma capitate. Capsules ellipsoid. Seeds pale brown, elliptic.

Flowering & Fruiting: January – December

Habitat: open places, at edge of open forests; upto 2000 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, 26.11.2014, A. Bora & D. Bhattacharyya 11509, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Thailand, Vietnam

Note: B. asiatica is also used in perfumes as it produces a sweet freesia-like fragrance (Li and Leeuwenberg, 1996). It may also be used as a fish poison (Mabberley, 1997).

Threat status: Not Evaluated

Lindernia All.

L. anagallis (Burm.f.) Pennell, J. Arnold Arbor. xxiv. 252. 1943. *Lindernia cordifolia* Merr., Enum. Philipp. Fl. Pl. iii. 437. 1923.

Vernacular Name: Not known

Herbs, 10 – 40 cm. Leaves short petiolate to subsessile; leaf blade triangular-ovate, ovate or oblong, 0.4 – 2 × 0.7 – 1.2 cm, glabrous, truncate to subcordate at base, margin shallowly crenate, rounded to acute at apex. Flowers axillary, solitary. Pedicel 6 – 10 mm. Calyx *c.* 5 mm, basally connate; lobes narrowly lanceolate, glabrous. Corolla white or light purple, 0.8 – 1.2 cm; lower lip slightly longer than upper lip, 3-lobed, subequal; upper lip ovate, 2-lobed. Stigma 2-lobed. Capsule linear-ovoid.

Flowering & Fruiting: April – November

Habitat: Forest edge, along streams, wet places; *c.* 1500 m.

Specimens Examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, Gumra, 11.09.2010, H. A. Barbhuiya 85088 (ASSAM).

Distribution: India, Bhutan, Cambodia, China, Japan, Laos, Malaysia, Myanmar, Philippines, Sikkim, Thailand, Vietnam; Australia

Note: Used as a remedy for gonorrhoea (Cook 1996).

Threat status: Least Concern ver 3.1

Mecardonia Ruiz & Pav.

M. procumbens Small, Fl. S.E. U.S. 1065. 1903. *Bacopa chamaedryoides* Wettst., Nat. Pflanzenfam. 4, Abt. 3b: 76. 1891. *Bacopa procumbens* (Mill.) Greenm., Publ. Field Columb. Mus., Bot. Ser. 2: 261. 1907.

Vernacular Name: Baby Jump Up (E)

Plants *annual* or *perennial*, glabrous, branched from the base, prostrate to suberect, the stems quadrangular, glabrous, mostly 30 cm long or less. *Leaves* shortly petiolate, elliptic or shortly ovate-elliptic, mostly 8 – 25 mm long, 6 – 12 mm wide, rounded to acute at the apex, serrate, usually blackening when dried. *Pedicels* 4 – 6 mm long at anthesis, elongating in fruit to 18 mm, mostly longer than the leaves; *calyx* without basal bracteoles, green; *corolla* yellow, about 1 cm long, slightly longer than calyx. *Capsule* 2-valved, oblong, 6 – 10 mm long.

Flowering & Fruiting: Spring – Autumn

Habitat: Wet places, common weed of lawns, gardens and agricultural land; upto to 1160 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11614, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Introduced and naturalised in India; Native of Tropical America.

Threat status: Not Evaluated

Scoparia L.

S. dulcis L., Sp. Pl. 1: 116. 1753; Hook. f., Fl. Brit. India 4: 289. 1884; Kanjilal *et al.*, Fl. Assam 3: 380. 1939; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 244. 2003; Hong *et al.* in Fl. China 18. 21. 1998.

Vernacular Name: Sweet Broom Weed (E), Bon dhonya (B)

Herbs or subshrub, erect, to 1 m tall. *Leaves* petiolate; *leaf blade* rhomboid-ovate to rhomboid-lanceolate, to 3.6 × 1.5 cm, glabrous, cuneate at base, margin toothed above middle, obtuse at apex. *Flowers* usually axillary. *Pedicel* 5 – 10 mm, glabrous. *Bracteoles* absent. *Calyx* 4 lobed, ovate-oblong, c. 2 mm, margin ciliate, obtuse at apex. *Corolla* white, c. 4 mm. in diam.; lobes 2 – 3 mm. *Stamens* exserted. *Style* erect; *stigma* truncate to 2 – parted. *Capsule* columella persistent.

Flowering & Fruiting: Throughout the year

Habitat: Waste places, roadsides, grassland; below 1400 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 03.03.2012, A. Bora & D. Bhattacharyya 11302, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Pantropic.

Note: It is traditionally used in treatment of diabetes, dysentery, earache, fever, gonorrhoea, headaches, jaundice, snake bite, stomach problems, toothache and warts (Website: <http://www.flowersofindia.net/catalog/slides/Sweet%20Broom%20Weed.html>).

Threat status: Not Evaluated

Torenia L.

- 1a. Flowers light blue, solitary, axillary.....*T. vagans*
1b. Flowers pale yellow or white, in terminal fascicles or solitary in leaf axils.....*T. violacea*

T. vagans Roxb., Hort. Bengal. [95]; Fl. Ind. iii. 96. 1832; Hook. f., Fl. Brit. India 4: 277. 1884; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 244. 2003.

Vernacular Name: Not known

Diffused branched *herb*; rooting at lower nodes. *Leaves* opposite, c. 1 – 3.5 × 0.5 – 1.5 cm, ovate at base, acute at apex, serrate at margin, shortly petiolate. *Flowers* light blue, solitary,

axillary. *Calyx* linear-oblong. *Corolla* 2-lipped. *Stamens* 4, didynamous. *Fruit* a capsule, linear.

Flowering & Fruiting: August – November

Habitat: Common, moist places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11650; Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11345; Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11394, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, China

Threat status: Not Evaluated

T. violacea (Azaola ex Blanco) Pennell in J. Arnold Arbor. xxiv. 255. 1943; Hong *et al.* in Fl. China 18. 39. 1998. *Mimulus violaceus* Azaola ex Blanco, Fl. Filip., ed. 2, 357. 1845. *Torenia edentula* Griff. in Madras J. Lit. Sci. Ser. I, iv. 376. 1836.

Vernacular Name: Violet Wishbone Flower (E)

Herbs, 8 – 35 cm tall. *Stems* erect or somewhat decumbent. *Leaf blade* ovate to narrowly ovate, 2 – 4 × 1 – 2 cm, villous, cuneate to somewhat truncate at base, margin shallowly serrate, acuminate at apex. *Flowers* in terminal fascicles or solitary in leaf axils, rarely in racemes. *Calyx* 5-lobed, purple-red, oblong-fusiform, 1.3 – 1.7 cm × 6 – 8 mm, rounded and slightly decurrent at base. *Corolla* pale yellow or white, 1.5 – 2.2 cm, exceeding calyx; lower lip c. 3 × 4 mm, subequal; upper lip suberect, suborbicular, c. 6 mm in diam. *Stamens* unappended. *Fruit* a capsule, 1.1 – 1.4 cm. *Seeds* yellow.

Flowering & Fruiting: August – November

Habitat: Grassland on mountain slopes, forests, along trails; 200 – 2000 m.

Specimens Examined: India, Assam, NC Hills dist., Haflong, 28.08.1908, W. G. Craib 322742, Fl. (CAL).

Distribution: India, Bhutan, Cambodia, China, Indonesia (Java), Laos, Malaysia, Philippines, Sikkim, Thailand, Vietnam

Threat status: Not Evaluated

122. LAMIACEAE Martinov

1a. Herbs.....	<i>Epimeredi</i>
1b. Herbs, subshrubs, shrubs or trees.....	2
2a. Corolla 1-lipped or 2-lipped.....	3
2b. Corolla not as above; corolla actinomorphic, 4-lobed.....	<i>Callicarpa</i>
3a. Corolla 1-lipped; tube included or exerted.....	<i>Teucrium</i>
3b. Corolla 2-lipped, tube not as above.....	4
4a. Fruit a small drupe.....	5
4b. Fruit a nutlet.....	6

- 5a. Trees, shrubs or subshrubs, erect.....*Premna*
 5b. Straggling shrub, branches drooping.....*Holmskioldia*
- 6a. Leaves margin entire to pinnatifid or dentate.....7
 6b. Leaves serrate.....8
- 7a. Inflorescences terminal or axillary racemes or spikes.....*Scutellaria*
 7b. Inflorescence verticillasters few to many flowered.....*Leucas*
- 8a. Corolla purple-red or yellow to white.....*Gomphostemma*
 8b. Corolla not as above.....9
- 9a. Inflorescence capitula, compact spikes, or loose panicles.....*Hyptis*
 9b. Inflorescence verticillasters 6(-10)-flowered, in terminal, pedunculate thyrses or panicles.....*Ocimum*

Callicarpa L.

- 1a. Shrub, tomentose when young.....*C. macrophylla*
 1b. Trees.....*C. arborea*

C. macrophylla Vahl, Symb. Bot. 3. 13. t. 53. 1794; Clarke in Hook. f., Fl. Brit. India 4: 568. 1885; Kanjilal *et al.*, Fl. Assam 3: 464. 1939; P. J. Bora & Y. Kumar, Florist. Diversity Assam 268. 2003.

Vernacular Name: Bonmala, Tong-loti (A)

Shrub, tomentose when young. *Leaves* 8 – 25 × 3 – 8 cm, ovate-lanceolate, acuminate or acute at the base, cuneate at the base, margin serrate, pubescent beneath. *Inflorescence* axillary, lax cymes. *Flower* pinkish; *calyx* campanulate, 4-lobed; *corolla* 4-lobed, ovate. *Fruit* a drupe, white.

Flowering & Fruiting: August – December

Habitat: Occasionally, in hilly forest; 1500 m

Specimen Examined: Included after Kanjilal *et al.* 1939.

Distribution: India, China, Myanmar, Vietnam.

Note: The leaves are heated and applied as a poultice to ease the pain of rheumatic joints. A decoction of the leaves is used in the treatment of diarrhoea and dysentery. A juice made from the leaves mixed with equal portions of *Drymaria diandra* and *Oxalis corniculata* is used in the treatment of gastric troubles. The root is chewed to relieve rashes on the tongue. A paste made from the roots is used to treat fevers (Manandhar and Manandhar, 2002)

Threat status: Not evaluated

C. arborea Roxb., Roxb., Fl. Ind., i. 405–406. 1820; Chen & Gilbert in Fl. China 17: 6. 1994. *Aganon umbellata* Raf., Sylva Tellur. 161. 1838. *Callicarpa magna* Schauer, Prodr. 11: 641. 1847.

Vernacular Name: Beautyberry Tree (E), Bonmola/Gunmola/Khoja (A), Bormala (B)

Treesc. 8 m tall; branchlets, inflorescences, and petioles densely tomentose, hairs stellate or verticillately branched. *Leaf blade* elliptic, oblong-elliptic, or ovate, 13 – 37 × 7 – 13 cm, leathery, cuneate to rounded at base, entire at margin. *Inflorescence* in cymes, 6 – 11 cm across; *peduncle* 4-angled, longer than petioles. *Calyx* cup-shaped. *Corolla* purple, c. 3 mm. *Stamens* much longer than corolla. *Ovary* densely stellate tomentose. *Fruit* purple-brown.

Flowering & Fruiting: May – December

Habitat: Mountain slopes; 1000 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11531, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

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

Note: The bark is used to treat skin diseases. A decoction of the leaves is taken to relieve a stomachache. The leaves are used as a poultice to heal sores. The plant is used to treat influenza (Wiar, 2006).

Threat status: Not evaluated

Epimeredi Adans.

E. indicus (L.) Rothm. in Fedde Repert. 53: 12. 1944; Deb, Fl. Tripura 2: 321. 1983. *Anisomeles ovata* R. Br. in Ait. Hort. Kew. Ed. 2. 3: 164. 1811; Hook. f., Fl. Brit. India 4: 672. 1885; Kanjilal *et al.*, Fl. Assam 3: 521. 1939.

Vernacular Name: Gobura (B)

Herbs. *Leaves* petiolate, broadly ovate, serrate at the margin, acute at the apex, rounded, subcordate or cuneate at the base. *Inflorescence* in dense spicate, axillary. *Flowers* crowded in whorls. *Calyx* tubular, 5-lobed; ciliate. *Corolla* bluish-purple, tube short; *upper lip* erect, entire; *lower lip* broad, spreading. *Stamen* 4, exerted; *filaments* bearded. *Style* subequally bifid. *Fruit* a nutlet, shining, black.

Flowering & Fruiting: November – January

Habitat: Common

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11642; Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11403, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Himalayas, China, Malaya Peninsula, Philippines and Sri Lanka.

Note: The whole plant is used, but especially the leaves and the roots. It is a powerful astringent, carminative, febrifuge and tonic. The leaves yield an essential oil which shows antimicrobial activity against *Bacillus anthracis*, *Proteus vulgaris*, *Salmonella stanley*, *Salmonella newport*, *Streptococcus agalactiae*, *Staphylococcus aureus*, *Escherichia coli*, *Aspergillus fumigatus* and *Anisomeles niger* (Website: <http://tropical.ferns.info/viewtropical.php?id=Anisomeles+indica>)

Threat status: Not evaluated

Gomphostemma Wall. ex Benth.

G. parviflorum Wall. ex Benth. in Wall., Pl. Asiat. Rar. 2: 12. 1831; Hook.f., Fl. Brit. India 4: 697. 1885; Kanjilal *et al.*, Fl. Assam 3: 528. 1939; Deb, Fl. Tripura 2: 322. 1983; P. J. Bora & Y. Kumar, Florist. Diversity Assam 268. 2003.

Vernacular Name: Not known

Undershrub. Laves opposite, *c.* 4.5 – 20 × 1.8 – 8.5 cm, elliptic-ovate, serrate at the margin, acute or acuminate at the apex, cuneat at the base, abaxially densely pubescent. Inflorescence in axillary cymes; bracts present. Flower yellow, *c.* 2.2 cm long; calyx 5-lobed, *c.* 0.6 cm long, pubescent; corolla yellow; uppwer lip hooded, lower lip 3-lobed. Stamen 4, didynamous. Style glabrous, 2-fid. Fruit a nutlet, solitary.

Flowering & Fruiting: August – December

Habitat: Common, shady places near the bank of the stream

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11698, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India (Assam, Manipur, Meghalaya, Tripura), Bangladesh, Malaysia, Myanmar

Threat status: Not Evaluated

Hyptis Jacq.

1a. Shrubs; leaves broadly elliptic to lanceolate.....*H. capitata*

1b. Undershrub, aromatic. Leaves broadly ovate, cordate.....*H. suaveolens*

H. capitata Jacq., Coll. i. 102; Ic. Rar. 1. t. 114. 1787. *Clinopodium capitatum* Sw., Prodr. 88. 1788.

Vernacular Name: Buttonweed, knobweed, wild-hops (E)

Shrubs, to 2 m tall; *stem* hollow when old, furrowed or obscurely 4-angled, puberulus. *Leaves* broadly elliptic to lanceolate, scabrid, nerves 5 – 7 pairs, oblique. *Heads* 1 – 2.5 cm across, on long peduncle, axillary and terminal. *Flowers* numerous, densely packed; *calyx* 7 mm long in fruit, glandular, lobes 5 – 7, acute to acuminate, united well above the middle; *corolla* 4 mm long, white. *Nutlets* smooth, black.

Flowering & Fruiting: September – January

Habitat: Cropfield, roadsides & waterways

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, 12.12.2013, A. Bora & D. Bhattacharyya 11364, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Naturalised in some parts of India, Vietnam, Thailand, Singapore, Malaysia, Indonesia and the Philippines, Native of Tropical America.

Note: The leaves are excitant and tonic. A decoction of the leaves is used to clean wounds. The young leaves are pounded into a paste and applied to the affected areas as a treatment for stomach ache. A decoction of the roots is used in the treatment of amenorrhea. The plant (part not specified) is used as a treatment for dry cough and tooth aches; gas pains in infants and convulsions in children (Website: <http://tropical.theferns.info/viewtropical.php?id=Hyptis+capitata>).

Threat status: Not evaluated

H. suaveolens (L.) Poit. in Ann. Mus. Hist. Nat. 7: 472. t. 29. f. 2. 1806; Hook. f., Fl. Brit. India 4: 630. 1885; Deb, Fl. Tripura 2: 323. 1983; P. J. Bora & Y. Kumar, Florist. Diversity Assam 268. 2003.

Vernacular Name: Tukmah (A)

Aromatic annuals. *Undershrub*, stem, branches quadrangular. *Leaves* opposite, broadly ovate, cordate, dentate, pubescent, cuneate or rounded at base. *Flowers* blue, axillary or terminal, bracts minute. *Calyx* 5 toothed, glandular, hispid outside, villous at the mouth. *Corolla* upper lip 4-lobed, 2 lipped, stamen 4, ovary 4 partite. *Fruit* a nutlet, flat, ovoid.

Flowering & Fruiting: September – February

Habitat: Common, along roadside, plain forest

Specimen Examined: Indranagar

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11643; Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11386, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Assam, Meghalaya, Tripura, Bihar, South India, West Bengal, Andaman & Nicobar Islands, Africa, Malaysia, Myanmar, Tropical Americ.

Note: A decoction of the roots is valued as an appetizer. This plant is also used for affections of the uterus. A decoction of the root is said to be emmenagogic, and a stimulant if employed in rheumatism. The juice of leaves, mixed with lime juice, is drunk for stomach aches. Applied externally, it is used as a wash or poultice on skin disorders such as dermatitis and eczema, boils, headaches etc. (Website: <http://tropical.theferns.info/viewtropical.php?id=Hyptis+suaveolens>).

Threat status: Not evaluated

Leucas R. Br.

L. aspera (Willd.) Link., Enum. Hort. Berol. Alt. 2: 113. 1822; Hook. f., Fl. Brit. India 4: 690. 1885; Deb, Fl. Tripura 2: 325. 1983; P. J. Bora & Y. Kumar, Florist. Diversity Assam 268. 2003. *Leucas dimidiata* Spreng., Syst. Veg. (ed. 16) 2: 743. 1825.

Vernacular Name: Durun (A), Darunaphula (B)

Erect pubescent annual *herb*, much branched stem. *Leaves* 3.0 – 6.5 × 0.5 – 1.5 cm, subsessile or short petiolate, linear or narrowly oblong-lanceolate, distantly crenate, obtuse,

narrow at the base. *Flowers* white, in terminal or axillary whorls; *bracts* linear, pubescent. *Calyx* tubular, curved, ribbed, hispid outside. *Corollac.* 1 cm long, white; *upper lip* hooded, hairy outside. *Nutlets* brown, smooth and oblong.

Flowering & Fruiting: Most part of the year

Habitat: Common, in open field, along roadside

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11656, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, China, Malaysia

Note: Eating the plant (as a pot herb) is believed to increase resistance to disease. The leaf sap is used to treat sores of the eyes and nose. The juice of the plant is used in the treatment of fevers, coughs and colds. The bruised leaves are considered to be active against bites of poisonous insects and snakes. The crushed plant is applied hot as a poultice on to wounds, sores (Website: <http://tropical.ferns.info/viewtropical.php?id=Leucas+aspera>).

Threat status: Not evaluated

Holmskioldia Retz.

H. sanguinea Retz., *Observ. Bot.* 6. 31. 1791; Clarke in Hook. f., *Fl. Brit. Ind.* 4: 596. 1885; Kanjilal *et al.*, *Fl. Assam* 3: 493. 1939; Deb, *Fl. Tripura* 2: 111. 1983; Bora & Kumar, *Floristic Diversity of Assam: SPWS.* 260. 2003.

Vernacular Name: Chinese hat (E), Kapni (H)

Straggling *shrub*, branches drooping. *Leaves* opposites, c. 5 – 10 × 2.5 – 5 cm, ovate, acuminate, crenate-serrate. *Flowers* in short axillary or terminal cymes. *Calyx* orange red, salver shaped, acresent. *Corolla* tubular, reddish, oblique, c. 2 cm long, 2-lipped. *Stamen* 4, didynamous. *Ovary* 4-celled; *style* 2-fid. *Fruit* a drupe, globose.

Flowering & Fruiting: September – March

Habitat: Common, hilly forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11690, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Sub-Himalayas

Note: Used as fodder for goats and sheep. Used as ornamental (website: <http://indiabiodiversity.org/species/show/266151>).

Threat status: Not Evaluated

Ocimum L.

O. sanctum L., *Mant. Pl.* 85. 1767; Kanjilal *et al.*, *Fl. Assam* 3: 500. 1939. *Ocimum tenuiflorum* L. *Sp. Pl.* 597. 1753; Deb, *Fl. Tripura* 2: 332. 1983.

Vernacular Name: Holy Basil (E), Tulshi (B)

Perennial *herbs*. *Branchlets* purplish, pubescent. *Leaves* ovate-oblong to elliptic, 2 – 4 × 1 – 2 cm, serrulate at the margin, acute at the apex, pillose. *Inflorescence* in raceme or paniced whorls. *Flower* purplish; *bract* 2 mm; *calyx* 1.5 – 2 mm, *lower lip* longer than *upper lip*. *Corolla* purplish-white, *c.* 4 mm. *Fruit* a nutlet.

Flowering & Fruiting: November – February

Habitat: Roadside, cultivated

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, SCF Nala, on the way to Damcherra, 25.04.2015, A. Bora & D. Bhattacharyya 11731, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Andaman & Nicobar Islands, China

Note: The leaves and whole plant parts are used in treating common cold, fever, acne, cough, headache, stress, mouth ulcer, respiratory problems, skin disorders, and stomach problems.

Threat status: Not evaluated

Premna L.

P. bengalensis Clarke, Fl. Brt. India 4 (12): 577. 1885; Kanjilal *et al.*, Fl. Assam 3: 474. 1939. *Gumira bengalensis* Kuntze, Revis. Gen. Pl. 2: 507. 1891.

Vernacular Name: Gohora (A)

Medium sized *tree*. *Leaves* 7.5 – 25 × 3.5 – 10 cm, ovate-oblong or elliptic, acuminate at the apex, margin entire, rounded at the base; *petiole* 1 – 4 cm. *Inflorescence* terminal, paniced cymes. *Flower* pubescent; *calyx* 5-lobed, 2-lipped, pubescent; *corolla* greenish white, 2-lipped, pubescent outside. *Fruit* a drupe, globose.

Flowering & Fruiting: May – November

Habitat: Common, near streams and river banks; up to 300 m

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11760, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, India, Myanmar, Nepal

Note: The wood is a light brownish white or cream-coloured. It is even-grained, hard and durable. It is also used for bridge-work as it lasts well in water. It would do for turnery and carvings (Gamble, 1972).

Threat status: Not evaluated

Scutellaria L.

S. discolor Colebr., Pl. Asiat. Rar. (Wallich). i. 66. 1830; Li & Hedge in Fl. China 17: 80. 1994.

Vernacular Name: Bicolor Skullcap (E)

Herbs perennial. *Stems* ascending, 5.5 – 38 cm tall, densely puberulent. *Petiole* 0.5 – 3 cm; leaf blade elliptic-ovate to broadly elliptic, 1.5 – 7.5 × 1 – 4.5 cm, papery, cordate at base

margin undulate-crenate, rounded to obtuse at apex. *Racemes*, 5 – 24 cm; *peduncle* 2.5 – 4 cm, densely puberulent; *floral leaves* sessile to short petiolate, ovate to elliptic; *bracts* ovate, 1.5 – 3 × c. 1 mm, pubescent, entire at margin. *Flowers* alternate or opposite. *Pedicel* purplish, 2.5 – 3 mm, densely pubescent. *Calyx* c. 2 mm, pubescent. *Corolla* white or purple, 0.9 – 1.2 cm; tube 7 – 10 mm, base bent. *Nutlets* brown, ovoid-ellipsoid.

Flowering & Fruiting: September – February

Habitat: Forested hillsides, streamsides, grassy slopes, roadsides; 0 – 2000 m.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kayang River bank, 12.12.2013, A. Bora & D. Bhattacharyya 11406, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar); India, Cachar dist., Barail Wildlife Sanctuary, West Block, 15 No. Hill, 10.11.2011, H. A. Barbhuiya 84852 (ASSAM); 15 No. Hill, 12.11.2011, H. A. Barbhuiya 818 (ASSAM).

Distribution: India (Assam, Arunachal Pradesh, Meghalaya, Bihar, Uttar Pradesh), Bangladesh, Bhutan, Nepal, China, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia.

Note: Juice of the plant is applied to wounds between the toes caused by prolonged walking barefooted in muddy water during the rainy season. Juice of the root is given to treat indigestion and gastric troubles (Website: <http://www.flowersofindia.net/catalog/slides/Bicolor%20Skullcap.html>).

Threat status: Not evaluated

Teucrium L.

T. viscidum Blume, Bijdr. Fl. Ned. Ind. 14: 827. 1826.
Teucrium stoloniferum Roxb., Hort. Bengal. 44; Fl. Ind. iii. 3. 1832.
Teucrium philippinense Merr. in Philipp. J. Sci., C 7: 100. 1912.

Vernacular Name: Sticky germander (E)

Herbs perennial, stoloniferous. *Stems* erect, 30 – 70 cm tall, basally glabrous or subglabrous, apically pubescent or glabrous. *Petiole* 1 – 3 cm, subglabrous; *blade* ovate-oblong, 3 – 10 cm, rounded, broadly cuneate to cuneate at base, double crenate-serrate at margin, acute to short acuminate at apex. *Spikes* on apical parts of stem and branches, 3 – 7 cm, densely pubescent; verticillasters close together, 2-flowered; *bracts* lanceolate. *Pedicel* 1 – 2 mm, villous. *Calyx* campanulate, 2.8 – 4 × 2.2 mm; teeth subequal, less than 1/2 as long as calyx tube, upper 3 ovate-triangular, lower 2 triangular. *Corolla* white, reddish or purplish, 6.5 – 7.5 mm, tube c. 3 mm. *Ovary* hairy. *Style* as long as stamens. *Nutlets* yellow-brown.

Flowering & Fruiting: June – November

Habitat: Moist forests, ravines, slopes; 100 – 2500 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11473, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Indonesia, Japan, Korea, Myanmar, Philippines

Note: The herb is infrequently used in Chinese medicine for treatment of rheumatic and bleeding disorders (Poonet *al.*, 2008).

Threat status: Not evaluated

123. ACANTHACEAE Juss.

1a. Woody climbers or rarely shrubs.....	<i>Thunbergia</i>
1b. Herbs, subshrubs, shrubs or trees.....	2
2a. Herbs; annual or perennial; terrestrial or aquatic.....	3
2b. Subshrubs, shrubs or trees; terrestrial.....	6
3a. Plants aquatic or hygrophilous; Stamens 2 or 4.....	<i>Hygrophila</i>
3b. Plants terrestrial; stamen 2.....	4
4a. Calyx 4-lobed to base.....	<i>Nelsonia</i>
4b. Calyx deeply 5-lobed.....	5
5a. Inflorescences of axillary or terminal racemes, when terminal sometimes branched and forming a panicle.....	<i>Codonacanthus</i>
5b. Inflorescences axillary or terminal spikes, sometimes reduced to a single flower.....	<i>Rungia</i>
6a. Stamens usually 4 and didynamous.....	<i>Strobilanthes</i>
6b. Stamens 2.....	7
7a. Staminodes absent.....	8
7b. Staminodes 2 or absent.....	11
8a. Calyx deeply 4- or 5-lobed; lobes equal or subequal.....	<i>Justicia</i>
8b. Calyx 5-lobed.....	9
9a. Stamens 2, exerted from mouth of corolla.....	<i>Rhinacanthus</i>
9b. Stamens 2, exerted from or included in corolla tube.....	10
10a. Inflorescences terminal or axillary, panicles, racemes, or sometimes spikes or dense clusters.....	<i>Andrographis</i>
10b. Inflorescences axillary or terminal, spikes, racemes, or panicles, often secund.....	<i>Gymnostachyum</i>
11a. Inflorescences terminal or rarely axillary, spikes, lax, sometimes several forming a panicle.....	<i>Eranthemum</i>
11b. Inflorescence not as above.....	12
12a. Leaf blade large, margin entire or obscurely crenate.....	<i>Phlogacanthus</i>
12b. Leaf blade margin entire or subentire or lobed.....	<i>Pseuderanthemum</i>

Andrographis Wall. ex Nees

A. paniculata (Burm. f.) Wall. Ex Nees in Wall., Pl. Asiat. Rar. 3: 116. 1832; Clarke in Hook. f., Fl. Brit. India 4: 501. 1884; Kanjilal *et al.*, Fl. Assam 3: 440. 1939; Deb, Fl. Tripura 2: 285. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 248. 2003. *Justicia paniculata* Burm.f., Fl. India 9. 1768.

Vernacular Name: Chirata (A), Kalmegh (B)

Annual herbs, stems 4-angled, glabrous. *Leaf blade* ovate-lanceolate, 1.5 – 7 × 1 – 2.5 cm, both surfaces glabrous, margin entire, apex acute to shortly acuminate. *Inflorescences* terminal, panicles, racemes; *bracts* triangular to subulate; calyx 2.5 – 3 mm; *Corolla* white, 0.9 – 1.5 cm; lower lip with purple dots, 5 – 7 mm; upper lip 5 – 7 mm, 2-lobed. *Stamens* exerted from corolla tube. *Capsule* ellipsoid-compressed.

Flowering & Fruiting: through out the year

Habitat: Forest floor

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Lakhicherra near Bhaluk Nala, 24.04.2014, A. Bora & D. Bhattacharyya 11680, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Native to India, China and Sri Lanka, naturalized in Cambodia, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam, and Caribbean

Note: Used traditionally for the treatment of diseases such as cancer, diabetes, high blood pressure, ulcer, leprosy, bronchitis, skin diseases, flatulence, colic, influenza, dysentery, dyspepsia and malaria.

Threat status: Not Evaluated

Codonacanthus Nees

C. pauciflorus Nees, Prodr. 11: 103. 1847; Hu & Daniel, Fl. China 19:448. 2011. *Codonacanthus acuminatus* Nees, Prodr. 11: 103. 1847. *Leptostachya repanda* Q. H. Chen in Guizhou Sci. 19 (2): 54. 2001.

Vernacular Name: Not known

Herbs 20 – 60 cm tall. Petiole 3 – 12 mm, puberulent or glabrous; leaf blade elliptic, ovate or lanceolate, 2 – 12 × 1 – 4.5 cm, thin, rounded or cuneate at base and decurrent onto petiole, acute or acuminate at apex. Inflorescence in simple racemes or terminal ones forming a panicle; bracts 1 – 2.5 mm, puberulent; bracteoles 1 – 2 mm, puberulent. Pedicel 1 – 7 mm, puberulent. Calyx 2.5 – 4 mm; lobes lanceolate, puberulent. Corolla white with purple spots at base of lower lip, 6.5 – 10 mm, glabrous. Staminal filaments c. 2.5 mm, glabrous. Ovary glabrous; style 4 – 6.5 mm. Capsule glabrous.

Flowering & Fruiting: August – April

Habitat: Wet places, stream banks; below 100 – 1500 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bhaluknala, Durbintila, 26.02.2016, A. Bora & D. Bhattacharyya 11545, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Japan, Myanmar, Thailand, Vietnam.

Threat status: Not Evaluated

Eranthemum L.

E. pulchellum Andrews, Bot. Repos. t. 88. 1800. *Eranthemum nervosum* (Vahl) R.Br., Prodr. Fl. Nov. Holland. 476. 1810; Kanjilal *et al.*, Fl. Assam 3: 438. 1939. *Daedalacanthus nervosus* T.Anderson in J. Linn. Soc., Bot. 9: 487. 1867; Clarke in Hook.f. Fl. Brit. India 4: 418. 1884.

Vernacular Name: Gulsham (H)

Undershrub. Stem quadrangular. Leaves c. 4.5 – 19 × 2 – 6.5 cm, ovate-elliptic, acuminate, narrowed at the base, margin entire or crenulated. *Inflorescence* in paniced spikes, terminal. *Flowers* light blue, c. 2.5 cm long; *bractsc.* 1.2 cm, ovate or elliptic, acuminate; *bracteoles* 2, c. 0.5 cm long, lanceolate. *Corolla* 5-lobed, rounded. *Stamen* 2. *Carpelsc.* 2 cm long. *Fruit* a capsule, oblong, c. 1.5 cm long.

Flowering & Fruiting: January – June

Habitat: Ocassionally, in hilly forests

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11501, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Himalayas, Tropical countries

Note: It is used as ornamental plant.

Threat status: Not Evaluated

Gymnostachyum Nees

G. venustum T. Anderson in J. Linn. Soc., Bot. 9: 506. 1867. *Cryptophragmium venustum* Nees, Pl. Asiat. Rar. iii. 180. 1832.

Vernacular Name: Jakhi (Khasi)

Herb, up to 75 cm high. Stem with few remote very small leaves. Radical leaves, elliptic-obovate, acute, decurrent on the petiole, entire or undulate-crenate, nearly glabrous; petiole broadly winged. Panicles terminal, trichotomously branched 20 – 60 cm or reduced to a single spike; flowers opposite, 1 – 3 together; bracts small, linear; bracteoles absent. Sepals 3 – 4 mm, linear, hairy. Corolla 2 – 3 cm, pubescent; limb deep purple or blueish. Anthers oblong, glabrous. Capsule linear c. 2 cm; seeds ovoid, compressed

Flowering & Fruiting: April – December

Habitat: Moist deciduous forest; upto 1200 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11699, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Threat status: Not Evaluated

Hygrophila R.Br.

H. salicifolia (Vahl) Nees, Pl. Asiat. Rar. 3: 1832; Clarke in Hook.f., Fl. Brit. India 4: 407. 1884; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 250. 2003. *Ruellia salicifolia* Vahl, Symb. 3: 84. 1794.

Vernacular Name: Not known

Herb. Leaves c. 2 – 5 cm long, linear-lanceolate, acute at the apex, base narrow. Flower dense, axillary, in whorls, purple, c. 1.6 cm long; bract c. 0.5 cm long, hispid; bracteoles linear. Calyx c. 0.7 cm long, 5 lobed. Corolla 2-lipped, c. 1 – 1.5 cm long. Stamen 4, didynamous.

Flowering & Fruiting: October – January

Habitat: Common, moist area, near wetlands of the sanctuary

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bandarkhal, way to Jatinga, 28.02.2015, A. Bora & D. Bhattacharyya 11548, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Japan, Malaysia, Philippines

Note: Leaves and shoots cooked as vegetables.

Threat status: Least Concern ver 3.1

Justicia L.

- 1a. Slender herb, upto 1 m high.....*J. virgate*
1b. Shrubs.....2
2a. Leaves 7 – 15 cm long, elliptic or elliptic-lanceolate.....*J. adhatoda*
2b. Leaves c. 5 – 13 cm long, linear-lanceolate.....*J. gendarussa*

J. adhatoda L., Sp. Pl. 15. 1753. *Adhatoda zeylanica* Medik. In Hist., Comment Acad. Theod. Plalat. 6: 393. 1790; Deb, Fl Tripura 2: 284. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 248. 2003. *Adhatoda vasica* Nees in Wall., Pl. Asiat. Rar. 3: 102. 1832; Clarke in Hook. f., Fl. Brit. India 4: 540. 1885; Kanjilal *et al.*, Fl. Assam 3: 455. 1939.

Vernacular Name: Vashaka (B), Bahaka tita (A)

Evergreen shrub, nodes swollen. Leaves opposite, 7 – 15 cm elliptic or elliptic-lanceolate, acuminate at the apex, entire. Flower axillary, white with purple stripes; bracts present, elliptic-ovate. Calyx 5 lobed, campanulate. Corolla 2-lipped, c. 2 – 3 cm long, throat tomentose. Stamen 2. Ovary superior, 2-celled.

Flowering & Fruiting: November – April

Habitat: Occasionally, along the foothills

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bhaluknala, Durbintila, 26.02.2016, A. Bora & D. Bhattacharyya 11547, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Sri Lanka, Southeast Asia

Note: Leaf extract taken with honey in cold and cough (Bora and Kumar, 2003).

Threat status: Not Evaluated

J. gendarussa Burm. f., Fl. India 10: 1768; Clarke in Hook. f., Fl. Brit. India 4: 532.1885; Kanjilal *et al.*, Fl. Assam 3: 454. 1939. *Gendarussa vulgaris* Nees in Wall., Pl. Asiat. Rar. 3: 104. 1832; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 249. 2003.

Vernacular Name: Jagat madan (B)

Small *shrub*. Leaves opposite, *c.* 5 – 13 cm long, linear-lanceolate, acuminate at the apex. *Inflorescence* terminal or axillary spikes; *flower* white, *bract* small. *Calyx* 5 lobed, *c.* 0.5 cm long. *Corolla* *c.* 1.5 cm long, 2-lipped. *Stamen* 2. *Fruit* a clavate capsule.

Flowering & Fruiting: March – August

Habitat: common, road side, generally used as hedge plant

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Tiprapunji, 11.03.2012, A. Bora & D. Bhattacharyya 11549, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, China, Malaysia, Philippines

Note: The dried leaves are used to repel insects from clothing (website: <http://www.naturalmedicinalherbs.net/herbs/j/justicia-gendarussa.php>).

Threat status: Not Evaluated

J. virgate T. Anderson, J. Linn. Soc., Bot. 9: 516. 1867. *Dianthera virgata* (T. Anderson) Benth. in Benth. & Hook.f., Gen. Pl. 2: 1114. 1876; C.B. Clarke in Hook.f., Fl. Brit. India 4: 542. 1885.

Slender herb, upto 1 m high. Leaves elliptic, acuminate, punctulate on both surfaces. Bracts ovate or elliptic acute as long as the calyx. Spikes 8 – 15 cm linear, slender, interrupted, terminal, 1 – 3 together, or sometimes paniced; bracts *c.* 4 mm, flowers opposite, *c.* 6 mm, white or slightly yellow-tinged. Anther cells completely superposed. Capsule *c.* 1.2 cm, clavate, puberulous. Seeds glabrous, tubercular-verrucose.

Flowering & Fruiting: November – February

Habitat: Roadside, hillslopes

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, West Block, 15 No. Hill, 09.11.2011, H. A. Barbhuiya 767 (ASSAM).

Distribution: India (Assam, Arunachal Pradesh, Meghalaya, Mizoram, Sikkim), Bhutan, Myanmar, Thailand.

Threat status: Not Evaluated

Nelsonia R.Br.

N. canescens (Lam.) Spreng., Syst. Veg. 1: 42. 1824; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 253. 2003. *Justicia canescens* Lam., Ency. 1: 41. 1783. *J. Campestris* R. Br. Prodr. 481. 1810; Clarke in Hook.f., Fl. Brit. India 4: 394. 1885. *Nelsonia campestris* R.Br., Prodr. Fl. Nov. Holland. 481. 1810.

Vernacular Name: Blue pussyleaf (E)

Herb, erect, villous. *Leavesc.* 2.2 – 5 cm long, pubescent elliptic-oblong, entire, tomentose, acute at the apex; upper leaves sessile and lower leaves petioled. *Inflorescence* terminal or axillary, hairy spikes; *flower* small, purple; *bract* pubescent; *bracteoles* 2. *Calyxc.* 0.5 cm long, hairy. *Corollac.* 0.6 cm long. *Stamen* 2.

Flowering & Fruiting: November – April

Habitat: common, moist places along roadsides and streambeds

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11735, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Northeast India, Himalayas.

Distribution: India, Africa, America, Australia, South-east Asia, Sri Lanka

Note: This plant is used in African and Asian traditional medicine. In India, it is called “Bada Rasna” and it is used in traditional medicine to treat pain and inflammation (website: <http://www.cabi.org/isc/datasheet/120146>).

Threat status: Not Evaluated

Phlogacanthus Nees

P. thyrsiflorus Nees. in Pl. Asiat. Rar. 3: 99. 1832; Clarke in Hook. f., Fl. Brit. India 4: 512. 1885; Kanjilal *et al.*, Fl. Assam 3: 443. 1939; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 254. 2003. *Justicia thyrsiflora* Roxb., Fl. India 1: 114. 1820.

*Vernacular Name:*Tita ful (A)

Shrubs. *Leaves* opposite, *c.* 10 – 25 cm long, elliptic to oblanceolate, apex acuminate, base narrow. *Inflorescence* panicles, terminal; *flowers* curved to some extent, deep red, elongated; *bracts* villous. *Calyx* 5 lobed, *c.* 0.5 cm long. *Corolla* curved, *c.* 2 – 2.2 cm long. *Stamen* 2. *Style* filiform.

Flowering & Fruiting: January – May

Habitat: common, foot hills, rode side

Specimens Examined: Malidahar

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Kalaincherra, near Kalian Tea Estate 15 No., 26.11.2014, A. Bora & D. Bhattacharyya 11505, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Northeast India, Himalayas.

Note: Fruit and leaves are taken after burning as a specific for fevers. Leaves are used as an expectorant in cough, bronchitis and asthma (Yusuf *et al.* 2009).

Threat status: Not Evaluated

Pseuderanthemum Radlk.

P. crenulatum Radlk., Sitzungsber. Math. – Phys. Cl. Konigl. Bayer. Akad. Wiss. München 13: 286. 1884; Kanjilal *et al.*, Fl. Assam 3: 449. 1939; Hu & Daniel, Fl. China 19:439. 20011.

Vernacular Name: Blue Twilight, Blue Crossandra or Florida Twilight (E)

Shrub erect, *c.* 15 – 30 cm tall. *Stem* quadrangular in shape. *Leaves* opposite, *c.* 4 – 10 cm × 1.8 – 3.5 cm, elliptic-lanceolate, acute to sub-acuminate at the tip of the leaves, leaf base narrow. *Flower* pinkish-purple, in terminal verticillaster pattern; *bractsc.* 0.2 cm long, pubescent. *Calyxc.* 0.6 cm long, linear-lanceolate, hairy, green in colour. *Corolla* pinkish purple, *c.* 1 cm long, 2-lipped, 5 lobed, subequal, pubescent outside. *Flower* salver-shaped; *stamen* 2, perigynous; *ovary* 4-celled. *Capsule* *c.* 2.5 cm long, compressed, lanceolate-pandurate, linear towards the base, mid-rib present, 4 seeded.

Flowering & Fruiting: March – May

Habitat: moist places, near stream

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11620, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

pecimens Examined: Indranagar

Distribution: India, China, Laos, Malaysia, Thailand, Vietnam

Note: Used as very rare ornamental plant

Threat status: Not Evaluated

Rhinacanthus Nees

R. calcaratus Nees, Prodr. 11: 444. 1847; Kanjilal *et al.*, Fl. Assam 3: 440. 1939.

Vernacular Name: Not known

Small *shrub* to 1 m. *Leaves* narrowly elliptic, entire, glabrous, 10 – 23 × 3 – 8 cm, shortly acuminate at apex; *petiole* 0.3 cm. *Inflorescence* of up to 10 spike-like branches, sometimes much reduced; *branches* 2 – 12cm, *rhachis* pubescent. *Bracts* lanceolate, 1 – 2 mm. *Calyx* 5 – 6 mm, pubescent, lobes lanceolate. *Corolla* 40 – 50 mm, pubescent, tube cylindrical, 30 – 40 × 1 – 2 mm, greenish-white; *upper lip* greenish-white, *c.* 10 mm, lower lip white, lobes elliptic, *c.* 10 × 8 mm. *Ovary* and *style* persistent long after corolla has fallen, *ovary* pubescent. *Capsule* not known.

Flowering & Fruiting: March – May

Habitat: moist places, near stream

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Bhaluknala, Durbintila, 26.02.2016, A. Bora & D. Bhattacharyya 11546, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Vietnam, Myanmar.

Note: Used as an anthelmintic. Roots are used for the treatment in herps.

Threat status: Not Evaluated

Rungia Nees

R. pectinata Nees, Prodr. 11: 470. 1847; Hu & Daniel in Fl. China 19: 445. 2011. *Rungia parviflora* Nees, Pl. Asiat. Rar. iii. 110. 1832. *Justicia pectinata* L., Amoen. Acad. 4: 299. 1760.

Vernacular Name: Comb Rungia (E)

Herbs 20 – 50 cm tall, annual or perennial. *Stem* basally prostrate and rooting at nodes, minutely pubescent. *Petiole* 0 – 7 mm; *leaf blade* oblong-elliptic, 1 – 4 × 0.4 – 1.4 cm, glabrous except for a few trichomes along veins, cuneate at base and decurrent onto petiole, entire at margin, acute at apex. *Spikes* axillary or terminal, 0.5 – 2 cm, 1-sided, solitary or sometimes 2 or 3 compound; *bracts* dimorphic; fertile bracts circular to obovate, 4 – 5 × c. 2 mm, pubescent, margin broadly hyaline, apex obtuse to rounded to emarginate and mucronulate; *bracteoles* elliptic, 2 – 3 mm, margin ciliate, apex 2-cleft and subacute. *Calyx* colorless, pubescent; lobes linear-lanceolate, c. 3 × 0.5 mm, margin narrowly hyaline, apex mucronulate. *Corolla* blue or white, c. 5 mm, outside pubescent; lower lip 3-lobed, lobes triangular; upper lip ovate, 1 – 2 mm, apex emarginate. *Staminal* filaments glabrous. *Ovary* glabrous. *Capsule* ellipsoid, glabrous.

Flowering & Fruiting: November – April

Habitat: Wastelands

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11404, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Bhutan, China, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam.

Note: Leaf juice is considered cooling and aperient; prescribed for children suffering from small-pox in doses of a tablespoonful or two, twice daily. Bruised leaves applied to contusions to relieve pain and swelling. Roots are given in fever. Spray of leaf decoction kills bedbugs by the Marma (Yusuf *et al.* 2009).

Threat status: Not Evaluated

Strobilanthes Blume

S. elongata C. B. Clarke, Fl. Brit. India 4 (11): 470. 1884. *Strobilanthes furcatus* Biswas, Assam Forest Rec., Bot. 1: 23 1934.

Vernacular Name: Not known

An *undershrub*; *branches* terete. *Leaves* 6.3 – 14 cm × 2 – 1.5 cm, sub-petiolate, crenate at the margin, acuminate at the apex. *Inflorescence* spicate, furcate, rarely terminal, 5 – 12 cm long. Bracts almost equal to the calyx lobes, oblong-ovate. Calyx lobes lineolate, 0.8 – 1 × 0.1 – 0.25 cm. Corolla elongate, 1 cm broad. Stamen 4, didynamous. Style long, linear. Fruit not seen.

Flowering: May

Habitat: Hillslopes

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11700 (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Threat status: Not Evaluated

Thunbergia Retz.

T. grandiflora (Roxb. ex Rottl.) Roxb., Bot. Reg. 6: 6. 1820; Clarke in Hook.f. Fl. Brit. India 4: 392. 1885; Kanjilal *et al.*, Fl. Assam 3: 410. 1939; Deb, Fl. Tripura 2: 299. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 256. 2003.

Vernacular Name: Neel lota (B), Kukua loti (A)

Woody climber. Leaves opposite, *c.* 10 – 20 × 5 – 11 cm, ovate or deltoid ovate, cordate. *Inflorescence* terminal, in racemes. *Bracts* large, foliaceous, brownish abaxially. *Calyx.* 2.5 cm long. *Corolla* whitish blue, *c.* 5 cm long, campanulate. *Fruit* a capsule, with four quertrous beak.

Flowering & Fruiting: September – January

Habitat: Common, hilly forest of sanctuary

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11421; Craig Park Tea Estate touching BWS, 26.11.2014, A. Bora & D. Bhattacharyya 11693, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: NE India, Malaysia, South China, Vietnam.

Note: The leaves are used as a remedy against snake bites (Dan & Nhu, 1989).

Threat status: Not Evaluated

124. BIGNONIACEAE Juss.

- 1a. Stamens 5, subequal.....*Oroxylum*
- 1b. Stamens 4, didynamous.....2
- 2a. Flowers crimson-purple, white within, in recemose panicles, terminal.....*Pajanelia*
- 2b. Flowers yellow or pale red, in cymose-paniculate, terminal.....*Stereospermum*

Oroxylum Vent.

O. indicum (L.) Kurz, Forest Fl. Burma 2: 237. 1877; Clarke in Hook.f., Fl. Brit. India 4: 378. 1884; Kanjilal *et al.*, Fl. Assam 3: 40. 1939; Deb, Fl. Tripura 2: 95. 1983. *Bignonia indica* L., Sp. Pl. 2: 625. 1753.

Vernacular Name: Thukuna gach (B)

Trees 6 – 10 m tall. *Leaves* pinnately compound; *leaflets* triangular-ovate, *c.* 5 – 13 × 3 – 10 cm, glabrous, base subrounded, margin entire, apex acuminate. *Flowers* usually open at night having foul smell; *pedicel* 3 – 7 cm; *calyx* campanulate, *c.* 2.2 – 4.5 × 2 – 3 cm,

glabrous, apex truncate; *corolla* purple-red; tube fleshy, c. 3 – 9 × 1 – 1.5 cm; upper lip 2-lobed, lower lip 3-lobed. *Stamens* inserted at middle of corolla tube; *filaments* slightly exerted from corolla tube; *anthers* c. 8 – 10 mm, slightly divergent. *Disc* large, fleshy, 5-lobed. Style 5 – 7 cm; *stigma* bifurcate. *Capsule* woody. *Seeds* rounded with papery wing.

Flowering & Fruiting: January – March of next year

Habitat: Open forests, roadsides, slopes

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11564, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India Bhutan, Cambodia, China, Indonesia (Java, Sumatra), Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam

Note: Bark and fruit is used for tanning and dyeing. Root and bark juice is tonic and astringent. Used in diarrhoea and dysentery and rheumatism. Wood used for match boxes.

Threat status: Not Evaluated

Pajanelia DC.

P. longifolia Schum, Nat. Pflanzenfam. iv. 3b. 244. 1895. *Bignonia indica* L., Sp. Pl. 2: 625. 1753. *Bignonia longifolia* Willd., Sp. Pl., ed. 4 3(1): 306. 1800.

Vernacular Name: Wild Trumpet tree (E), Hona, Kawarhoa (Sylh.)

Tree. Leaves imparipinnate; leaflets opposite, c. 7.5 – 24 × 2.5 – 10 cm, ovate or ovate-elliptic, margin entire, acute to acuminate at the apex, lathery, glabrous, base unequal. *Inflorescence* terminal, robust panicles. *Flower* large, c. 5 – 7.5 cm long, dark purplish; calyx 2.8 cm long, irregularly 5-lobed, tubular; *corolla* dull white, 5 – 7.5 cm long, 5-lobed, rounded. *Stamen* 4, free, didyynamous. *Stigma* 2-lobed. *Fruit* a capsule, 2-winged, compressed.

Flowering & Fruiting: December – May

Habitat: open forests

Specimen Examined: India, Assam, NC Hills dist., Barail Wildlife sanctuary, Durbintila, 28.02.2015, A. Bora & D. Bhattacharyya 11565, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Myanmar, South East Asia, Sri Lanka

Note: Leaves, fruits seeds and roots are used for diarrhea, wounds, rheumatic arthritis and colic.

Threat status: Not Evaluated

Stereospermum Cham.

1a. Leaflets ovate-lanceolate or elliptic oblong, 7 – 11, c. 6 – 12 × 3.5 – 6.5 cm.....*S. chelonoides*

1b. Leaflets elliptic, 8 – 14 × 2.5 – 6 cm long.....*S. tetragonum*

S. chelonoides DC., Biblioth. Universelle Genève xvii. 124. 1838; Kanjilal *et al.*, Fl. Assam 3:404. 1939; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 108. 2003.

Vernacular Name: Fragrant Padri tree (E), Parhori, Paroli (A)

Large tree. *Leaves* imparipinnate; *leaflets* 7 – 11, *c.* 6 – 12 × 3.5 – 6.5 cm, ovate-lanceolate or elliptic oblong, acuminate at the base, serrate at the margin or sometimes entire. *Inflorescence* terminal, lax panicles. *Flowers* yellowish; *calyx* purplish, campanulate, *c.* 0.7 cm long; *corolla* yellowish with purplish tinge at throat, *c.* 1.7 cm long. *Capsule* curved, compressed, spirally twisted, *c.* 30 – 50 cm long.

Flowering & Fruiting: April – Cold season

Habitat: occasionally, in hilly forest

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11761, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout moist parts of India, Myanmar, Sri Lanka, South-East Asia

Note: Wood is used for canoes and heavy packing cases.

Threat status: Not Evaluated

S. tetragonum DC., Biblioth. Universelle Genève xvii. 124. 1838; Gamble, Fl. Madras 2: 998. 1993 (re. ed); Sasidharan, Biodiversity documentation for Kerala – Flowering Plants, part 6: 335. 2004; Keshava Murthy and Yoganarasimhan, Fl. Coorg (Kodagu) 322. 1990. *Stereospermum personatum* (Hassk.) Chatterjee in Bull. Bot. Soc. Bengal 2(1): 70. 1948.

Vernacular Name: Dhapatita (A), Yellow Snake Tree (E)

Deciduous tree, upto 15 – 20 m tall. *Leaves* large, pinnate, *c.* 25 – 50 cm long; *leaflets* elliptic, 8 – 14 × 2.5 – 6 cm long. *Flowers* light-yellow, with reddish-purple veins, *c.* 2 cm long; *upper lip* 2-lobed, and the *lower one* 3-lobed. *Fruit* long, 4-angular, curved, brown, covered with white specks.

Flowering: May – July

Habitat: occasional, margins of evergreen forests

Specimen Examined: India, Assam, Cachar dist., 13.05.1989, J. C. Prazer 334003 (CAL).

Distribution: India, Bangladesh and Sri Lanka

Threat status: Not Evaluated

125. VERBENACEAE J.St.-Hil.

- 1a. Shrubs, erect or climbing.....2
- 1b. Trees, tall shrubs or rarely subshrubs.....3
- 2a. Shrubs, climbing, aromatic, pubescent or glabrous; ovary 2-locular.....*Lantana*
- 2b. Shrubs, erect or straggling; not aromatic; ovary 8-locular.....*Duranta*

- 3a. Stamens 5 or 6.....*Tectona*
 3b. Stamens 4.....4
 4a. Stamens exserted.....*Clerodendrum*
 4b. Stamens usually included.....*Gmelina*

Clerodendrum L.

- 1a. Undershrub with foetid smell; leaves pubescent.....*C. viscosum*
 1b. Subshrubs to shrubs; leaves glabrous.....*C. indicum*

C. indicum Kuntze, Revis. Gen. Pl. 2: 586. 1891. *Clerodendrum longicolle* G.Mey., Prim. Fl. Esseq. 217. 1818.

Vernacular Name: Bamunhati (B)

Subshrubs to shrubs. Leaves whorled, sessile or subsessile; leaf blade narrowly lanceolate to oblong-lanceolate, 10 – 21 × 1.3 – 2.5 cm, glabrous, attenuate at base, entire or sinuate at margin, short acuminate at apex. Inflorescences terminal leafy thyrses, 20 – 45 × 10 – 15 cm; cymes, few flowered; peduncle to 3 cm; bracts 1 – 2 cm; bracteole present. Calyx 1 – 1.5 cm, ovate-lanceolate, 8 – 15 × 3 – 6 mm, acute at apex. Corolla white, tube funnellform, curved, 5 – 9 cm; lobes spreading, lanceolate, elliptic or ovate-oblong, 8 – 15 × 3 – 6 mm. Stamens long exserted. Ovary glabrous. Style longer than stamens. Fruiting calyx leathery. Drupes dark blue.

Flowering & Fruiting: August – November

Habitat: Roadsides on mountain slopes; 500 – 1000 m.

Specimens examined: India, Assam, Cachar Dist., Barail Wildlife Sanctuary, near Gumra, 11.09.2010, H. A. Barbhuiya 85069 (ASSAM).

Distribution: India, Bhutan, Cambodia, China, Laos, Malaysia, Myanmar, Nepal, Thailand

Note: The dried leaves are smoked like cigarettes to relieve asthma. The juice of the tender parts of the plant is used as an external application for skin complaints. A resin extracted from the plant is used in the treatment of syphilitic rheumatism (Website: <http://tropical.theferns.info/viewtropical.php?id=Clerodendrum+indicum>).

Threat status: Not Evaluated

C. viscosum Vent., Jard. Malmaison 1. t. 25. 1803; Deb, Fl. Tripura 2: 109. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 259. 2003. *Clerodendrum infortunatum* auct., Non Linn. 1753; Clarke in Hook. f., Fl. Brit. Ind. 4: 594. 1885; Kanjilal *et al.*, Fl Assam 3: 487. 1939.

Vernacular Name: Bhataitita (B)

Undershrub with foetid smell, softly tomentose; *branches* 4 angled. *Leaves* 5 – 20 × 4 – 15 cm, ovate-cordate, acuminate, dentate, pubescent. *Petiole* 1.5 – 12 cm long, hairy. *Flowers* white with pinkish tinge in terminal subcorymbose panicles; *bracts* deciduous, elliptic, acuminate, hairy. *Calyx* deeply 5 partite, pubescent, acuminate. *Corolla* white,

hairy outside; lobes oblong, obtuse; *stamens* declinate. *Drupes* globose, within persistent calyx, black when matured.

Flowering & Fruiting: March – July

Habitat: Common, along road side and grassland

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 11.03.2012, A. Bora & D. Bhattacharyya 11336, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Malaysia, South China, Sri Lanka, Vietnam.

Note: In Ayurveda the extracts of *C. viscosum* were reported to be used against cough and cold, itching, worm's indigestion as well as in leprosy; its bark juice was effective against indigestion and abdominal pain, while leaf juice was very effective against scorpion sting (Bhattacharya 1981; Kirtikar & Basu 1991).

Threat status: Not Evaluated

Duranta L.

D. repens L., Sp. Pl. 637. 1753; Deb, Fl Tripura 2: 110. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 259. 2003. *Duranta erecta* L., Sp. Pl. 637. 1753. *Duranta plumieri* Jacq., Select. Strip. Amer. Hist. 186. t. 176. 1763; Kanjilal *et al.*, Fl Assam 3: 462. 1939.

Vernacular Name: Duranta (B)

Evergreen spiny *shrub*, erect, spines axillary or supra axillary. *Leaves* opposite, acute, serrate, cuneate, ovate-elliptic. *Flowers* violet blue in axillary or terminal panicles; *bracts* hairy. *Calyx* tubular, 5 toothed, pubescent. *Corolla* 5 lobed, unequal. *Drupes* orange yellow, succulent, globose.

Flowering & Fruiting: May – July (may be through out the year)

Habitat: Common, used as fencing

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Indranagar, 18.05.2013, A. Bora & D. Bhattacharyya 11590, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Naturalised in India, native to Central America

Note: Used as hedge, border plant, lawn specimen or train as small tree in warm climates (website:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a507>).

Threat status: Not Evaluated

Gmelina L.

G. arborea Roxb. ex Sm., Cycl., (London ed.) 16: Gmelina n. 4. 1810; Clarke in Hook. f., Fl. Brit. Ind. 4: 581. 1885; Kanjilal *et al.*, Fl. Assam 3: 466. 1939; Deb, Fl Tripura 2: 110. 1983; Bora & kumar, Floristic Diversity of Assam: SPWS. 260. 2003.

Vernacular Name: Gamhar (H), Gamari (A)

Deciduous *tree*. *Bark* dark grey or ashy, branchlets nearly pubescent, quadrangular. *Leaves* 6 – 20 × 3 – 9 cm, ovate, acute or acuminate, subcoriaceous, glabrescent above, fairly pubescent or almost glaucous beneath, long petiolate. *Flowers* brownish-yellow, in axillary or terminal panicles; *bracts* linear-lanceolate. *Calyx* 5 toothed, campanulate or copular, hairy. *Corolla* with crenulate margin, yellow, 2 lipped, hairy outside. *Stamen* 4, didynamous. *Ovary* 4-celled; style slender. *Drupes* succulent, obovoid-pyriform, yellow when ripe. *Seed* 1-3, lenticular.

Flowering & Fruiting: March – June

Habitat: Occasionally, in hilly forest

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari, Indranagar, 07.04.2013, A. Bora & D. Bhattacharyya 11589, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Malaysia

Note: Gamhar produces high-quality wood, which is harvested for the manufacture of furniture and musical instruments. It is also used as structural timber, for instance in mines and ship building, as well as joinery, and to make plywood, matches, agricultural implements and even artificial limbs. The wood also produces good quality pulp used in the manufacture of cardboard and various grades of paper (Website: <http://www.kew.org/science-conservation/plants-fungi/gmelina-arborea-gamhar>).

Threat status: Not Evaluated

Lantana L.

L. camara L., Sp. Pl. 2: 627. 1753. *Lantana camara* L. var. *aculeata* (L.) Moldenke in Torreyia 34: 9. 1934; Deb, Fl. Tripura 2: 111. 1983, *Lantana aculeata* L., Sp. Pl. 627. 1753; Kanjilal *et al.*, Fl. Assam 3: 460. 1939.

Vernacular Name: Not known

A straggling *shrub*, aromatic, stems with recurved prickles. *Leaves* opposite 2.5 – 9 × 1.2 – 4 cm, ovate or obovate, oblong, acute at apex; rounded or cordate at base; *petiole* short. *Flowers* usually orange, varying to white or dark purple; *bracts* lanceolate. *Calyx* small, obscurely toothed. *Corolla* tube slender. *Stamens* 4, didynamous. *Ovary* 2 celled; *style* short; *stigma* oblique, sub capitate. *Fruit* greenish-blue, fleshy. *Seeds* exalbuminous.

Flowering & Fruiting: Throughout the year

Habitat: Common, along roadside

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari, Indranagar, 07.04.2013, A. Bora & D. Bhattacharyya 11654, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Neutralised in India, Native to tropical America

Note: Plant leaves are boiled and applied for swellings and pain of the body. Its bark is astringent and used as a lotion in cutiginous eruptions, leprous ulcers (Website: http://ntbg.org/plants/plant_details.php?plantid=6862).

Threat status: Not Evaluated

Tectona L.f.

T. grandis L.f., Suppl. Pl. 151. 1782; Clarke in Hook. f., Fl. Brit. India 4: 570. 1885; Kanjilal *et al.*, Fl. Assam 3: 466. 1939; Deb, Fl. Tripura 2: 115. 1983; Bora & Kumar, Floristic Diversity of Assam: SPWS. 263. 2003.

Vernacular Name: Segun (A)

Large deciduous *tree*; *branches* quadrangular. *Leaves* large, broadly ovate, acute at apex, cuneate at base, margin entire, stellate pubescent below. *Flowers* white, large terminal panicles. *Calyx* obtuse, 6 lobed. *Corolla* white; tube cylindrical. *Drupes* globose.

Flowering & Fruiting: August – January

Habitat: Common, roadside, sparse forest

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidahar, 12.12.2015, A. Bora & D. Bhattacharyya 11588, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Myanmar, South-east Asia

Note: The plant is a source of a high quality general purpose hardwood known as teak. The timber is used for ship decking, flooring, furniture and construction (website: <http://www.kew.org/science-conservation/plants-fungi/tectona-grandis-teak>).

Threat status: Not Evaluated

126. AQUIFOLIACEAE Bercht. & J.Presl

Ilex L.

- 1a. Trees evergreen; stigma discoid.....*I. excelsa*
1b. Shrubs or trees, evergreen; stigma capitate.....*I. godajam*

I. excelsa (Wall.) Voigt, Hort. Suburb. Calcutt. 347. 1845; Chen *et al.* in Fl. China 11: 380. 2008. *Ilex doniana* DC., Prodr. 2: 644. 1825.

Vernacular Name: Kumkum (H)

Trees evergreen. *Stipules* 1 – 1.5 mm; *petiole* 1 – 2 cm, slender, glabrous; *leaf blade* elliptic, oblong or ovate-elliptic, 5 – 10 × 2 – 4 cm, papery, cuneate or obtuse at base, margin entire, acuminate at apex. *Inflorescences* in cymes or solitary, axillary; *flowers* 4 – 6 merous. *Male inflorescences:* *peduncles* 4 – 8 mm, *bracts* present; *pedicels* 2 – 5 mm; *bracteoles* 1 or 2; *calyx* glabrous, 4 – 5-lobed, lobes orbicular; *corolla* rotate, oblong, c. 2 mm; *stamens* equal or slightly longer than corolla, *anthers* oblong; *rudimentary ovary* present. *Female inflorescences:* *peduncles* 5 – 12 mm; *pedicels* 3 – 4 mm; *bracteoles*

present; *calyx* 5 – 6-lobed, lobes deltoid; *corolla* broadly ovate, *c.* 2 mm; *staminodes* about half of corolla lobes; *ovary* ovoid, *stigma* discoid. *Fruit* red, ovoid-ellipsoidal, *c.* 5 mm.

Flowering & Fruiting: April – November

Habitat: Sparse forests; 800 – 2800 m.

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 282.

Distribution: N and NE India, Bangladesh, Bhutan, China, Nepal

Note: Fruit are purgative, emetic, diuretic (Quattrocchi, 2016).

Threat status: Not evaluated

I. godajam (Colebr.) Wall. ex Hook.f., *Fl. Brit. India* 1 (3): 604. 1875; Chen *et al.* in *Fl. China* 11: 382. 2008.

Vernacular Name: Hati-kerepa, Born-bokul (A)

Shrubs or *trees*, evergreen. *Stipules* minute, puberulent; *petiole* 1 – 1.5 cm, puberulent; *leaf blade* ovate or oblong, 4.5 – 8 × 2.5 – 4 cm, rounded at base, margin entire, obtuse-rounded at apex. *Inflorescences* axillary cymes, umbelliform, solitary. *Flowers* white-yellow, 4 – 6 merous. *Male inflorescences*: cymes; *bracteoles* present; *calyx* patelliform, puberulent, 4 – 5 lobed, lobes ovate, ciliate; *corolla* rotate, 4-lobed, oblong, *c.* 2 mm; *stamensc.* as long as corolla, *anthers* ovoid; *rudimentary ovary* globose. *Female inflorescences*: cymes; *peduncles* 1 – 1.4 cm; *bracts* present; *pedicels* 2 – 5 mm; *bracteoles* deltoid; *calyx* as in male flowers; *corolla* elliptic, *c.* 2 mm; *ovary* ovoid, *stigma* capitate. *Fruit* red, globose.

Flowering & Fruiting: January – September

Habitat: Sparse forests, mountain slopes; 300 – 1000 m.

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 280.

Distribution: NE India, Bhutan, China, Laos, Myanmar, Nepal, N Vietnam

Note: Decoctions of bark used in diarrhoea and as a diuretic. Wood yields inferior quality of timber and is also used as firewood (Website: <http://efloraindia.nic.in/efloraindia/taxonList.action?id=4014&type=4>).

Threat status: Not evaluated

127. ASTERACEAE Bercht. & J.Presl

- 1a. Herbs, annuals, perennials or biennials.....2
- 1b. Herbs, shrubs, or trees or woody vines.....5
- 2a. Annuals, leaves alternate.....*Sphaeranthus*
- 2b. Annual to perennial; leaves opposite or verticillate.....3
- 3a. Phyllaries persistent, in 2 or 3+ series, outer usually shorter, more herbaceous, inner often scarious.....*Tridax*
- 3b. Phyllaries imbricate or subimbricate.....4
- 4a. Leaves opposite, margin toothed.....*Eclipta*
- 4b. Leaves opposite or verticillate, upper leaves subopposite to alternate, margin serrate to subentire.....*Eupatorium*

5a. Leaves alternate.....	6
5b. Leaves opposite or whorled or sometimes alternate.....	8
6a. Leaf margins entire, often tomentose.....	<i>Helichrysum</i>
6b. Leaf margin entire or toothed.....	7
7a. Pappus present.....	<i>Blumea</i>
7b. Pappus absent.....	<i>Parthenium</i>
8a. Plants usually woody vines or climbers.....	<i>Mikania</i>
8b. Plants not as above.....	9
9a. Achenes puberulent.....	<i>Spilanthes</i>
9b. Achenes usually glabrous or short hairy.....	10
10a. Synflorescence cymose to subcymose, sometimes subumbellate.....	<i>Ageratum</i>
10b. Synflorescence paniculate, densely clustered to laxly corymbose.....	<i>Vernonia</i>

Ageratum L.

A. conyzoides L., Sp. Pl. 839. 1753; Hook. f., Fl. Brit. India 3: 243. 1881; Deb, Fl Tripura 2: 203. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 193. 2003.

Vernacular Name: Jangli pudina (H), Uchunti (B)

Erect hispid *herb*, strongly scented. *Leaves* 3.0 – 6.5 × 2.0 – 3.5 cm, ovate – rhomboid, acute, truncate at base, hairy. *Heads* homogamous, in terminal corymbose or panicles with bluish purple flowers. *Involucral bracts* linear, sparsely hairy. *Corolla* white or pale blue or violate, all tubular, 5 cleft. *Anther* appendaged, obtuse at base. *Style* obtuse. *Pappus* scales 5, lanceolate, connate at base.

Flowering & Fruiting: Most part of the year, mostly in January – May

Habitat: Common, along roadside & forest floors

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11646; Damcherra (on the way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11363, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Pantropic

Note: Used against epilepsy and wounds, also used as an insect repellent.

Threat status: Not Evaluated

Blumea DC.

B. balsamifera DC., Prodr. 5: 447. 1836; Shi *et al.* 20 – 21: 833. 2011. *Conyza balsamifera* L., Sp. Pl., ed. 2, 2: 1208. 1763.

Vernacular Name: Ngai camphor (E)

Shrubs or *subshrubs*, perennial, erect, 1 – 3 m tall. *Branches* terete, densely hairy. *Leaves* narrowly oblong, 15 – 18 × 3.5 – 5 cm, narrowed, auriculate at base, *margin* serrulate to

serrate, acuminate at apex. *Capitula* 6 – 7 mm, in pyramidal panicles, pedunculate. *Involucres* campanulate; phyllaries in 3 or 4 series. *Receptacle* 2.5 – 3 mm in diam., flat, glabrous. *Marginal* florets filiform, to 6 mm, 2 – 4-lobed. *Central* florets yellow, tubular, 6 – 7 mm, lobes papillate, sparse hairs. *Achenes* terete, oblong, c. 1 mm, sparsely hirsute. *Pappus* reddish.

Flowering & Fruiting: almost round the year

Habitat: Dry fields, grasslands, riverbanks; below 1200 m

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11739, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Thailand, Vietnam

Note: Used as herbal medicine to treat kidney stones, wounds and cuts, rheumatism, anti-diarrhea, anti spasms, colds and coughs and hypertension (website: <http://www.philippineherbalmedicine.org/sambong.htm>).

Threat status: Not Evaluated

Eclipta L.

E. alba Hassk., Pl. Jav. Rar. 528. 1848; Hook. f., Fl. Brit. India 3: 304. 1881; Kanjilal *et al.*, Fl. Assam 3: 117. 1932. *Eclipta prostrata* L., Mant. 286. 1771; Deb, Fl. Tripura 2: 215. 1983; P. J. Bora & Y. Kumar, Florist. Diversity Assam 195. 2003. *Verbesina prostrata* L., Sp. Pl. 902. 1753.

Vernacular Name: Kehraj (A), Bhringraj (S)

Erect *herb*, pubescent. *Leaves* opposite, linear-oblong, lanceolate, acute, hirsute on both surfaces. *Heads* white, terminal or axillary, solitary. *Involucral bracts*, acute, hairy, ovate. *Disk florets* tubular, 4 – 5 lobed. *Pappus* absent.

Flowering & Fruiting: almost throughout the year

Habitat: Common, moist places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Malidhar, 03.03.2012, A. Bora & D. Bhattacharyya 11306; Lakhicherra 24.04.2014, A. Bora & D. Bhattacharyya 11464, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Pantropic

Note: This herb has traditionally been used as a liver tonic and having beneficial effects on diabetes, eye health and hair growth (web: <https://examine.com/supplements/eclipta-alba/>).

Threat status: Data Deficient ver 3.1

Eupatorium L.

E. odoratum L., Syst. Nat., ed. 10. 2: 1205. 1759; Hook.f., Fl. Brit. India.3: 244.1881; Kanjilal *et al.*, Fl. Assam 3: 108. 1939; P. J. Bora & Y. Kumar, Florist. Diversity Assam 198. 2003.

Vernacular Name: Jarmoni bon (A)

Erect aromatic *shrub*. *Leaves* opposite, c. 5 – 11 × 2 – 5.5 cm, ovate or ovate-lanceolate, acuminate at the apex, serrate margin, puberulous beneath. *Inflorescence* corymbose heads, terminal or axillary. *Flowers* white. *Involucral bracts* present. *Corollac.* 0.5 cm long. *Pappus* 5, white. *Achenes* ribbed, narrow base.

Flowering & Fruiting: November – February

Habitat: common, along road side, forest margins

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Ditekcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11563, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Native to America, tropical region

Note: The young leaves are crushed, and the resulting liquid can be used to treat skin wounds (website:

<http://www.toxicologycentre.com/English/plants/English/communistpacha.html>).

Threat status: Not Evaluated

Helichrysum Mill.

H. luteoalbum (L.) Rchb., Handb. Gewächsk., ed. 2. 2 (2): 1460. 1829. *Gnaphalium luteoalbum* L., Sp. Pl. 2: 851. 1753; Hook.f., Fl. Brit. India.3: 244.1881.

Vernacular Name: Jersey cudweed (E)

Erect, densely lanate annual, *herb*, to 0.7 m high. *Basal leaves* to 5 cm long. *Stem leaves* alternating up the stems; slightly stem clasping, 5 cm × 5 mm wide, linear, hairy. *Flowers* cream-yellow, petals absent. *Flower heads* urn-shaped to oval, in large tight clusters at the ends of the stems, sometimes also clusters at the bases of the leaves. *Flowers* golden due to bracts. Many *female florets*, pink or reddish, threadlike, bisexual florets in each involucre. *Bracts* several rows, egg shaped to oblong. *Ovary* superior. *Achene* sparse, tiny hairs; *pappus* of 8 – 12, rough, free, fine bristles.

Flowering & Fruiting: February – May

Habitat: common, moist places, river bank

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11626, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Warm temperate countries.

Note: The leaves are astringent, cholagogue, diuretic, febrifuge, haemostatic and vulnerary (Chopra *et al.*, 1986).

Threat status: Not Evaluated

Mikania Willd.

M. scandens (L.) Willd., Sp. Pl., ed. 4. 3 (3): 1743. 1803. *Eupatorium scandens* L. Sp. Pl. 2: 836. 1753.

Vernacular Name: climbing hempvine (E)

Twining *herb*. *Leaves* simple, acuminate at the apex, coarsely dentate, lobes unequal, *c.* 1.5 – 8 cm wide and *c.* 2.5 – 14 cm long, deeply cordate at the base. *Petioles* shorter than the leaf blades, *c.* 1 – 8 cm long. *Inflorescence* paniced corymbs, terminal or axillary. *Flowers* in small heads 5 – 7 mm long, crowded; *involucral bracts* four, linear-lanceolate, 4 – 5 mm along with one additional smaller bract; *corolla* pink, pale purplish, or rarely white.

Flowering & Fruiting: round the year

Habitat: Common, twining over the bushes and trees

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Ditekcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11368, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Naturalized in India, Pakistan, Sri Lanka, Southeast Asia, United States. Native to Central and South America, Mexico and the West Indies.

Note: Used by the Seminoles to treat itchy skin. Also used for circumcision, wounds, and tumors. Planted as an ornamental, cover crop, and for cattle feed (website: http://www.asianplant.net/Asteraceae/Mikania_scandens.htm).

Threat status: Not Evaluated

Parthenium L.

P. hysterophorus L., Sp. Pl. 2: 988. 1753. *Argyrochaeta bipinnatifida* Cav., Icon. iv. 54. I. 378. 1791. *Echetosis pentasperma* Phil. in Anales Univ. Chile 129 (reimpr. 28). 1873.

Vernacular Name: Carrot Grass (E), Gajar ghas/Chatak Chandani (H)

Annual *herbs*. *Leaf blade* ovate-elliptic, 3 – 18 × 1 – 9 cm, pinnately 1 or 2-lobed, ultimate lobes lanceolate to linear, 3 – 50 × 2 – 15 mm, both surfaces sparsely to densely scaberulose and gland-dotted. *Synflorescences* of open panicles. *Capitula* obscurely radiate; *peduncles* 1 – 15+ mm; *outer phyllaries* 5 or 6, elliptic-lanceolate, 2 – 4 mm, inner 5 or 6 ovate to orbicular, 2.5 – 4 mm. *Female florets* 5 or 6; *corolla limbs* reniform or orbicular to oblong, 0.3 – 1 mm. *Disk florets* 12 – 60. *Achenes* obovoid, 1.5 – 3.5 mm; pappuslike enations erect, deltate to ovate, 0.5 – 1 mm.

Flowering & Fruiting: April – November (round the year)

Habitat: Fields, roadsides

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11649, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: native to tropical America; a widely introduced weed in the tropics.

Note: Plant has no known medicinal properties; instead it is a poisonous plant, causing allergic asthma, hay fever and dermatitis. It is also toxic for cattles.

Threat status: Not Evaluated

Sphaeranthus L.

S. indicus L., Sp. Pl. 2: 927. 1753; Shi *et al.* in Fl. China 20 – 21: 845. 2011.
Sphaeranthus hirtus Willd., Sp. Pl., ed. 4. 3(3): 2395. 1803.

Vernacular Name: Indian sphaeranthus (E), Murmuriya (B)

Plants rank-smelling. *Stems* 10 – 45 cm tall with 4 irregularly and sharply toothed wings, minutely stipitate glandular and whitish pubescent. *Leaves* oblanceolate or spatulate, 2.5 – 6 × 0.8 – 2.5 cm, minutely stipitate glandular and white lanate on both surfaces, semiamplexicaul and strongly decurrent at base, margin rather irregularly biserrate-dentate, obtuse or acute at apex, apiculate, attenuate. Clusters of *capitula* ovoid-globose, c. 12 × 10 mm; capitulum *bracts* linear-lanceolate, 4 – 5 mm, ciliate, hispid and stipitate glandular, apex finely acuminate. *Phyllariesc.* 12, linear-oblong to linear-spatulate, more scarious and less glandular than bracts. *Marginal florets* 10 – 15; central florets 2 or 3; *corollas* purplish. *Achenes* puberulent.

Flowering & Fruiting: December – April

Habitat: Sandy banks along rivers, grasslands; 700 – 1000 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11629; Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11402, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, Cambodia, China, Laos, Malaysia, Nepal, Thailand, Vietnam; Africa, Australia.

Note: Used in insanity, indigestion, bronchitis, anaemia and enriches the blood.

Threat status: Least Concern ver 3.1

Spilanthes Jacq.

S. paniculata Wall., Numer. List n. 3186. 1831; Deb, Fl. Tripura 2: 226. 1983; P. J. Bora & Y. Kumar, Florist. Diversity Assam 200. 2003. *Spilanthus acmella sensu* Hook. f., Fl. Brit. India 3: 307. 1881; Kanjilal *et al.*, Fl. Assam 3: 118. 1939.

Vernacular Name: Botam ful (B)

Erect annual *herb*. *Leaves* opposite, c. 2 – 7 × 0.5 – 2.5 cm, ovate, acute, entire or crenate-serrate. *Heads* yellow, in long terminal peduncles, heterogamous. *Involucral bracts* ciliate, sub 2 serrate. *Florets* tubular. *Anther* bases truncate. *Corolla* yellow. *Achenes* obovoid, black, hairy, laterally compressed.

Flowering & Fruiting: throughout the year

Habitat: In moist places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11653, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Pantropical.

Note: It is a medicinal plant with rich source of therapeutic constituents.

Threat status: Not Evaluated

Tridax L.

T. procumbens L., Sp. Pl. 900. 1753; Hook. f., Fl. Brit. India 3: 311. 1881; Chowdhury in Hajra *et al.* Fl. India 12: 418. 1995.

Vernacular Name: Mexican Daisy (E), Tridhara/Tridaksha (B)

Herb, hispid. *Leaves* opposite, ovate or lanceolate, acute at the apex, margin dentate.

Inflorescence in heads, yellow, solitary; *peduncles* long. *Involucular bracts* 2 – 3 seriate.

Ray florets c. 0.4 cm long, yellow. *Disk florets* c. 0.5 cm long, 5 – lobed, yellow. *Achenes* brown, angular. *Pappus* unequal, bristled.

Flowering & Fruiting: almost throughout the year

Habitat: Common, roadside

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11367; Bandarkhal, way to Jatinga, 28.02.2015, A. Bora & D. Bhattacharyya 11513, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, introduced from South America.

Note: Leaf juice possesses antiseptic, insecticidal and parasiticidal properties. The crushed leaves are applied to arrest bleeding in bruises and cuts. Leaves are also used for the treatment of bronchial catarrh, dysentery, diarrhoea and for the restoration of hairs.

Threat status: Not Evaluated

Vernonia Schreb.

V. subsessilis DC., Prodr. 5: 62. 1836; Hook.f., Fl. Brit. India 3: 230. 1881. *Vernonia subsessilis* DC. var. *bracteolata* Hook.f., Fl. Brit. India 3: 230. 1881.

Vernacular Name: Not known

Undershrub. *Leaves* narrowly lanceolate or oblanceolate, acute or acuminate, obscurely or distantly toothed or sinuate, chartaceous, glabrescent above, pubescent beneath; *lateral nerves* 7 – 10 pairs. *Inflorescence* in corymbose heads; *peduncles* pubescent; *bracts* foliaceous, linear-oblong. *Heads* about 40-flowered; *involucral bracts* subulate, pubescent, often recurved. *Flowers* purple, fading white. *Corolla* glabrous. *Fruit* ribbed. *Pappus* reddish, unequal, persistent.

Flowering & Fruiting: October – December

Habitat: Lower hill forest.

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife Sanctuary, West Block, Kalain Range, 15 No Hill, 12.11.2011, H. A. Barbhuiya 830 (ASSAM).

Distribution: India (Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram), Bangladesh, Nepal, Myanmar.

Threat status: Not Evaluated

128. ESCALLONIACEAE R.Br. ex Dumort.

Itea L.

I. macrophylla Wall. in Roxb., Fl. India, ed. Carey & Wall. ii. 419. 1824; Shuying & Ohba in Fl. China 8: 425. 2001.

Vernacular Name: Not known

Trees, 8 – 10 m tall. *Petiole* stout, 1 – 2.5 cm, glabrous; *leaf blade* elliptic or broadly ovate, 10 – 20 × 5 – 12 cm, thinly leathery, both surfaces glabrous, rounded-obtuse at base, margin glandular serrate, acute or acuminate at apex. *Inflorescence* in raceme, axillary, usually 2 or 3 – clustered, rarely solitary, erect, 10 – 15 cm; *bracts* subulate. *Calyx* cupular; lobes triangular – lanceolate, c. 1.5 mm, puberulous. *Corolla* white, narrowly lanceolate, 3 – 4 mm, apex subacute. *Stamens* 1/2 as long as corolla; *filaments* glabrous; *anthers* dorsifixed, oblong. *Ovary* semi-inferior, glabrous. *Stigma* capitate. *Capsule* glabrous.

Flowering & Fruiting: April – June

Habitat: Roadsides on mountain slopes; 500 – 1500 m.

Specimen Examined: Included after Dutt *et al.* 1974, D. 544.

Distribution: India, Bhutan, China, Indonesia, Myanmar, Philippines, Sikkim, Thailand, Vietnam.

Threat status: Not Evaluated

129. CAPRIFOLIACEAE Juss.

Viburnum L.

V. cylindricum Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 142. 1825; Yang & Malécot in Fl. China 19: 595. 2011. *Viburnum coriaceum* Blume, Bijdr. Fl. Ned. Ind. 13: 656. 1826.

Vernacular Name: Not known

Shrubs or small *trees*, to 8 – 15 m tall. *Leaves* always opposite; *stipules* absent; *petiole* robust, 1 – 5 cm, glabrous or pubescent; *leaf blade* elliptic to oblong or ovate-oblong, 8 – 24 × 3 – 10 cm, leathery, abaxially usually glabrous, adaxially glabrous, rounded at base, margin entire or irregularly dentate, acuminate or acute at apex. *Flowers* appearing after leaves. *Inflorescence* a compound umbel-like cyme, terminal; *rays* whorled; *peduncles* 1 – 6 cm; *bracts* usually caducous, leaflike, whitish green, linear-lanceolate, c. 3 × < 1 mm, glabrous; *bracteoles* scalelike. *Flowers* usually on rays of 3rd order, sessile or shortly

pedicellate. *Calyx* greenish; tube ovoid-orbicular, *c.* 1.5 mm; lobes very small, glabrous, apex rounded. *Corolla* white or reddish, campanulate, 4 – 6 mm; tube 3 – 5 mm; lobes erect, orbicular-ovate, *c.* 1 mm. *Stamens* longer than corolla, inserted near base of corolla; *filaments* 3 – 4 mm; *anthers* purple, oblong. *Styles* exceeding calyx lobes; *stigmas* capitate. *Fruit* ovoid.

Flowering & Fruiting: June – October

Habitat: Sparse forests, scrub; 500 – 3300 m.

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Damcherra, 12.12.2013, A. Bora & D. Bhattacharyya 11413, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bhutan, China, Indonesia, N Myanmar, Nepal, Pakistan, Thailand, Vietnam.

Note: Bark used against eye diseases, psychosis, intermittent fever, leprosy and glandular swelling. Seed oil is used for cooking. Wood is grained and hard, used for making furniture (Website: <http://indiabiodiversity.org/species/show/265147>).

Threat status: Not Evaluated

130. PITTOSPORACEAE R.Br.

Pittosporum Banks ex Gaertn.

P. humile Hook. f. and Thomson, Fl. Brit. India 1: 198. 1872.

Vernacular Name: Not known

Shrubs or undershrubs. Leaves narrow-lanceolate, cuneate at base, acute or acuminate at apex, entire at margins, 3 – 7 × 0.8 – 1.2 cm, glabrous; petioles 5 – 10 mm long. Inflorescence terminal or axillary, racemose; bracts lanceolate, pubescent. Sepals free, broadly lanceolate, oblong or ovate-lanceolate, *c.* 2.5 mm long. Petals free, oblong, 6 – 7 × 2 mm, yellowish green. Filaments glabrous. Ovary glabrous; ovules several; style glabrous. Capsules subglobose; seeds 6 – 9.

Flowering & Fruiting: April – November

Habitat: River bank

Specimen Examined: Included after Dutt *et al.* 1974, D. 309.

Distribution: North-eastern India

Note: Sometimes shoots smell of garlic (Website: <http://efloraindia.nic.in/efloraindia/taxonList.action?id=3819&type=4>).

Threat status: Not Evaluated

131. ARALIACEAE Juss.

- 1a. Small trees or shrubs, prickly, or unarmed, rhizomatous herbs; leaves 1-3-pinnately compound.....*Aralia*
1b. Trees or shrubs; leaves simple, palmately compound.....2

- 2a. Calyx rim 5-toothed.....*Brassaiopsis*
 2b. Calyx entire or 5-toothed.....3
 3a. Corolla 7 – 12.....*Trevesia*
 3b. Corolla 5 or 5 – 11.....4
 4a. Ovary 2 or 3-carpellate.....*Macropanax*
 4b. Ovary 5 – 11-carpellate.....*Schefflera*

Aralia L.

- 1a. Shrubs.....*A. armata*
 1b. Shrubs or trees.....2
 2a. Petiole glabrous.....*A. foliolosa*
 2b. petiole pubescent.....*A. thomsonii*

A. armata Seem., J. Bot. 6: 134. 1868; Kanjilal *et al.*, Fl. Assam 2: 345. 1938. *Aralia tengyuehensis* C.Y.Wu, Fl. Yunnan. 2: 493. 1979. *Aralia thomsonii* Seem. var. *glabrescens* C. Y. Wu, Fl. Yunnan. 2: 498. 1979.

Vernacular Name: Not known

Shrubs. Leaves 2 – 3 pinnately compound, base rounded to cordate, margin serrate, apex acuminate. *Inflorescence* terminal, paniculate umbels, glabrous or pubescent. *Flowers* bisexual; *bracts* caducous, linear, 1.2 – 2.5 mm; umbels 20 – 50-flowered; *pedicels* 1 – 1.5 cm, with stout trichomes. *Ovary* 5-carpellate; *styles* 5, free. *Fruit* globose.

Flowering & Fruiting: August – December

Habitat: forest margins

Specimen Examined: Included after Kanjilal *et al.* 1938.

Distribution: India, China, Malaysia, N. Myanmar, Thailand, Vietnam

Note: It is medicinally used for lung problem in Manipur, India (Singh *et al.* 2015).

Threat status: Not Evaluated

A. foliolosa Seem., J. Bot. 6: 134. 1868. *Aralia lantsangensis* G.Hoo in Acta Phytotax. Sin., Addit. 171. 1965.

Vernacular Name: Not known

Shrubs or trees. Leaves 2 – 3 pinnately compound; *petiole* glabrous; ovate to elliptic, 3.5 – 11 × 2.5 – 5 cm, papery to leathery, base rounded to subcordate, margin serrulate, apex acuminate. *Inflorescence* terminal, umbels, glabrous. *Flower* bisexual and many lateral umbels of male flowers; *bracts* present, narrowly oblong, to 4.5 cm; *pedicels* 5 – 13 mm, glabrous. *Ovary* 5-carpellate; *styles* 5, united basally, free apically. *Fruit* globose to ovoid-globose.

Flowering: September – March

Habitat: bank of stream, roadsided

Specimen Examined: Included after Dutt *et al.* 1974, D. 545.

Distribution: India, China, Bangladesh, Bhutan, Myanmar, Thailand, Vietnam

Threat status: Not Evaluated

A. thomsonii Seem., J. Bot. 6: 134. 1868. *Aralia thomsonii* Seem.
var. *brevipedicellata* Feng, Fl. Yunnan. 2: 498. 1979. *Aralia thomsonii* Seem.
var. *integerrima* Ha in Novosti Sist. Vyssh. Rast. 11: 236. 1974.

Vernacular Name: Not known

Shrubs or trees, 1.5 – 10 m tall. *Leaves* pinnately compound; *petiole* pubescent, prickly; *leaflet* lanceolate to ovate, 8 – 20 × 3 – 10.5 cm, papery, both surfaces densely villous, base rounded, margin serrulate, apex acuminate or acute. *Inflorescence* terminal, panicle of umbels, densely pubescent; bisexual *flowers* and 1 to several lateral umbels of male flowers; *bracts* persistent; umbels 8 – 25-flowered; densely pubescent. *Ovary* 5-carpellate; *styles* 5, free. *Fruit* globose to ovoid-globose.

Flowering & Fruiting: May – November

Habitat: forest margin or roadside

Specimen Examined: India, Assam, N. Cachar Hills dist., Haflong, 03.08.1908, W. G. Craib 191840, 191848 (CAL); Included after Dutt *et al.* 1974, *D.* 599.

Distribution: India, China, Malaysia, Myanmar, Thailand, Vietnam.

Threat status: Not Evaluated

Brassaiopsis Decne. & Planch.

B. glomerulata Regel, Gartenflora 275. t. 411. 1863. *Brassaiopsis speciosa* Decne. & Planch., Rev. Hort. Ser. IV, iii. 106. 1854; Kanjilal *et al.*, Fl. Assam 2: 358. 1938.

Vernacular Name: Kurila (A)

Trees. *Leaves* palmately compound; *petiole* 30 – 50 cm; *leaflets* oblong, ovate-elliptic or broadly lanceolate, 15 – 35 × 6 – 15 cm, ferruginous when young, soon glabrescent, base cuneate to rounded, margin entire or lightly serrulate, apex acuminate. *Inflorescence* terminal, pendent, ferruginous when young; primary axis more than 30 cm; umbels 2 – 3 cm in diam. *Ovary* 2-carpellate. *Fruit* globose or compressed-globose.

Flowering & Fruiting: June – February of next year

Habitat: dense forest, hill slopes

Specimen Examined: Included after Kanjilal *et al.* 1938.

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

Note: It is a plant that appears to have traditional usage in treating rheumatism and back pain in the elderly (website: <https://examine.com/supplements/brassaiopsis-glomerulata/>).

Threat status: Not Evaluated

Macropanax Miq.

M. undulatus Seem., J. Bot. 2: 294. 1864. *Hedera undulata* Wall. & G. Don, Gen. Hist. 3: 394, descr. 1834. *Macropanax parviflorus* G. Hoo in Acta Phytotax. Sin., Addit. 165. 1965. *Paratropia undulata* K. Koch in Wochenschr. Gärtnerei Pflanzenk. 2: 365. 1859.

Vernacular Name: Not known

Trees upto c. 15 m tall. *Leaflets* 3 – 5, elliptic to somewhat obovate, 5 – 16 × 2 – 6 cm, glabrous, base broadly cuneate or rounded, margin entire, minutely thickened, apex shortly acuminate. *Inflorescence* paniculate, glabrous throughout; *peduncle* 0.5 – 2 cm. *Calyx* inconspicuous, 5-lobed. *Fruit* ovoid to ellipsoid.

Flowering & Fruiting: Summer– Spring

Habitat: Mixed forest

Specimen Examined: India, Assam, N. Cachar Hills dist., Haflong, 03.08.1908, W. G. Craib 193387 (CAL); Included after Dutt *et al.* 1974, *D.* 504.

Distribution: India, Bhutan, China, Myanmar, Nepal, Thailand, Vietnam.

Threat status: Not Evaluated

Schefflera J.R.Forst. & G.Forst.

S. venulosa Harms., Nat. Pflanzenfam. iii. 8. 39. 1894. *Heptapleurum venulosum* Seem in J. Bot. 3: 80. 1865; Clarke in Hook.f., Fl. Brit. India 2: 729. 1879; Kanjilal *et al.*, Fl. Assam 2: 353. 1938.

Vernacular Name: Dhobai-lata, Jokhini gach (A)

Small trees. *Leaves* 10 – 14 × 5 – 8 cm, ovate-oblong, apex abruptly acuminate, base rounded; *stipule* 5 mm broad, black. *Flowers* brown; *pedicel* 8 – 12 mm long; *calyx* truncate; *corolla* 2 × 2.5 mm, triangular. *Fruit* a drupe, globose.

Flowering & Fruiting: March – June

Habitat: Evergreen forest

Specimen Examined: Included after Dutt *et al.* 1974, *D.* 519.

Distribution: India, Myanmar, China

Threat status: Not Evaluated

Trevesia Vis.

T. palmata (Roxb. ex Lindl.) Vis., Mem. Reale Accad. Sci. Torino Ser. II, iv. 262. 1842; Clarke in Hook.f., Fl. Brit. India 2: 732. 1879; Kanjilal *et al.*, Fl. Assam 2: 363. 1938.

Vernacular Name: Snowflake Tree (E)

Evergreen tree. *Leaves* simple; *petiole* c. 30 – 90 cm; *stipules* united into a 2-lobed sheath; *leaf blade* very large, 60 – 90 cm wide, leathery, glabrous or sometimes with scattered stellate hairs, margin serrate, acuminate at the apex. *Inflorescence* a panicle of umbels; *pedicels* 1.5 – 2 cm. *Calyx* rim 1 – 2 mm, pubescent. *Stamens* 7 – 12. *Ovary* 7 – 12 carpellate. *Fruit* subglobose to compressed – globose, smooth or ribbed.

Flowering & Fruiting: October – July of next year

Habitat: Common, mountain slopes

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila, 08.03.2014, A. Bora & D. Bhattacharyya 11431, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: India, Bangladesh, Cambodia, China, Laos, Nepal, Thailand, Vietnam.

Note: Fruits are used as fish poison.

Threat status: Not Evaluated

132. APIACEAE Lindl.

- 1a. Herbs, perennial.....*Centella*
- 1b. Herbs, perennial or biennial, rarely annual.....2
- 2a. Calyx teeth prominent, persistent, ovate to lanceolate, acute to obtuse.....*Eryngium*
- 2b. Calyx teeth minute or obsolete.....3
- 3a. Petals white or pinkish.....*Cnidium*
- 3b. Petals white, greenish or yellow.....*Hydrocotyle*

Centella L.

C. asiatica (L.) Urban in Mart., Fl Bras. 11: 287. 1879; Deb, Fl Tripura 2: 192. 1983; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 170. 2003. *Hydrocotyle asiatica* L., Sp Pl. 234. 1753; Clarke in Hook. f., Fl. Brit. India 2: 669. 1879; Kanjilal *et al.*, Fl. Assam 2: 340. 1938.

Vernacular Name: Manimuni (A)

Prostrate creeping *herb*, rooting at the nodes. *Leaves* suborbicular or reniform, palmately nerved, long petiolate, crenate, dentate, stipulate. *Flowers* 3 – 5 in an umbel, subsessile. *Corolla* red, ovate, acute or obtuse, imbricate. *Stamens* red. *Fruits* laterally compressed, ovate to orbicular.

Flowering & Fruiting: April – September

Habitat: Common, in moist places

Specimen Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Durbintila (way to Bandarkhal), 12.12.2013, A. Bora & D. Bhattacharyya 11344, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: Throughout India, Tropical and subtropical regions

Note: As a brain tonic, it is said to aid intelligence and memory. It strengthens the adrenal glands and cleanses the blood to treat skin impurities. It is said to combat stress and depression, increase libido and improve reflexes. It has also been used for chronic venous insufficiency, minor burns, scars, scleroderma, skin ulcers, varicose veins, wound healing, rheumatism, blood diseases, congestive heart failure, urinary tract infections, venereal diseases, hepatitis and high blood pressure.

Threat status: Least Concern ver 3.1

Cnidium Cusson

C. monnieri (L.) Cusson, Hist. Soc. Roy. Méd. 1782 – 83: 280. 1787. *Seseli daucifolium* Clarke, Fl. Brit. India 2(6): 693. 1879.

Vernacular Name: Not known

Annual herb, 10 – 60 cm with taproot. *Inflorescence* umbellate; *bracts* 6–10, linear to linear-lanceolate, ciliate; *bracteoles* 5 – 9, linear. 15 – 20 flowered; *pedicels* present; *calyx* teeth minute. *Stylopodium* conical. *Fruit* ovoid.

Flowering & Fruiting: April – October

Habitat: grasslands

Specimen Examined: Included after Dutt *et al.* 1974, D. 499.

Distribution: India, China, Korea, Laos, Mongolia, Russia, Vietnam; Europe; adventives in North America

Note: It has been used for over a thousand years in traditional Chinese medicine for its positive effect on the libido. It is considered a reproductive aid and aphrodisiac. The seeds are said to be a natural libido booster; and in the treatment of male sexual dysfunction and impotence (website: <http://www.herbaextractsplus.com/cnidium-monnier.html>).

Threat status: Not Evaluated

Eryngium L.

E. foetidum L., Sp. Pl. 1: 232. 1753; Kanjilal *et al.*, Fl. Assam 2: 340. 1938.

Vernacular Name: Jongali-memedo (A)

Aromatic herb. *Basal leaves* numerous; petiole short; *leaf blade* lanceolate or oblanceolate, entire, 5 – 25 × 1.2 – 4 cm, base cuneate, apex obtuse. *Upper leaves* sessile, opposite, spinulose-serrate to parted. *Flower heads* cylindrical, 5 – 12 × 3 – 5 mm; *bracts* present, lanceolate, bracteoles lanceolate; *Calyx teeth* ovate-lanceolate, 0.5 – 1 mm, acute, equal as corolla; *corolla* white or pale yellow. *Styles* erect, c. 1.1 mm. *Fruit* ovoid-globose.

Flowering & Fruiting: April – December

Habitat: Forests, stream banks, moist places, roadsides

Specimens Examined: India, Assam, NC Hills dist., Haflong, 27.08.1908, W. G. Craib 186036, Fl. (CAL); Included after Dutt *et al.* 1974, D. 368.

Distribution: India, native to Central America; now a widespread weed in tropical and subtropical regions

Note: The plant is used as a substitute for coriander for flavouring rice and curries.

Threat status: Not Evaluated

Hydrocotyle L.

1a. Leaves orbicular.....*H. javanica*

1b. Leaves cordate, crenate.....*H. sibthorpioides*

H. javanica Thunb., Diss. Hydroc. n. 17. t. 2. 1798; Kanjilal *et al.*, Fl. Assam 2: 339. 1938.

Vernacular Name: Manamuni (Garo)

Prostrate *herbs*, spreading by runners, rooting at nodes. *Leaves* alternate, 1.5 – 3.5 × 2.5 – 6 cm, orbicular, margin serrate. *Flowers* sessile in capitate clusters or umbell; *pedicels* 0.5 – 2 cm long; *involucral bracts* scaly; *calyx* forming a tube, 0.5 cm long, 5-lobed; *corolla* 5 lobed, 0.05 – 0.1 cm long, lanceolate. *Stamens* 5. *Ovary* 2-celled; styles 2; *stigma* capitate. *Fruit* 3-ridged.

Flowering & Fruiting: October – May

Habitat: stream bank in evergreen forest

Specimens Examined: India, Assam, NC Hills dist., Haflong, 01.08.1908, W. G. Craib 88, Fl. (CAL); Included after Dutt *et al.* 1974, D. 172.

Distribution: Tropical Asia and Oceania

Note: The leaves are used as blood purifier and indigestion, nervousness and dysentery. The leafstalks have a pungent aromatic odour and are said to be useful in toothache (website: <http://www.toxicologycentre.com/English/plants/Botanical/cheruvall.html>).

Threat status: Least Concern ver 3.1

H. sibthorpioides Lam., Encyl. 3: 153. 1789; P. J. Bora & Y. Kumar, Floristic diversity of Assam: Study of Pabitora Wildlife Sanctuary 171. 2003. *Hydrocotyle rotundifolia* Roxb., Fl. India 2: 38. 1824; Clarke in Hook. f., Fl. Brt. India 2: 668. 1879; Kanjilal *et al.*, Fl. Assam 2: 340. 1938.

Vernacular Name: Soru manimuni (A)

Prostrate *herb*; root at the nodes. *Leaves* cordate, crenate. *Inflorescence* umbel, *flower* sessile. *Stipules* round, ovate. *Calyx* teeth minute. *Corolla* red, c. 0.3 cm long, acute, lanceolate. *Fruits* reddish brown.

Flowering & Fruiting: May – November

Habitat: Common, in moist places

Specimens Examined: India, Assam, Cachar dist., Barail Wildlife sanctuary, Madhura khuwari (Indranagar), 07.04.2013, A. Bora & D. Bhattacharyya 11628, Fl. (Herbarium of Department of Life Science & Bioinformatics, Assam University, Silchar).

Distribution: North-east India, North and Western Himalayas, West Bengal; Malaysia, Tropical Africa

Note: It is occasionally eaten as a vegetable and used in medicine. It has folkloric uses in treatment of illnesses such as fever, edema, detoxication and throat pain. It has also been shown to exert an anti-diuretic activity and has proven effective as an external application for skin tumours (Anitha, 2013).

Threat status: Least Concern ver 3.1

* The information provided in the “*Note*” is not intended to be used as a guide for treatment of medical conditions using plants.

2. DISCUSSION

The present study on diversity of Angiosperms in Barail Wildlife Sanctuary, Assam, recognizes a total of 702 (with 1 subspecies and 8 varieties) species distributed under 482 genera and 132 families (Table 5). Total number of genera and species in each family is shown in the table 6 for comprehensive enumeration of the entire flora of BWS. The study was based on critical morpho-taxonomic investigations and was carried out on collected specimens from different locality of Barail Wildlife Sanctuary in different seasons. Besides, specimens from Barail Wildlife Sanctuary and adjacent areas deposited in other herbaria like CAL and ASSAM were also studied in detail. The study revealed the occurrence of about 09 endemic species (Table 7) the Sanctuary and its adjacent areas. Other data have been also recorded for each and every species during field survey, such as habit, flowering and fruiting time, occurrence, etc.

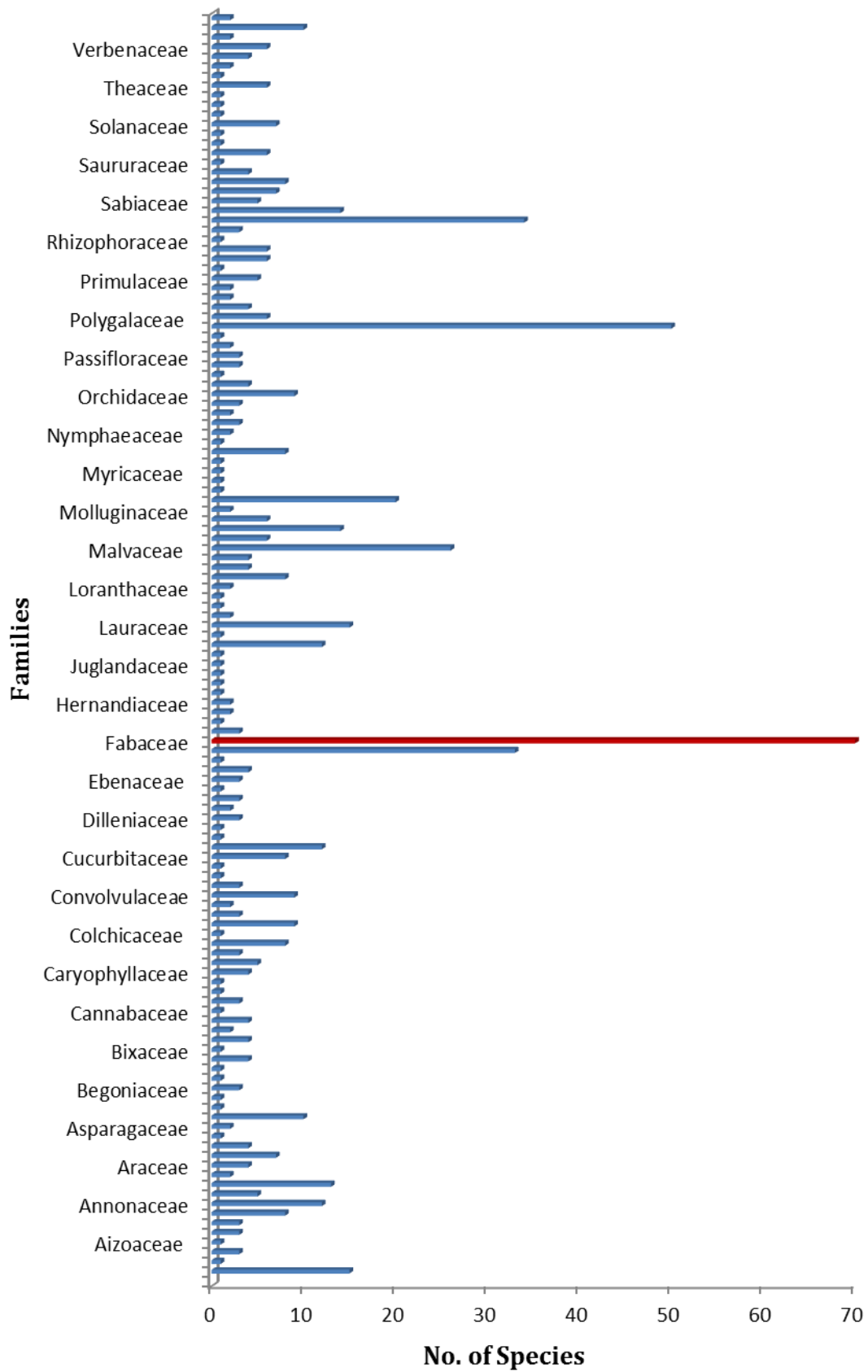
Sl. No.	Family	Genera	Species
1.	Acanthaceae Juss.	13	15
2.	Acoraceae Martinov	1	1
3.	Actinidiaceae Engl. & Gilg	2	3
4.	Aizoaceae Martinov	1	1
5.	Amaryllidaceae J. St. Hilaire	2	3
6.	Amaranthaceae Juss.	3	3
7.	Anacardiaceae R.Br.	7	8
8.	Annonaceae Juss.	10	12
9.	Apiaceae Lindl.	4	5
10.	Apocynaceae Juss.	12	13
11.	Aquifoliaceae Bercht. & J.Presl	1	2
12.	Araceae Juss.	2	4
13.	Araliaceae Juss.	5	7
14.	Arecaceae C.H. Schultz	4	4
15.	Aristolochiaceae Juss.	1	2
16.	Asparagaceae Juss.	1	2
17.	Asteraceae Bercht. & J.Presl	11	11
18.	Balanophoraceae Rich.	1	1
19.	Balsaminaceae A.Rich.	1	1
20.	Begoniaceae C.Agardh	1	3
21.	Berberidaceae Juss.	1	1
22.	Betulaceae Gray	1	1
23.	Bignoniaceae Juss.	3	4
24.	Bixaceae Kunth	1	1

25.	Boraginaceae Juss.	3	4
26.	Brassicaceae Burnett	2	2
27.	Burseraceae Kunth	3	4
28.	Cannabaceae Martinov	1	1
29.	Capparaceae Juss.	2	4
30.	Caprifoliaceae Juss.	1	1
31.	Caricaceae Dumort.	1	1
32.	Caryophyllaceae Juss.	3	4
33.	Celastraceae R.Br.	5	5
34.	Cleomaceae Horan.	1	3
35.	Clusiaceae Lindl.	4	8
36.	Colchicaceae DC.	1	1
37.	Combretaceae R.Br.	3	9
38.	Commelinaceae Mirb.	3	3
39.	Connaraceae R.Br.	2	2
40.	Convolvulaceae Juss.	5	9
41.	Cornaceae Bercht. & J.Presl	3	3
42.	Costaceae Nakai	1	1
43.	Crypteroniaceae A.DC.	1	1
44.	Cucurbitaceae Juss.	7	8
45.	Cyperaceae Juss.	6	12
46.	Datisceae Dumort.	1	1
47.	Dichapetalaceae Baill.	1	1
48.	Dilleniaceae Salisb.	2	3
49.	Dioscoreaceae R.Br.	1	2
50.	Dipterocarpaceae Blume	2	3
51.	Droseraceae Salisb.	1	1
52.	Ebenaceae Gürke	1	3
53.	Elaeocarpaceae Juss. ex DC.	2	4
54.	Escalloniaceae R.Br. ex Dumort.	1	1
55.	Euphorbiaceae Juss.	18	33
56.	Fabaceae Lindl.	38	70
57.	Fagaceae Dumort.	3	3
58.	Geraniaceae Juss.	1	1
59.	Gesneriaceae Dumort.	2	2
60.	Hernandiaceae Blume	1	2
61.	Hydroleaceae R.Br.	1	1
62.	Icacinaceae Miers	1	1
63.	Ixonanthaceae Planch. ex Miq.	1	1
64.	Juglandaceae A. Richard ex Kunth	1	1
65.	Juncaceae Juss.	1	1
66.	Lamiaceae Martinov	10	12
67.	Lardizabalaceae R.Br.	1	1
68.	Lauraceae Juss.	6	15
69.	Lecythidaceae Poiteau	2	2
70.	Linaceae DC. ex Perleb	1	1
71.	Loganiaceae R.Br. ex Mart.	1	1
72.	Loranthaceae Juss.	2	2

73.	Lythraceae J.St.-Hil.	5	8
74.	Magnoliaceae Juss.	1	4
75.	Malpighiaceae Juss.	2	3
76.	Malvaceae Juss.	16	26
77.	Melastomaceae Juss.	3	6
78.	Meliaceae Juss.	10	14
79.	Menispermaceae Juss.	6	6
80.	Molluginaceae Bartl.	2	2
81.	Moraceae Gaudich.	5	20
82.	Moringaceae Martinov	1	1
83.	Musaceae Juss.	1	1
84.	Myricaceae Rich. ex Kunth	1	1
85.	Myristicaceae R.Br.	1	1
86.	Myrtaceae Juss.	3	8
87.	Nelumbonaceae A. Rich.	1	1
88.	Nymphaeaceae Salisb.	2	2
89.	Olacaceae Juss. ex R.Br.	3	3
90.	Oleaceae Hoffmanns. & Link	2	2
91.	Onagraceae Juss.	1	3
92.	Orchidaceae Juss.	9	9
93.	Oxalidaceae R.Br.	2	4
94.	Pandanaceae R.Br.	1	1
95.	Papaveraceae Juss.	3	3
96.	Passifloraceae Juss. ex Roussel	2	3
97.	Piperaceae Giseke.	1	2
98.	Pittosporaceae R.Br.	1	1
99.	Poaceae Barnhart	29	48
100.	Polygalaceae Hoffmanns. & Link.	2	4
101.	Polygonaceae Juss.	2	2
102.	Pontederiaceae Kunth	2	2
103.	Portulacaceae Juss.	1	2
104.	Primulaceae Batsch ex Borkh.	2	5
105.	Proteaceae Juss.	1	1
106.	Ranunculaceae Juss.	5	6
107.	Rhamnaceae Juss.	5	6
108.	Rhizophoraceae Pers.	1	1
109.	Rosaceae Juss.	2	3
110.	Rubiaceae Juss.	28	34
111.	Rutaceae Juss.	10	14
112.	Sabiaceae Blume	2	5
113.	Salicaceae Mirb.	4	7
114.	Sapindaceae Juss.	7	8
115.	Sapotaceae Juss.	4	4
116.	Saururaceae Rich. ex T.Lestib.	1	1
117.	Scrophulariaceae Juss.	5	6
118.	Simaroubaceae DC.	1	1
119.	Smilacaceae Ventenat	1	1
120.	Solanaceae Juss.	3	7

121.	Stemonaceae Caruel	1	1
122.	Styracaceae DC. & Spreng.	1	1
123.	Symplocaceae Desf.	1	1
124.	Theaceae Mirb. ex Ker Gawl.	4	6
125.	Thymelaeaceae Juss.	1	1
126.	Ulmaceae Mirbel	2	2
127.	Urticaceae Juss.	4	4
128.	Verbenaceae J.St.-Hil.	5	6
129.	Violaceae Batsch	1	2
130.	Vitaceae Juss.	6	10
131.	Zingiberaceae Martinov	2	2
132.	Zygophyllaceae R.Br.	1	1

Table 6: List of total number of genera and species in each family



Graph 5: Total number of species in each family

Floristic analysis

Among all these recognized species, maximum numbers of species were recorded in the family Fabaceae (70), followed by Poaceae (48), Rubiaceae (34), Euphorbiaceae (33), Malvaceae (26), Moraceae (20), Acanthaceae (15), Lauraceae (15), Meliaceae (14), Rutaceae (14), etc.

Maximum number of genera under each family were recorded in the family Fabaceae (38), followed by Poaceae (29), Rubiaceae (28), Euphorbiaceae (18), Malvaceae (16), Acanthaceae (13), Apocynaceae (12), Annonaceae (10), Meliaceae (10) and Rutaceae (10).

Some of the large genera in Barail Wildlife Sanctuary were *Ficus* (13 species), *Bambusa*, *Cyperus*, *Panicum*, *Phanera* and *Syzygium* (6 species each) and *Caesalpinia*, *Combretum*, *Glochidion*, *Ipomoea* and *Mallotus* (5 species each).

Some of the important economically valuable species recorded from the sanctuary were *Aegle marmelos* (L.) Correa, *Anthocephalus cadamba* (Roxb.) Miq., *Artocarpus heterophyllus* Lamk, *Azadirachta indica* Juss., *Bauhinia wallichii* J. F. Macbr, *Bauhinia glauca* (Benth.) Wall. ex Benth., *Cassia fistula* L., *Dillenia indica* L., *Elaeocarpus serratus* L., *Embllica officinalis* Gaerth., *Ficus religiosa* L., *Gmelina arborea* Roxb., *Mangifera indica* L., *Murraya koenigii* (L.) Sprengel., *Musax paradisiaca* L., *Oroxylum indicum* (L.) Vent *Saraca asoca* (Roxb.) de Wilde, etc.

Table 7: A list of endemic plant species occurring in Barail Wildlife Sanctuary

Sl. No.	Name of the Species	Family	Habit	Flowering Period
1.	Ornithochilus cacharensis Barbhuiya, B. K. Dutta & Schuit.	Orchidaceae	Epiphyte	June – October
2.	Larsenianthus assamensis S.Dey, Mood & S.Choudhury	Zingiberaceae	Herb	October – December
3.	Schizostachyum manni R.B.Majumdar	Poaceae	Bamboo	Not seen
4.	Dalbergia thomsonii Benth.	Fabaceae	woody climber	July – January
5.	Garcinia lanceifolia Roxb.	Clusiaceae	Shrub	November – May
6.	Diospyros cacharensis (Das & P. C. Kanjilal) H.B.Naithani	Ebenaceae	Tree	April – September
7.	Ardisia keenanii Clarke	Primulaceae	Shrub	April – September
8.	Acranthera tomentosa Hook.f.	Rubiaceae	Epiphyte	July – October
9.	Chassalia curviflora (Wall.) Thwaites var. longifolia Hook.f.	Rubiaceae	Small tree	May – July

Rare, Endangered and Threatened (RET) Taxa

The IUCN Red List of Threatened Species is widely known as the most comprehensive approach for evaluating the conservation status of plant and animal species. Some of the RET taxa from Barail Wildlife Sanctuary and its adjacent areas have been listed in this work. The following are the threatened plant species found in the sanctuary according to the IUCN Red List categories.

Endangered (EN)

Prunus ceylanica Miq.

Vulnerable (VU)

The following nine taxa were found as vulnerable in the sanctuary. These were:

Aglaia edulis (Roxb.) Wall., *Cayratia japonica* Gagnep., *Cinnamomum bejolghota* (Buch.-Ham.) Sweet, *Dioscorea deltoidea* Wall. ex Griseb., *Dipterocarpus retusus* Blume, *Ixonanthes khasiana* Hook.f., *Ixora malabarica*(Dennst.) Mabb., *Saraca asoca*(Roxb.) de Wildein and *Vanda coerulea* Griff. ex Lindl.

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