

Flora of
Mahananda Wildlife Sanctuary
Darjeeling
West Bengal

T. K. Paul | Anant Kumar



BOTANICAL SURVEY OF INDIA
2023



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T. K. PAUL
ANANT KUMAR



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MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
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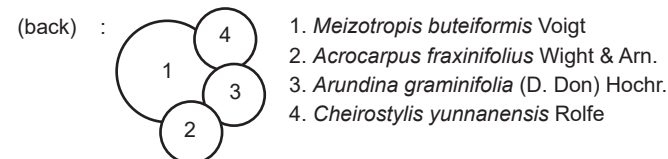
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Cover photo (front) : A view of Mahananda river from Kalijhora, Darjeeling.



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Botanical Survey of India



FOREWORD

Floral wealth of protected areas and their documentation plays an essential role for better understanding of ecosystems, their functions, and the status of various species. The documentation is also suitable for conservation and management actions. There are 567 declared wildlife sanctuaries in India, and 16 in West Bengal. The Mahananda Wildlife Sanctuary in West Bengal is one of the protected areas which endowed with rich floral wealth. Botanical Survey of India has brought out this publication entitled "Flora of Mahananda Wildlife Sanctuary, Darjeeling, West Bengal". The book has dealt with 558 plant taxa belong to 378 genera and 126 families. I am confident that this book will be a valuable resource for forestry and academic personnel involved in taxonomic research. Botanical Survey of India will continue to encourage efforts to bring out similar contributions in other protected areas.

I congratulate the authors on their significant contribution, which provides an up-to-date status on the flora of Mahananda Wildlife Sanctuary representing an unique ecosystem.

(A.A. MAO)



PREFACE

Plant diversity is essential for the survival and well-being of humanity. Apart from cultivated species, many wild plants still play an important role in meeting local needs for food, fuel, medicine and construction materials.

India is one of the 17 mega diverse countries and has four biodiversity hotspots. The country has 10 biogeographical zones, each with its own unique and distinct natural vegetation. There are 567 wildlife sanctuaries in India, and 16 in West Bengal.

The state of West Bengal covers a geographical area of 88,752 sq km. It is bounded on the north by Sikkim and Bhutan, on the northwest by Bihar and Nepal, on the east by Assam and Bangladesh, on the south by Bay of Bengal, on the west by Bihar, Jharkhand and Odisha. The state is geographically divided into five distinct regions. These are Darjeeling Himalayan region; Tarai-Duars region; Western undulating uplands and extension of Chotanagpur plateau; Gangetic plains; and Gangetic delta of Sundarbans.

The Mahananda Wildlife Sanctuary is situated on the west bank of the river Tista in the Terai region of Darjeeling district, West Bengal that forms a part of the Eastern Himalaya. The book entitled "Flora of Mahananda Wildlife Sanctuary, Darjeeling, West Bengal" dealt with 558 plant taxa belong to 378 genera and 126 families. Angiosperms have the maximum diversity in terms of species richness followed by Pteridophytes and Gymnosperms.

T.K. PAUL

ANANT KUMAR



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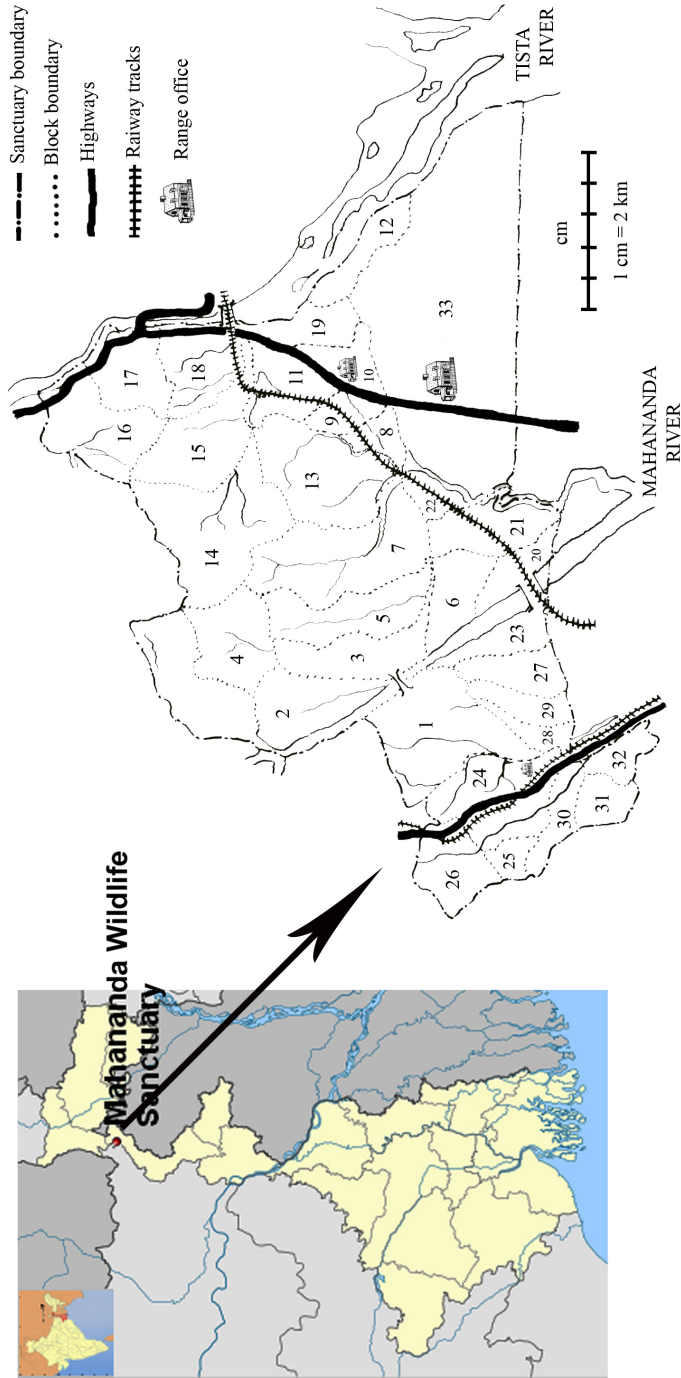


INTRODUCTION

The Mahananda Wildlife Sanctuary (hereafter MWLS) is situated on the west bank of the river Tista in the Terai region of Darjeeling district, West Bengal that forms a part of the Eastern Himalaya, and located between latitudes 26° 55' 33" N and 26° 47' 54" N and longitude 88° 33' 31" E and 88° 23' 36" E. The notified area of the sanctuary is 127.22 sq km. It was first notified as a protected area during 1949. "Protection" at that time however was limited only to restrict the hunting of wild animals. The reserved forest in the lower catchment of Mahananda River had been declared as a Wildlife Sanctuary by Government of West Bengal in June 1976, under the administrative control of a Divisional Forest Officer. Major part of the sanctuary was brought under the administrative control of Wildlife Division I, Darjeeling by Principal Chief Conservator of Forests in November 1995, all the notified blocks of MWLS have been placed under the direct management of Wildlife wing on re-organization of Forest Directorate in September, 1995 (Anonymous 1996). The total area is divided into 33 forest blocks under four ranges viz. East, West, North and South range. The forest blocks are: Punding, Bandar jhola, Jogi jhora, Kuni, Choklong, Upper Champasari, Gulma valley, Silihhita, West Sevoke, East Sevoke, North Sevoke, Jhenaikuri, Lower Ghoramara, Upper Ghoramara, Gola, Ruyem, Andera, Chawa, Samaardanga, Lower Champasari, Singimari, Gulma, Mahanadi, Sukna (Part 1), Rongdong, Kaklong, Mohorganj, Panchenai, Hatisar, Kyananuka, Adalpur, Chumta and Laltong.

TOPOGRAPHY

The area of MWLS comprises of 60% of the forest in hilly region in the foot hills of the Himalayas, characterized by moderate, steep to precipitous mountain slopes and high ridges towards the north and then sloping to almost flat stretch of the Terai and alluvial plains towards the south. There are two broad ecological subdivisions, the Hill tract and the Bhabar tract. Conversion of the higher hills into tea estates and Cinchona plantations have fragmented the



1. Punding; 2. Bandar jhola; 3. Jogi jhora; 4. Kuni; 5. Choklong; 6. Upper Champasari; 7. Gulma valley; 8. Sliihhita; 9. West Sevoke; 10. East Sevoke; 11. North Sevoke; 12. Jhenaikuri; 13. Lower Ghoramara; 14. Upper Ghoramara; 15. Gola; 16. Ruyem; 17. Andera; 18. Chawa; 19. Samaardanga; 20. Lower Champasari; 21. Singimari; 22. Gulma; 23. Mahanadi; 24. Sukna (Part-D); 25. Rongdong; 26. Kaklong; 27. Mohorganj; 28. Panchenai; 29. Hatisar; 30. Kyananuka; 31. Adalpur; 32. Chumta; 33. Laltong.

Location Map of Mahananda Wildlife Sanctuary

ecological boundary in the north. River Tista in the east forms a physical barrier against movement of terrestrial wild lives of the Bhabar tract which is gently sloping and covered with sal forests. The river and khola belts act as valuable biotope for wildlife. The sal forest in the south forms an ecological continuum with Laltong block and Baikunthapur Division. A thin strip of forest makes the boundary in the rest of the portion in Hatisar, Mohorganj and Panchenai blocks. There are cultivated fields, labor colonies in the south. In the west, after the junction of Hill Cart Road and River Mahanada, the tea gardens and habitations limit the forest extant (Anonymous 1996).

Soils

Soils of the sanctuary are extremely varied depending upon the elevation and slopes. The basic soil types are yellow soils, red brown soils and brown forest soils. All the soils are definitely acidic in nature with the tendency to increase slightly in depth. Red and yellow soils have developed on gneiss while brown on schists and shales. The chemical content of the soil over Gneiss is characterized by a high proportion of potassium derived from feldspar and muscovite mica. This soil is rich in lime, magnesium, iron oxides, phosphorus and nitrogen. (www.darjeeling.gov.in).

Climate

The climate of the MWLS is principally tropical and there are mainly three well marked seasons e.g. Summer, Winter and Monsoon. The average minimum temperature recorded is 10.1° C and maximum temperature is 32.4° C (2003–2007). The average rainfall was 1141.1 mm per annum recorded from 1997–2006. The maximum rainfall is during June–August and minimum in December and February. The relative humidity ranges recorded from 2003–2007 are 85.2–91%. (Climatological data from Environmental Research Station, Sukna, Darjeeling personal communication).

VEGETATION

The MWLS, a treasure house of biodiversity falls in the transition zone between Peninsular Indian sub-region and Indo-Malayan sub-region of the Oriental region. The phytogeographical position, irregular and undulated topography with lofty hill ridges and deep valleys accompanied by wide variation in climate and soil have resulted into the formation of varied rich and fascinating vegetation. According to the classification of biographic regions of India (Rodgers & Panwar, 1988) these forests fall in zone 7, i.e. Gangetic plains, province 7B (Lower Gangetic plains), subdivisions Bengal Duars. The forest type varies from riverian khair-sissoo forest to dense mixed-wet forest in higher elevation. The vegetation composition can be described under the following types:

Grass: This is the first seral stage of vegetation succession occur in river beds. This type occur in the clear land formed due to erosion and washing away of the forest cover by Tista River. The area is dominated by grasses mainly of *Phragmites karka* (Retz.) Trin. ex Steud., *Saccharum bengalense* Retz., *S. spontaneum* L., etc.

Khair-Sissoo Forests: It is the second seral stage of vegetation in the plains found to grow near the banks of all rivers and larger streams. The area is dominated by *Albizia* spp., *Erythrina* spp., *Trewia* spp. The undergrowth consists of *Chromolaena odorata* (L.) R.M. King & H. Rob., *Mimosa himalayana* Gamble, etc.

Simul-Siris Forests: The inland areas where soil formations have progressed, the vegetation is dominated by *Haldina cordifolia* (Roxb.) Ridsdale, *Bischofia javanica* Blume, *Erythrina* spp., *Lagerstroemia parviflora* Roxb., *Tetrameles nudiflora* R. Br. in the top storey. The lower storey is composed of *Premna bengalensis* C.B. Clarke, *Mallotus philippensis* (Lam.) Müell.Arg., etc. The undergrowth is composed of *Chromolaena odorata* (L.) R.M. King & H. Rob., *Lantana camara* L., *Mimosa himalayana* Gamble, *Clerodendrum infortunatum* L., etc. The climbers are mainly of *Tinospora sinensis* (Lour.) Merr., *Dalbergia stipulacea* Roxb., *Clematis* spp. Small patches of this type of forests are found in North Sevoke, Punding forest blocks, etc.

Sal Forests: After the previous type of forests, Sal occurs gregariously in deep loamy soil. The associates of Sal in the East Himalayan lower Bhabar subtype are different from those in the East Himalayan upper Bhabar subtype. Eastern Bhabar subtype can be further subdivided into Bamba Sal and Sevoke Sal.

(i) **Bamba Sal** occurs in Lower Ghorama, Gulma valley, Choklong and Upper Champasari forest blocks. The associates of Bamba Sal are: *Schima wallichii* Choisy, *Garuga pinnata* Roxb., *Tetrameles nudiflora* R. Br., etc. The under storey is composed of *Macaranga* spp., *Dillenia pentagyna* Roxb., *Careya arborea* Roxb., *Premna bengalensis* C.B. Clarke, etc. Ground flora includes *Chromolaena odorata* (L.) R.M. King & H. Rob., *Clerodendrum infortunatum* L., *Coffea benghalensis* B. Heyne ex Roth, etc. Climbers are rarely found.

(ii) **Sevoke Sal** occurs in North Sevoke, West Sevoke and East Sevoke forest blocks. The Sal forest of this type is associated with *Terminalia crenulata* Roth, *Toona ciliata* M. Roem., *Chukrasia tabularis* A. Juss., etc. Undergrowth is dominated by *Chromolaena odorata* (L.) R.M. King & H. Rob., *Leea* spp., *Coffea benghalensis* B. Heyne ex Roth, *Clerodendrum infortunatum* L., *Urena lobata* L., etc. Climbers are *Phanera vahlii* (Wight & Arn.) Benth., *Mikania* spp., *Milletia* spp. Eastern Terai Sal type occurs in Shilibhita blocks. This type occurs in wet areas with ferns and canes. The associates of Sal are *Lagerstroemia parviflora* Roxb., *Sterculia villosa* Roxb., *Haldina cordifolia* (Roxb.) Ridsdale, *Garuga pinnata* Roxb., etc. The under storey is composed of *Bauhinia purpurea* L., *Premna bengalensis* C.B. Clarke, etc. The undergrowth is dominated by *Chromolaena odorata* (L.) R.M. King & H. Rob., *Clerodendrum infortunatum* L., etc. Climbers are *Phanera vahlii* (Wight & Arn.) Benth., *Parthenocissus* spp., etc.

Dry Mixed Forests: Sal is common in this forests. The associates are *Dillenia pentagyna* Roxb., *Careya arborea* Roxb., *Terminalia crenulata* Roth, *Gmelina arborea* Roxb., *Lagerstroemia parviflora* Roxb., *Albizia* spp. The lower storey is composed of *Ocotea lancifolia* (Schott) Mez, *Alstonia scholaris* (L.) R. Br., *Macaranga* spp., *Cinnamomum tamala* (Buch.-Ham.) T. Nees & Eberm., etc. The undergrowth is composed of *Ageratum* spp., *Clerodendrum infortunatum* L., *Chromolaena odorata* (L.) R.M. King & H. Rob., *Dendrocalamus hamiltonii*



Plate 1: A. Panoramic view of Kanchenjunga from Mahananda Wildlife Sanctuary; B. Entry point of Mahananda Wildlife Sanctuary; C. Way to Forest Range Office; D. A watch tower for the tourist; E. A new watch tower under construction; F. Mahananda river along the Sanctuary.

Nees & Arn. ex Munro, etc. The climbers are *Phanera vahlii* (Wight & Arn.) Benth., *Mikania* spp., *Tinospora sinensis* (Lour.) Merr. This type is found in North Sevoke, West Sevoke, Lower Ghoramara, Gulma valley, Choklong, Jogijhora, Upper Champasari and Punding forest blocks.

Wet Mixed Forests: This type of forest occur in Samardanga, West Sevoke and Shlibhita forest blocks. The species are found to grow like *Dillenia indica* L., *Eugenia* spp., *Tetrameles nudiflora* R. Br. The lower storey is composed of *Callicarpa arborea* Roxb., *Wrightia arborea* (Dennst.) Mabb., *Premna bengalensis* C.B. Clarke. *Macaranga* spp. Ferns and canebreaks are common. Climbers are *Tinospora sinensis* (Lour.) Merr., *Mikania* spp., *Piper* spp., *Cissus* spp., etc.

Hill Forests: Hill forests can be grouped into Lower hill forests (up to 800 m elevation) and Middle hills forests (800 m and above). Lower hill forests can be grouped into (i) Lower hill Sal forests, (ii) Lower hill dry mixed forests, and (iii) Lower hill wet mixed forests.

(i) Lower hill Sal forests: This type of forest is found to grow in Gulma valley, Punding, Jogijhora, Gola, Chawa and Ruyem forest blocks. The Sal forest is associated with *Schima wallichii* Choisy, *Terminalia crenulata* Roth, *Lagerstroemia parviflora* Roxb., *Careya arborea* Roxb., etc. The lower storey is composed of *Macaranga* spp., *Castanopsis* spp., *Ocotea lancifolia* (Schott) Mez, *Ficus* spp., etc. The undergrowth consists of *Chromolaena odorata* (L.) R.M. King & H. Rob., *Clerodendrum infortunatum* L., etc. Climbers are *Phanera vahlii* (Wight & Arn.) Benth., *Mucuna* spp., *Parthenocissus semicordata* (Wall.) Planch., etc.

(ii) Lower hill dry mixed forests: The forest blocks like Chawa, Gola, Upper Ghoramara, Kuhi, Bandarjholra and Andera comprises of this type of forests. The dominant species are *Toona ciliata* M. Roem., *Terminalia crenulata* Roth, *Tetrameles nudiflora* R. Br., *Castanopsis* spp. The lower storey comprises of *Bauhinia purpurea* L., *Wrightia arborea* (Dennst.) Mabb., *Mallotus philippensis* (Lam.) Müell.Arg., *Pterospermum acerifolium* (L.) Willd., etc. The ground flora is composed of *Chromolaena odorata* (L.) R.M. King & H. Rob., *Clerodendrum infortunatum* L., *Leea* spp., *Coffea benghalensis* B. Heyne ex Roth, ferns and canes. The climbers are *Tinospora sinensis* (Lour.) Merr., *Clematis* spp., *Mikania* spp., etc.

(iii) Lower hill wet mixed forests: This type of forests occur in small patches in moist areas along Mahananda slopes, banks along the Jogijhora, Gulma, Ghoramara and Choklong, etc. The dominant species are *Acrocarpus fraxinifolius* Arn., *Toona ciliata* M. Roem., *Cinnamomum* spp., *Duabanga grandiflora* (Roxb. ex DC.) Walp., *Callicarpa candicans* (Burm. f.) Hoch., *Bischofia javanica* Blume, *Actinodaphne obovata* (Nees) Blume, *Pandanus* spp., canes and ferns. The climbers are *Tinospora sinensis* (Lour.) Merr., *Parthenocissus semicordata* (Wall.) Planch., *Cissus repanda* (Wight & Arn.) Vahl, *Bauhinia* spp., etc.

Middle hill forests (800 m and above): This type is found in Kuhi and Latpanchar forest blocks. The species are *Schima wallichii* Choisy, *Betula alnoides* Buch.-Ham. ex D. Don, *Castanopsis* spp., *Phoebe attenuata* (Nees) Nees, *Acrocarpus fraxinifolius* Arn. The lower storey comprises of *Cinnamomum bejolghota* (Buch.-Ham.) Sweet, *Macaranga* spp., *Wrightia arborea* (Dennst.)



Plate 2: A. Mahananda river in November; B. River Teesta along the Sanctuary; C. View of riverine vegetation along Mahananda river; D. Vegetation at Mahananda Wildlife Sanctuary; E. Shorea robusta plantation and its associates; F. Evergreen forest in Mahananda Wildlife Sanctuary; G. Moist deciduous forest in the background hills.

Mabb., and bamboos in large patches. The thick under growth comprises of *Desmodium* spp., *Maesa* spp., ferns and epiphytes.

PLANTATIONS

Large areas are under plantations both in plains and hills within the sanctuary areas. Plantations in plain areas are mainly of Teak and Sal. The other species grown are *Lagerstroemia speciosa* (L.) Pers., *Michelia champaca* L., *Schima wallichii* Choisy, *Bombax ceiba* L., *Dalbergia sissoo* Roxb. ex DC., *Gmelina arborea* Roxb., etc. Plantations in lower hill forests are mainly of *Shorea robusta* C.F. Gaertn., *Tectona grandis* L.f., *Acrocarpus fraxinifolius* Arn., *Aphanamixis polystachya* (Wall.) R. Parker, *Tetrameles nudiflora* R. Br., *Gmelina arborea* Roxb., *Michelia champaca* L., and *Pinus* spp. There is a *Cinchona* plantation in 30 hectares of land at Latpancher.

PAST BOTANICAL WORK

It was Sir J.D. Hooker, who made extensive collections from erstwhile Bengal and especially from Darjeeling and Sundarbans. The botanical findings during his travels have been systematically recorded by him (Hooker 1849, 1850, 1852). Gamble (1875, 1878) also made rich collections from Darjeeling and foothills of Jalpaiguri. Various parts of North Bengal and Duars were subsequently explored by King and Haines (1896, 1906) and Prain (1903). Biswas (1966) published the "Plants of Darjeeling and Sikkim Himalayas". Das & Chanda (1987) published a flowering calendar of the Angiospermic flora of Darjeeling hills, West Bengal. Grierson, Long and Noltie (1983–2002) published the 'Flora of Bhutan' in 3 volumes in 8 parts where they also included the plants of some areas of Mahananda Wildlife Sanctuary.

A report on "Survey of Flora and Fauna of Mahananda Wildlife Sanctuary" was published in 1996 by Wildlife Wing, Forest Department, Govt. of West Bengal, West Bengal Forest Development Corporation Ltd. & Nature, Environment & Wildlife Society. In this report there is only an enumeration of 170 plant species including trees (39 spp.), herbs (55 spp.), shrubs (54 spp.) and climbers (22 spp.) of the area.

PRESENT BOTANICAL WORK

Field work: The MWLS covers an area of 127.22 sq km. Some of the area is in plain land but most of the areas are hilly tracts, ridges and deep furrows with some inaccessible areas. The inaccessible areas were surveyed on foot as far as possible. The work is the result of intensive botanical exploration tours in different seasons and herbarium consultations. All the seasons like summer, monsoon and winter covering herbaceous flora including grasses and sedges as well as arboreal flora etc. are covered. During field collections, field notes like plant habit, habitat, colour of flower and fruit, phenology, frequency and abundance, exact locality, altitude, plant associations etc. have been noted down. The plants were collected and pressed in the blotting papers for drying. They were tentatively identified in the field.



Plate 3: A. Collection of specimens during field tour at Mahananda Wildlife Sanctuary; B. Field book entry during field tour; C. Processing of Specimens collected during field tour.

Herbarium work: The whole process of collection, pressing and preparation of herbarium sheets was in accordance to the conventional herbarium techniques (Jain & Rao 1977). Relevant field notes were entered and then identified with local floras, regional floras and recent monographs and confirmed by consulting authenticated herbarium sheets deposited at CAL as well as at NBU-Herbarium. All the earlier collections of this sanctuary preserved in CAL have also been consulted.

The voucher specimens have been deposited at CAL.

FLORISTIC COMPOSITION

The floral analysis of the MWLS shows that Angiosperms have the maximum diversity in terms of species richness followed by Pteridophytes and Gymnosperms. A total of 558 taxa under 378 genera and 126 families have been collected and identified. Of the total taxa, Dicotyledons comprise of 89 families, 289 genera and 427 species, Monocotyledons comprise of 18 families, 63 genera and 86 species, Gymnosperms comprise of 1 family, 1 genus and 1 species and Pteridophytes comprise of 18 families, 25 genera and 44 species. Of the total 378 genera, Dicotyledons represent 289 genera, Monocotyledons by 63 genera, Gymnosperms by 1 genus and Pteridophytes by 25 genera respectively. Out of total 558 taxa, Dicotyledons represent 76.38%, Monocotyledons 15.38%, Gymnosperms 0.17%, and Pteridophytes 8.05% of the flora (Table I). The most dominating families in MWLS is Leguminosae (59 spp.), which is followed by Asteraceae (29 spp.), Poaceae (28 spp.), Rubiaceae (22 spp.), etc. (Table II). Besides the Indian elements, the flora of MWLS has exhibit the phytogeographical affinity with other floristic regions of the world. The representative species of North American elements from the study area include *Gnaphalium purpureum* L., *Parthenium hysterophorus* L., *Tithonia diversifolia* (Hemsl.) A. Gray, *Argemone mexicana* L., etc.; Neotropical elements or plants of tropical American region occurring in MWLS represented by *Ageratum conyzoides* (L.) L., *Lantana camara* L., *Triumfetta rhomboidea* Jacq., *Urena lobata* L., *Peperomia pellucida* (L.) Kunth, *Mimosa pudica* L.; South American elements are *Croton bonplandianus* Baill., *Gomphrena celosioides* Mart., *Sida acuta* Burm.f., *Senna alata* (L.) Roxb., *Senna tora* (L.) Roxb.; African elements are *Cleome rutidosperma* DC., *Ludwigia hyssopifolia* (G. Don) Exell, *Ludwigia erecta* (L.) Hara, *Cynodon dactylon* (L.) Pers., *Emilia sonchifolia* (L.) DC.; European species like *Oxalis corniculata* L. The paleotropical elements occurring in the sanctuary area include *Achyranthes aspera* L., *Cleome viscosa* L., *Saccharum spontaneum* L., etc. The Pantropical elements are *Ageratum conyzoides* L., *Alternanthera sessilis* (L.) DC., *Amaranthus spinosus* L., *Boerhavia diffusa* L., *Euphorbia hirta* L., *Sida acuta* Burm.f., *Cyanthillium cinereum* (L.) H. Rob., etc. The cosmopolitan elements are *Chenopodium album* L., *Cynodon dactylon* (L.) Pers., *Cyperus rotundus* L., *Oxalis corniculata* L., *Triumfetta rhomboidea* Jacq., etc.

RARE, ENDANGERED & THREATENED SPECIES

Chakraverty et al. (1999) listed 37 rare and threatened taxa from West Bengal state of which 17 taxa are exclusively from Darjeeling district in which the wildlife



Plate 4: **A.** A tribal woman collected firewood from the Sanctuary; **B.** A tribal woman collected fodder from Sanctuary; **C.** A common livelihood by locals along Mahananda river; **D.** Encroached land in the bank of Mahananda river; **E.** Soil erosion at Wildlife Sanctuary; **F.** Forest wiped out for construction at Mahananda Wildlife Sanctuary.

sanctuary belongs to. Very few species had been described from the sanctuary areas and nearby. *Ixora athroantha* (Rubiaceae) described by Bremekamp collected by M.V. Laurie from Sukna in 1940; *Osbeckia darjeelingensis* G.S. Giri & M.P. Nayar (Melastomataceae) collected from Jhenaikuri, Darjeeling by J.S. Gamble in 1879. Sanjappa et al. (2012) published a list of 19 species which are not collected after type collection in West Bengal of which 14 are from Darjeeling and Jalpaiguri districts. The species like *Geissaspis cristata* Wight & Arn. (Fabaceae; Das et al. 2008), *Hyptis brevipes* Poit. (Lamiaceae; Banerjee & Maiti 2011), *Cheirostylis yunnanensis* Rolfe (Orchidaceae), *Helicteres plebeia* Kurz (Sterculiaceae) are found in very few populations in the Mahananda Wildlife Sanctuary.

FOREST FAUNA

Mahananda Wildlife Sanctuary situated in the Terai region of Darjeeling district, West Bengal is one of the richest heritages of wild flora and fauna. The variation in altitudes and forest types help the existence of large number of species of mammals, reptiles and birds. Among the important mammals are majestic Royal Bengal Tiger, Gigantic Elephants, Bison etc. (list enclosed). Large number of species of snakes including pythons and 243 spp. of birds live in the sanctuary.

Representative Mammals:

Common English Name	Scientific Name
Tiger	<i>Panthera tigris</i>
Leopard	<i>Panthera pardus</i>
Jungle cat	<i>Felis chaus</i>
Leopard cat	<i>Felis bengalensis</i>
Clouded leopard	<i>Neofelis nebulosa</i>
Elephant	<i>Elephas maximus</i>
Gaur	<i>Bos gaurus</i>
Spotted deer	<i>Axis axis</i>
Samber	<i>Cervus unicolor</i>
Barking deer	<i>Muntiacus muntjak</i>
Goral	<i>Nemorhaedus goral</i>
Wild boar	<i>Sus scrofa</i>
Chinese Pangolin	<i>Manis pentadactyla</i>
Assamese Macaque	<i>Macaca assamensis</i>
Rhesus Macaque	<i>Macaca mulatta</i>
Common Langur	<i>Presbytis entellus</i>
Himalayan Black bear	<i>Selenaretos thibatanas</i>
Large Indian cat	<i>Viverra zibetha</i>
Himalayan palm civet	<i>Peguma lurvata</i>

Representative Avifauna:

Common English Name	Scientific Name
Large egret	<i>Ardea alba</i>
White necked stork	<i>Ciconia episcopus</i>
Black stork	<i>Ciconia nigra</i>
Crested serpent eagle	<i>Spilornis chila</i>
Sikra	<i>Accipter badius</i>
Spurwinged lapwing	<i>Vanellus spinosus</i>
Green imperial pigeon	<i>Ducula aenea</i>
Emerald dove	<i>Chalcophaps indica</i>
Red jungle fowl	<i>Gallus gallus</i>
Rose ringed parakeet	<i>Psittacula krameri</i>
Common peafowl	<i>Pavo cristatus</i>
Brown hawk owl	<i>Ninox scutulata</i>
Small blue kingfisher	<i>Alcedo atthis</i>
Indian pied hornbill	<i>Anthraceros malabarica</i>
Rufous necked horn bill	<i>Aceros nipalensis</i>
Large green barbet	<i>Megalaima zeylanica</i>
Indian roller	<i>Coracius benghalensis</i>
Hill Myna	<i>Gracula religiosa</i>

Table I: Plant group wise representation of floristic analysis

	Angiosperms		Gymnosperms	Pteridophytes
	Dicots	Monocots		
Families	89	18	1	18
Genera	289	63	1	25
Species	427	86	1	44
Trees	105	2	-	-
Shrubs	96	9	-	-
Herbs	169	64	-	-
Climbers	57	11	-	-

Total number of plant taxa: Dicots (427) + Monocots (86) + Gymnosperms (1) + Pteridophytes (44) = 558

Percentage-wise representation of floristic analysis	
Dicots	76.38%
Monocots	15.38%
Gymnosperms	0.17%
Pteridophytes	8.05%

Table II: Ten most dominant families arranged according to their descending order of number of taxa

Sl. No.	Family	No. of taxa
1.	Fabaceae	38
2.	Asteraceae	29
3.	Poaceae	28
4.	Rubiaceae	22
5.	Euphorbiaceae	20
6.	Scrophulariaceae	17
6a.	Acanthaceae	17
7.	Lamiaceae	16
8.	Urticaceae	13
9.	Cyperaceae	12
10a.	Caesalpiniaceae	11
10b.	Malvaceae	11
10c.	Verbenaceae	11



Plate 5: A. *Acrocarpus fraxinifolius* Wight & Arn.; B. *Aglaia perviridis* Hiern; C. *Amomum subulatum* Roxb.; D. *Arundina graminifolia* (D. Don) Hochr.; E. *Asystasia macrocarpa* Nees; F. *Begonia nepalensis* (A. DC.) Warb.; G. *Begonia picta* Sm.



Plate 6: A. *Capparis acutifolia* subsp. *viminea* Jacobs; B. *Capsicum frutescens* L.; C. *Centranthera grandiflora* Benth.; D. *Cheirostylis yunnanensis* Rolfe; E. *Clerodendrum kaempferi* (Jacq.) Siebold; F. *Clerodendrum serratum* (L.) Moon



Plate 7: A. *Hellenia speciosa* (J. Koenig) S.R. Dutta; B. *Desmodium triquetrum* (L.) DC.; C. *Duabanga grandiflora* (Roxb. ex DC.) Walp.; D. *Eranthemum pulchellum* Andrews; E. *Eria lasiopetala* (Willd.) Ormerod; F. *Erythrina arborescens* Roxb.

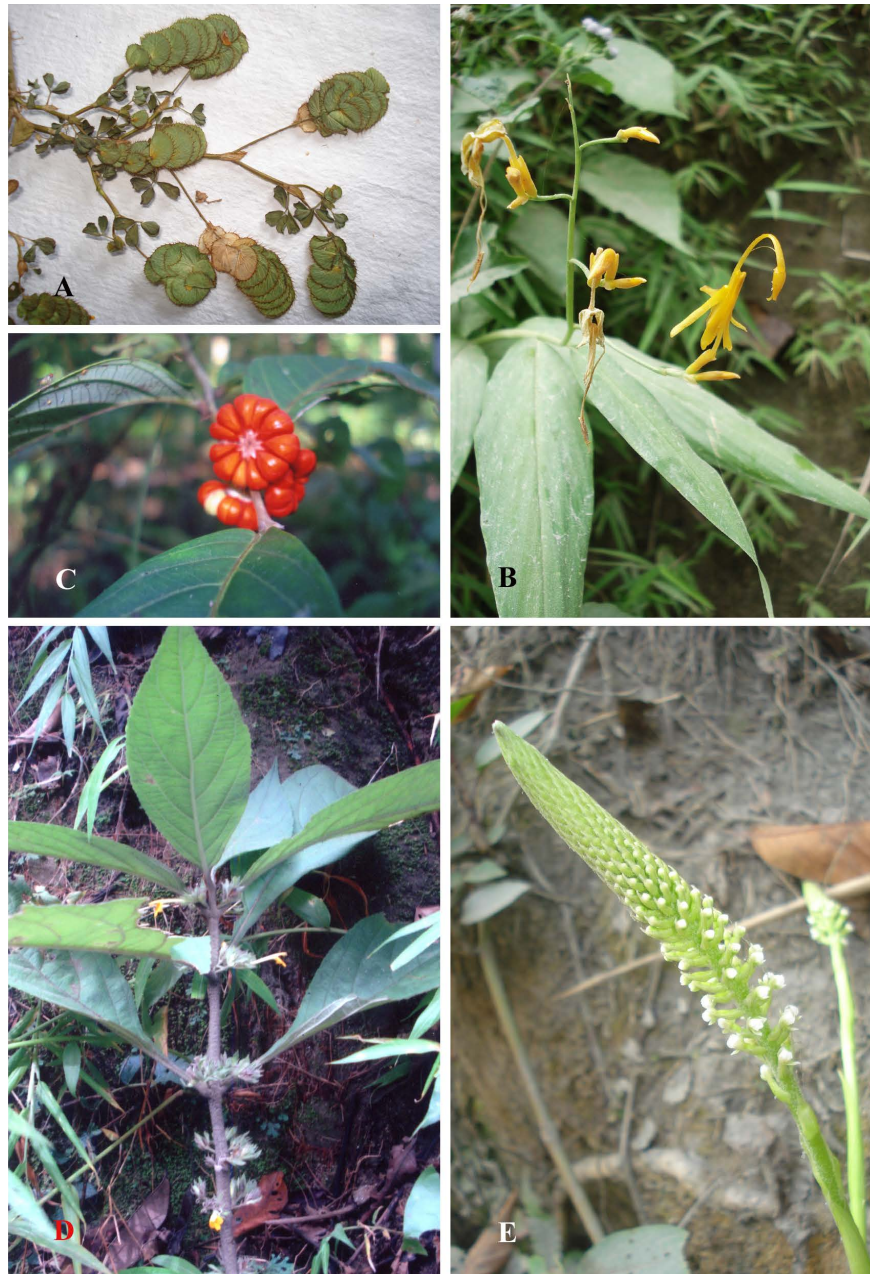


Plate 8: A. *Geissaspis cristata* Wight & Arn.; B. *Globba racemosa* Sm.; C. *Glochidion ellipticum* Wight; D. *Gomphostemma parviflorum* Benth.; E. *Goodyera procera* (Wall. ex Ker-Gawl.) Hook.



Plate 9: A. *Hypoestes phyllostachya* Baker; B. *Merremia vitifolia* (Burm.f.) Hallier f.; C. *Lepisanthes senegalensis* (Juss. ex Poir.) Leenh.; D. *Leucas zeylanica* (L.) R. Br.; E. *Lobelia rosea* Wall.; F. *Mallotus philippensis* (Lam.) Muell.Arg.; G. *Meizotropis buteiformis* Voigt



Plate 10: A. *Morinda pubescens* Sm.; B. *Osbeckia stellata* Buch.-Ham. ex D. Don; C. *Pandanus furcatus* Roxb.; D. *Phlogacanthus thyriformis* (Roxb. ex Hardw.) Mabb.; E. *Pogostemon auricularius* (L.) Hassk.; F. *Saccharum spontaneum* L.



Plate 11: A. *Stachytarpheta cayennensis* (Rich.) Vahl; B. *Stixis suaveolens* (Roxb.) Pierre; C. *Tephrosia candida* DC.; D. *Thunbergia grandiflora* Roxb.; E. *Torenia violacea* (Azaolo) Pannell; F. *Trichosanthes tricuspidata* Lour.; G. *Vallaris solanacea* (Roth ex Roem. & Schult.) Kuntze; H. *Woodfordia fruticosa* (L.) Kurz

SYSTEMATIC ENUMERATION

ANGIOSPERMS

Key to the families

- | | | | |
|---|--------------------|---|----------------------|
| 1a. Leaves usually reticulately veined; cotyledons usually 2 | 2 | 23a. Sepals 2 | 6. Papaveraceae |
| 1b. Leaves usually parallel veined; cotyledon 1 | 109 | 23b. Sepals 4–6 | 24 |
| 2a. Perianth present, biseriate or multiseriate | 3 | 24a. Leaves with prominent parallel lateral veins, margins dentate; sepals large, fleshy, accrescent | 2. Dilleniaceae |
| 2b. Perianth absent or if present, then uniseriate | 92 | 24b. Plant not as above | 25 |
| 3a. Petals free | 4 | 25a. Fruits of 3–10 drupes, occurring on a broad disc | 25. Ochnaceae |
| 3b. Petals all united, at least at the base | 64 | 25b. Fruits not as above | 26 |
| 4a. Ovary superior or stamens inferior or inserted on the top of a hypogynous disc in which ovary may be immersed | 5 | 26a. Calyx accrescent in wings in fruit | 16. Dipterocarpaceae |
| 4b. Ovary inferior or perianth and stamens perigynous | 53 | 26b. Calyx not accrescent in fruit | 27 |
| 5a. Stamens more than twice as many as the petals | 6 | 27a. Ovary 1-loculed with parietal placentation | 10. Flacourtiaceae |
| 5b. Stamens fewer, at the most twice as many as the petals | 28 | 27b. Ovary 2–10-loculed with axile placentation | 20. Tiliaceae |
| 6a. Leaves gland dotted, 1- or 3-foliate, rachis usually winged; ovary 8-many loculed | 24. Rutaceae | 28a. Leaves simple | 29 |
| 6b. Plants not as above | 7 | 28b. Leaves compound | 50 |
| 7a. Stamens united into one or more bundles | 8 | 29a. Ovary 1-loculed (or imperfectly up to 5-loculed) | 30 |
| 7b. Stamens free | 14 | 29b. Ovary perfectly 2- or more-loculed | 40 |
| 8a. Leaves opposite | 13. Clusiaceae | 30a. Climbers; flowers unisexual, 3-merous | 5. Menispermaceae |
| 8b. Leaves alternate | 9 | 30b. Plant not as above | 31 |
| 9a. Anthers 1-celled | 10 | 31a. Flowers actinomorphic, with a distinct corona, ovules many, attached on three parietal placentas | 48. Passifloraceae |
| 9b. Anthers 2-celled | 11 | 31b. Plants not as above | 32 |
| 10a. Herbs, shrubs or trees; carpels in fruits frequently splitting away from the central axis; pollens muricated | 17. Malvaceae | 32a. Perianth in 3-series, connectives produced, carpels many | 4. Annonaceae |
| 10b. Trees; carpels not or rarely splitting away from the central axis; pollens smooth | 18. Bombacaceae | 32b. Plants not as above | 33 |
| 11a. Flowers unisexual | 84. Euphorbiaceae | 33a. Placentation free central | 34 |
| 11b. Flowers bisexual | 12 | 33b. Placentation otherwise | 35 |
| 12a. Androecium of many helically disposed stamens | 3. Magnoliaceae | 34a. Herbs; leaves opposite | 12. Caryophyllaceae |
| 12b. Androecium otherwise | 13 | 34b. Small trees or shrubs; leaves alternate | 58. Myrsinaceae |
| 13a. Leaves stipulate | 19. Sterculiaceae | 35a. Ovules biseriate on the posterior margin | 36 |
| 13b. Leaves exstipulate | 14. Theaceae | 35b. Ovules not arranged as above | 38 |
| 14a. Pistil one | 15 | 36a. Leaves 2-pinnate; corolla actinomorphic, petals valvate; stamens 4–many | 39. Mimosaceae |
| 14b. Pistils more than one | 16 | 36b. Leaves various; corolla zygomorphic, petals imbricate; stamens 10(–5) | 37 |
| 15a. Ovary stipitate on a gynophore | 8. Capparaceae | 37a. Adaxial petal interior (ascending imbrication) or petals absent | 38. Caesalpiniaceae |
| 15b. Ovary sessile or subsessile | 40. Rosaceae | 37b. Adaxial petal exterior (descending imbrication) | 37. Fabaceae |
| 16a. Stamens hypogynous, arising from receptacle | 17 | 38a. Anther connective produced beyond the cells; anthers more or less connivent around the pistil; one of the anther cells spurred | 9. Violaceae |
| 16b. Stamens perigynous, arising from hypanthium | 40. Rosaceae | 38b. Anther not as above | 39 |
| 17a. Flowers unisexual | 18 | 39a. Leaves stipulate | 40. Rosaceae |
| 17b. Flowers bisexual | 21 | 39b. Leaves exstipulate | 28. Icacinaceae |
| 18a. Styles many | 15. Actinidiaceae | 40a. Stamens usually tetradynamous; fruit usually a silique | 7. Brassicaceae |
| 18b. Styles 1–5, or absent | 19 | 40b. Flowers and fruits not as above | 41 |
| 19a. Petals with a ciliate scale within the base; ovules many in parietal placentation | 10. Flacourtiaceae | 41a. Flowers irregular | 42 |
| 19b. Plants not as above | 20 | 41b. Flowers regular | 44 |
| 20a. Style 1 or absent | 13. Clusiaceae | 42a. Calyx tubular with minute teeth; capsule included in the calyx | 45. Lythraceae |
| 20b. Styles 2–4 | 84. Euphorbiaceae | 42b. Calyx broad above with 3–5 distinct lobes; capsule not included in the calyx | 43 |
| 21a. Leaves alternate | 22 | 43a. Sepals 3, posterior ones petaloid, usually spurred at base; stamens 5; ovary 5-loculed | 21. Balsaminaceae |
| 21b. Leaves opposite | 46. Sonneratiaceae | 43b. Sepals 5, inner ones 2 petaloid, wing-like; stamens usually 8 or 4–5; ovary 2-loculed | 11. Polygalaceae |
| 22a. Leaves palmately veined | 20. Tiliaceae | 44a. Leaves opposite | 61. Oleaceae |
| 22b. Leaves pinnately veined | 23 | 44b. Leaves alternate | 45 |

45a. Androecium columnar or tubular	19. Sterculiaceae
45b. Androecium not as above	46
46a. Flowers all unisexual	47
46b. Flowers all bisexual or intermixed with unisexual	49
47a. Pistil 3–6	5. Menispermaceae
47b. Pistil 1	48
48a. Leaves stipulate; disc present	84. Euphorbiaceae
48b. Leaves exstipulate; disc absent	29. Aquifoliaceae
49a. Plants climbing with tendrils	31. Vitaceae
49b. Plants of various habits, without tendrils	34. Sabiaceae
50a. Ovary 1-loculed	36. Moringaceae
50b. Ovary 2 or more loculed	51
51a. Disc absent	23. Averrhoaceae
51b. Disc present	52
52a. Leaves stipulate or exstipulate; filaments free or connate at the base; fruit a drupe, rarely a pseudo-capsule; seeds not winged	26. Burseraceae
52b. Leaves exstipulate; filaments usually connate; fruit a capsule or a drupe; seeds not winged, if filaments free, then fruit a capsule with winged seeds	27. Meliaceae
53a. Stamens more than twice as many as the petals	54
53b. Stamens as many as the petals or less	58
54a. Flowers unisexual or polygamous	51. Begoniaceae
54b. Flowers bisexual	55
55a. Leaves gland dotted	42. Myrtaceae
55b. Leaves not gland dotted	56
56a. Leaves opposite or fascicled	46. Sonneratiaceae
56b. Leaves alternate	57
57a. Disc absent	60. Symplocaceae
57b. Disc present	43. Lecythedaceae
58a. Inflorescence umbellate	59
58b. Inflorescence otherwise	60
59a. Plants usually woody; fruit a berry or drupe	53. Araliaceae
59b. Plants herbaceous; fruit a cremocarp	52. Apiaceae
60a. Fruits winged	61
60b. Fruits not winged	62
61a. Wing solitary	30. Rhamnaceae
61b. Wings 2–5	41. Combretaceae
62a. Climbers with tendrils	50. Cucurbitaceae
62b. Herbs or shrubs	63
63a. Calyx lobes valvate	47. Onagraceae
63b. Calyx lobes imbricate	44. Melastomataceae
64a. Leaves gland dotted, disc present between stamens and ovary	24. Rutaceae
64b. Plant not as above	65
65a. Stamens more than the corolla lobes	66
65b. Stamens as many as the corolla lobes or fewer	68
66a. Herbs; leaves digitately compound; stamens 10; ovary 5-loculed; styles 5	22. Oxalidaceae
66b. Plant not as above	67
67a. Leaves palmately lobed	49. Caricaceae
67b. Leaves simple	16. Dipterocarpaceae
68a. Ovary partly or fully inferior	69
68b. Ovary superior	72

69a. Corolla zygomorphic; stamens didynamous	71. Gesneriaceae
69b. Flowers not as above	70
70a. Anthers or filaments and style connate, flowers in heads	71
70b. Anthers or filaments and style free	54. Rubiaceae
71a. Flowers in involucre heads; ovary 1-loculed	55. Asteraceae
71b. Flowers not in heads; ovary 2–3-loculed	56. Campanulaceae
72a. Plants often with milky latex; corolla often with a corona	63. Asclepiadaceae
72b. Plants not as above	73
73a. Stamens opposite the corolla lobes	75
73b. Stamens alternate with the corolla lobes	74
74a. Shrubs or small trees; leaves alternate	58. Myrsinaceae
74b. Herbs; leaves usually opposite	57. Primulaceae
75a. Corolla irregular	76
75b. Corolla regular	85
76a. Nodes swollen; leaves opposite, often with cystoliths; inflorescence usually with conspicuous bracts	74. Acanthaceae
76b. Plants not as above	77
77a. Ovules and seeds few	78
77b. Ovules and seeds many	82
78a. Leaves all alternate	79
78b. Leaves all opposite or sometimes upper leaves alternate	80
79a. Fruit a capsule	69. Scrophulariaceae
79b. Fruit a drupe or of 2–4-nutlets	66. Boraginaceae
80a. Ovary 4-lobed	81
80b. Ovary not lobed	73. Pedaliaceae
81a. Style gynobasic	76. Lamiaceae
81b. Style terminal	75. Verbenaceae
82a. Leaves compound	72. Bignoniaceae
82b. Leaves simple or dissected	83
83a. Plants root parasite, devoid of chlorophyll, leaves absent	70. Orobanchaceae
83b. Plant not as above	84
84a. Ovary 2-loculed	69. Scrophulariaceae
84b. Ovary spuriously 4-loculed	73. Pedaliaceae
85a. Herbs or shrubs; leaves alternate, often in unequal pairs; calyx persistent, accrescent; corolla funnel shaped, campanulate or rotate; fruit a berry or capsule	68. Solanaceae
85b. Plant not as above	86
86a. Leaves alternate	87
86b. Leaves opposite, sometimes whorled or crowded	90
87a. Flowers in scorpioid cymes or calyx with appendaged sinus	66. Boraginaceae
87b. Flowers neither in scorpioid cymes nor calyx appendaged	88
88a. Ovary with a distinct carpel	62. Apocynaceae
88b. Ovary not as above	89
89a. Plants usually climbing; sepals free; corolla lobes plicate-contorted; fruits capsular or fleshy and indehiscent	67. Convolvulaceae
89b. Plants erect; sepals connate; corolla lobes imbricate; fruits with 4 nutlets	66. Boraginaceae
90a. Ovule 1 or few in each locule	75. Verbenaceae
90b. Ovules many in each locule	91
91a. Scandent shrubs	64. Buddlejaceae
91b. Herbs	65. Gentianaceae

92a. Perianth absent	93
92b. Perianth present (at least in one of the sexes, if the flowers are unisexual)	94
93a. Ovary 2-loculed	61. Oleaceae
93b. Ovary 1-loculed	82. Piperaceae
94a. Ovary inferior or half-inferior	95
94b. Ovary superior	96
95a. Leaves imparipinnate, alternate, rarely opposite; flowers unisexual, in spikes or catkins	88. Juglandaceae
95b. Leaves simple, opposite; flowers bisexual, 1 or 3 together	46. Sonneratiaceae
96a. Anthers opening from the base upwards by valves	83. Lauraceae
96b. Anthers not dehiscent as above	97
97a. Carpels 2 or more	1. Ranunculaceae
97b. Carpel 1	98
98a. Ovary 2 or more loculed	99
98b. Ovary 1-loculed	100
99a. Plants armed; leaves prominently 3-nerved	30. Rhamnaceae
99b. Plants unarmed; leaves not prominently 3-nerved	89. Betulaceae
100a. Annual or perennial herbs, rarely undershrubs	101
100b. Trees or shrubs, sometimes scandent	108
101a. Plants with ochreate stipules	81. Polygonaceae
101b. Plants without ochreate stipules	102
102a. Perianth and bracts hyaline or scarious	77. Amaranthaceae
102b. Perianth and bracts herbaceous	103
103a. Flowers unisexual	104
103b. Flowers bisexual	105
104a. Filaments inflexed in bud	87. Urticaceae
104b. Flowers erect in bud	106
105a. Leaves stipulate	85. Cannabaceae
105b. Leaves exstipulate	78. Chenopodiaceae
106a. Stamens, at least 1 whorl alternating with the perianth lobes	81. Phytolaccaceae
106b. Stamens opposite the perianth lobes	107
107a. Twining herbs	79. Basellaceae
107b. Erect or prostrate herbs	78. Chenopodiaceae
108a. Ovule basal	87. Urticaceae
108b. Ovule apical	86. Moraceae
109a. Perianth 2-seriate, the segments of both coralline, rarely herbaceous	110
109b. Perianth series both calycine or if the inner series coralline then its segments not longer than those of the outer ones	122
110a. Seeds minute or inconspicuous	90. Orchidaceae
110b. Seeds conspicuous	111
111a. Ovary superior	112
111b. Ovary inferior	114
112a. Perianth series well differentiated into outer calycine, inner corolline	101. Commelinaceae
112b. Perianth series corolline and dry	113
113a. Climbing shrubs; leaves distinct	100. Smilacaceae
113b. Erect herbs; leaves replaced by cladodes	97. Asparagaceae
114a. Flowers usually actinomorphic	115
114b. Flowers prominently zygomorphic	118
115a. Perennial herbs; leaves usually ensiform, equitant; flowers solitary or in racemes; perianth large, showy; stamens 3; ovary not winged	95. Iridaceae
115b. Plants not as above	116

116a. Climbers; flowers unisexual; fruits winged	96. Dioscoreaceae
116b. Plants erect; flowers usually bisexual; fruits wingless	117
117a. Perianth tubular or campanulate, persistent in fruit, often covered with plumose hairs	98. Haemodoraceae
117b. Perianth not as above	99. Hypoxidaceae
118a. Fertile stamens 5	94. Musaceae
118b. Fertile stamen 1, the other stamens transformed into petal like staminodes	119
119a. Petiole pulvinous; ovary with 1-fertile cell; ovules solitary	93. Marantaceae
119b. Petiole not pulvinous; ovary with 3 fertile cells; ovules many	120
120a. Leaves spiral; filament forming with the produced connective on oblong petaloid process in its middle; stigma with a semi-lunar pit, ciliate along the margin; spikes usually at the top of leafy stems	92. Costaceae
120b. Leaves distichous; filaments short; connective produced into a narrow appendage as long as the anther; stigma subglobose; spikes usually produced direct from the rootstock	91. Zingiberaceae
121a. Perianth usually 2-seriate, trimerous	122
121b. Perianth absent or reduced to scales, bristles or lodicules or if perianth herbaceous or hyaline then segments either not regularly 3-merous or rarely 6 in 2 rows	123
122a. Both perianth series calycine; seeds with copious albumen	102. Areaceae
122b. Single series of perianth calycine; seeds exalbuminous	105. Alismataceae
123a. Inflorescence of heads or spikelets consisting of solitary flowers in the axils of glumaceous bracts	124
123b. Inflorescence of many or few flowered spadices, spike or racemes or if flowers solitary then not in the axils of glumes	125
124a. Stems 3-angled, without nodes; leaves tristichous with closed sheaths; flowers in the axils of single bracts	106. Cyperaceae
124b. Stems terete or 2-edged, nodose; leaves distichous; flowers enclosed between lemmas and paleas	107. Poaceae
125a. Plants arborescent; leaves armed, apex caudate	103. Pandanaceae
125b. Plants herbaceous; leaves unarmed, apex not as above	104. Araceae

1. RANUNCULACEAE

Clematis L.

1a. Terminal leaflet similar to others; petals absent	1. <i>C. connata</i>
1b. Terminal leaflet usually converted into tendril; petals present	2. <i>C. zeylanica</i>

1. *Clematis connata* DC., Prodr. 1: 4. 1824.

Woody climbers; leaves 3–5 or 3–7-foliolate; leaflets ovate, ovate-lanceolate or elliptic, simple or lobed; flowers light yellowish-cream; achenes ovate or obovate.

Fls. & Frts.: July–November. Occasional in hill slopes.

Latapanchar, *S. Chandra* 21581.

2. *Clematis zeylanica* Poir., Encycl. Suppl. 2: 296. 1811. 'Chaul-bati', 'Muruche' (Beng.).

Woody climbers; leaves 3-foliolate; terminal leaflet usually converted into tendril; flowers in panicles; achenes villous, with feathery tail.

Fls. & Frts.: February–September. Occasional in forest edges.

Sukna, *T.K. Paul & A. Kumar* 41389.

2. DILLENACEAE**Dillenia L.**

- 1a. Flowers 15–20 cm across, creamy white, carpels 14–20; fruits 8–10 cm across
1. D. indica
- 1b. Flowers 2.5–3 cm across, yellow, carpels 6; fruits up to 3.5 cm across
2. D. pentagyna

1. Dillenia indica L., Sp. Pl. 1: 535. 1753. 'Chalta' (Beng.).

Trees; leaves oblong; flowers creamy white, solitary, terminal; pseudocarps subglobose, greenish yellow; seeds reniform, black.

Fls.: May–July; *Frts.:* September–February. Occasional in forest edges, river banks in sandy soil.

Sukna, T.K. Paul & A. Kumar 43688.

2. Dillenia pentagyna Roxb., Pl. Coromandel 1: 21, t. 20. 1795. 'Karkotta' (Beng.).

Deciduous trees; leaves obovate-oblong; flowers yellow, 2–7 in each shoots; pseudocarps subglobose; seeds ovoid.

Fls. & Frts.: March–November. Frequent in forest.

Sukna, T.K. Paul & A. Kumar 43755.

3. MAGNOLIACEAE

- 1a. Flowers usually terminal; gynoecium sessile
1. Magnolia
- 1b. Flowers usually axillary; gynoecium stalked
2. Michelia

1. Magnolia L.

- 1a. Leaves oblanceolate to obovate-oblong, apex acuminate
1. M. hodgsonii
- 1b. Leaves elliptic to obovate, apex acute or obtuse
2. M. pterocarpa

1. Magnolia hodgsonii (Hook.f. & Thomson) Keng, Gard. Bull. Singapore 31(2): 129. 1978. *Talauma hodgsonii* Hook.f. & Thomson, Fl. Ind. 1: 74. 1855. 'Balukath, Chiuri, Hare' (Nep.).

Trees; leaves oblanceolate to obovate-oblong; flowers greenish-white, solitary; fruits ovoid; seeds oblong, red, shiny.

Fls.: April–May; *Frts.:* August–September. Occasional in forest edges in open place.

Latapanchar, T.K. Paul & A. Kumar 43745.

2. Magnolia pterocarpa Roxb., Pl. Coromandel 3: 62, t. 266. 1820. 'Patpate-champ' (Nep.).

Trees; leaves elliptic to obovate; flowers white, solitary; fruits oblong; seeds 2, orange.

Fls.: June–July; *Frts.:* October–November.

Latapanchar, S. Chandra 20731.

2. Michelia L.

Michelia champaca L., Sp. Pl. 1: 536. 1753. 'Champa' (Beng.).

Trees; leaves ovate-lanceolate; flowers pale yellow, axillary, rarely terminal; fruits laxly arranged, ovoid to ellipsoid, white-speckled; seeds many, enclosed in fleshy red aril.

Fls.: March–May; *Frts.:* August–October. Planted.

Sevoke, T.K. Paul & A. Kumar 43800.

4. ANNONACEAE

- 1a. Ripe carpels united forming many-celled syncarpous fruits
1. Annona
- 1a. Ripe carpels free, forming apocarpous fruit
2. Monoon

1. Annona L.

Annona reticulata L., Sp. Pl. 1: 573. 1753. 'Nona' (Beng.); 'Ramphal' (H).

Trees; leaves oblong-lanceolate; flowers 2–3 together, axillary; fruits ovoid to subglobose, yellowish brown to reddish green; seeds black, arillate.

Fls.: May–July; *Frts.:* September–January. Naturalised.

Sukna, T.K. Paul & A. Kumar 42105.

2. Monoon Miq.

Monoon longifolium (Sonn.) B. Xue & R.M.K. Saunders, Taxon 61(5): 1032. 2012. *Uvaria longifolia* Sonn., Voy. Indes Orient., ed. 2, 3: 260. 1782. 'Debdaru' (Beng.); 'Ashoka' (H).

Trees with conical crown; leaves lanceolate; flowers greenish-yellow in subumbellate clusters; ripe carpels numerous, ovoid, yellowish; seed ovoid, longitudinally grooved.

Fls.: March–May; *Frts.:* June–September. Planted near by forest offices.

Sukna, T.K. Paul & A. Kumar 43785.

5. MENISPERMACEAE

- 1a. Leaves peltate or sub-peltate
2
- 1b. Leaves not peltate
3. Tinospora
- 2a. Sepals 4 in male flowers, 1 in female flowers; petals united, cup-shaped; drupe hairy
1. Cissampelos
- 2b. Sepals 6–8 in male flower, 1–8 in female flower; petals free, erecto-patent; drupe glabrous
2. Stephania

1. Cissampelos L.

Cissampelos pareira L. var. **hirsuta** (Buch.-Ham. ex DC.) Forman, Kew Bull. 22(3): 356. 1968. *Cissampelos hirsuta* Buch.-Ham. ex DC., Syst. Nat. 1: 535. 1817.

Lianas; leaves ovate-orbicular; flowers green to yellow in subcorymbose cymes; drupes obovoid, red or orange.

Fls.: July–October; *Frts.*: March–May.

North range, *T.K. Paul & A. Kumar* 42490.

2. *Stephania* Kuntze

Stephania japonica (Thunb.) Miers var. **discolor** (Blume) Forman, *Kew Bull.* 11(1): 56. 1956. *Clypea discolor* Blume, *Bijdr. Fl. Ned. Ind.* 26. 1825.

Climbers; leaves ovate, peltate; flowers in capitate umbellate cymes, male flowers green, yellow or white, female flowers yellow; drupes sessile to shortly stalked, obovoid with transverse ridges.

Fls.: March–June; *Frts.*: December–February.

Sevoke road, *T.K. Paul & A. Kumar* 41362.

3. *Tinospora* Miers.

Tinospora cordifolia (Willd.) Miers ex Hook.f. & Thomson, *Fl. Ind.* 1: 184. 1855. 'Gulanchar' (Beng.).

Climbers; leaves ovate-rounded; flowers yellow in pseudoracemes; drupes 1–3, red; seeds oblong.

Fls.: August–December; *Frts.*: September–May.

Sukna, *T.K. Paul & A. Kumar* 41354.

6. PAPAVERACEAE

Argemone L.

Argemone mexicana L., *Sp. Pl.* 1: 508. 1753.

Herbs; leaves elliptic-oblong, pinnatifid, lower surface prickly; flowers yellow, solitary, bracts foliaceous; capsules oblong or elliptic-oblong.

Fls. & Frts.: February–May.

Sukna, *T.K. Paul & A. Kumar* 41356.

7. BRASSICACEAE

- 1a. Seeds 1-seriate
- 1b. Seeds 2-seriate

- 1. **Cardamine**
- 2. **Rorippa**

1. *Cardamine* L.

Cardamine hirsuta L., *Sp. Pl.* 2: 655. 1753.

Herbs; leaves 5–13-foliolate, orbicular or ovate, irregularly toothed or lobed; flowers white in racemes; pods cylindrical; seeds oval.

Fls. & Frts.: March–August. In moist shady places.

Sukna (W), *T.K. Paul & A. Kumar* 43625.

2. *Rorippa* Scop.

Rorippa dubia (Pers.) Hara, *Jap. Bot.* 30: 196. 1955. *Sisymbrium dubium* Pers., *Synop. Pl.* 2: 199. 1806.

Herbs, base creeping; basal leaves lyrate-pinnatifid, upper leaves obovate-oblong; racemes terminal; pods with one seriate seeds.

Fls. & Frts.: November–May.

Sukna (W), *T.K. Paul & A. Kumar* 43604.

8. CAPPARACEAE

- 1a. Herbs; fruit a cylindrical capsule
 - 1b. Trees, shrubs or climbers; fruit usually a globose berry or a capsule
 - 2a. Petals absent; stamens borne on short cylindrical androgynophore
 - 2b. Petals present; stamens borne from the base of gynophore
 - 3a. Leaves simple; thorns mostly present
 - 3b. Leaves 3-foliolate; thorns absent
- 2. **Cleome**
 - 3
 - 4. **Stixis**
 - 3
 - 1. **Capparis**
 - 3. **Crateva**

1. *Capparis* L.

- 1a. Twining shrubs
 - 1b. Bushy shrubs
 - 2a. Leaves ovate to obovate; flower more than one arising from nodal region, petals hairy
 - 2b. Leaves oblong-lanceolate; flowers numerous, borne singly directly on stem, petals glabrous
- 3. **C. olacifolia**
 - 2
 - 1. **C. acutifolia** subsp. **viminea**
 - 2. **C. mutiflora**

1. ***Capparis acutifolia*** Sweet subsp. **viminea** Jacobs, *Blumea* 12: 429. 1965. [Plate 6A]

Shrubs, sometimes stragglers; stems spiny; leaves elliptic or oblong; flowers creamy white with greenish striations in racemes; fruits globose, purple.

Fls. & Frts.: April–August.

Latapanchar, *S.Chandra & K.L. Maity* 27582.

2. ***Capparis multiflora*** Hook.f. & Thomson in Hook.f., *Fl. Brit. India* 1: 178. 1872.

Shrubs; leaves oblong-lanceolate; flowers yellow to whitish, solitary; fruits berry, globose to subglobose.

Fls. & Frts.: April–June. Occasional.

Latapanchar, *S.Chandra & K.L. Maity* 20741.

3. ***Capparis olacifolia*** Hook.f. & Thomson in Hook.f., *Fl. Brit. India* 1: 178. 1872.

Shrubs; leaves ovate-lanceolate; flowers axillary, 2 from each node; fruits globose with sharp beak.

Fls. & Frts.: March–June. Occasional.

Sukna, *T.K. Paul & A. Kumar* 41331.

2. Cleome L.

- 1a. Stem erect, densely glandular hairy; flowers yellow, stamens 10–15, ovary glandular
2. C. viscosa
- 1b. Stem partially procumbent, glabrous; flowers pinkish-violet, stamens 6, ovary glabrous
1. C. rutidosperma

1. Cleome rutidosperma DC., Prodr. 1: 241. 1824.

Herbs; leaves trifoliate; leaflets elliptic to oblanceolate; flowers pinkish in racemes; capsules linear; seeds many, curved, striate orange-yellow to dull-black.

Fls. & Frts.: September–November. Common.

Sukna, T.K. Paul & A. Kumar 42583.

2. Cleome viscosa L., Sp. Pl. 2: 672. 1753.

Herbs, densely glandular hairy; leaves 3–5-foliolate; leaflets elliptic, oblong or obovate; flowers axillary, in lax racemes; capsules striate, tapering at both ends; seeds subglobose.

Fls. & Frts.: July–September. Common.

Sukna, T.K. Paul & A. Kumar 42587.

3. Crateva L.

Crateva religiosa G. Forst., Fl. Ins. Austr. 35. 1786; 'Barun', 'Tiktoshak' (Beng.).

Trees; leaves 3-foliolate; leaflets ovate to ovate-lanceolate; flowers yellowish; fruit a globose berry.

Fls. & Frts.: April–June. Occasional.

Latapanchar, S.Chandra & K.L. Maity 21596.

4. Stixis Lour.

Stixis suaveolens (Roxb.) Pierre, Bull. Soc. Linn. Paris 1: 654. 1887. *Roydsia suaveolens* Roxb., Pl. Coromandel 3: 87, t. 289. 1819. **[Plate 11B]**

Woody climbers; leaves oblonglanceolate; flowers in axillary or terminal racemes, white or yellowish white, fragrant; drupes ellipsoid-obovoid, greenish brown with white lenticels.

Fls. & Frts.: October–February. Occasional.

Latapanchar, S.Chandra & K.L. Maity 21586.

9. VIOLACEAE**Viola L.**

Viola canescens Wall. in Roxb., Fl. Ind. 2: 450. 1824.

Herbs; leaves ovate-cordate to sub-reniform; flowers pale violet; capsules subglobose.

Fls. & Frts.: March–October.

Sukna, T.K. Paul & A. Kumar 43800.

10. FLACOURTIACEAE**Casearia Jacq.**

Casearia vareca Roxb., Fl. Ind. 2: 418. 1832.

Shrubs or small trees; leaves oblong-elliptic, often somewhat obovate; flowers greenish-yellow in axillary fascicles; capsules ellipsoid, orange-yellow.

Fls.: April–June; *Frts.:* October–May. Occasional.

Sukna, T.K. Paul & A. Kumar 41209.

11. POLYGALACEAE**Polygala L.**

Polygala arillata Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 199. 1825.

Shrubs; leaves ovate-lanceolate; flowers bright yellow in racemes; capsules deeply notched at apex, 2-seeded.

Fls. & Frts.: May–August.

Sukna, T.K. Paul & A. Kumar 43802.

12. CARYOPHYLLACEAE

1a. Leaves deltoid-ovate to subreniform; styles united at base

1. Drymaria

1b. Leaves linear; styles free to the base

2. Spergula

1. Drymaria Willd. ex Schult.

Drymaria diandra Blume, Bijdr. Fl. Ned. Ind. 2: 62. 1825.

Herbs; leaves deltoid-ovate to subreniform; flowers in cymes; capsules globose, 2-3 valved.

Fls. & Frts.: Throughout the year.

Sukna, T.K. Paul & A. Kumar 45625.

2. Spergula L.

Spergula arvensis L., Sp. Pl. 1: 440. 1753.

Herbs; leaves linear; flowers in cymose panicles, petals white; capsules ovoid.

Fls. & Frts.: Throughout the year.

Sukna, T.K. Paul & A. Kumar 43805.

13. CLUSIACEAE**Garcinia L.**

Garcinia cowa Roxb., Fl. Ind. 2: 622. 1820.

Trees with drooping branches; leaves broadly lanceolate; flowers polygamous, yellow; fruits ovoid, 6–8 grooved, yellow or dark purple, terminated by a mamillae.

Fls. & Frts.: April–August. Common.

Sevoke, T.K. Paul & A. Kumar 43770.

14. THEACEAE**Schima** Aucl. ex Steud.

Schima wallichii (DC.) Korthals in Temminck, Verh. Nat. Gesch. Ned. Bezitt. Bot. 5: 143. 1842. *Gordonia wallichii* DC., Prodr. 1: 528. 1824. 'Makrishal (Beng.)'

Trees; leaves oblong to obovate; flowers white or pale yellow in terminal racemes; capsules depressed globose, 5-locular.

Fls. & Frts.: April–September. Occasional.

Latapanchar, S. Chandra & party 20702.

15. ACTINIDIACEAE**Saurauia** Willd.

Saurauia napaulensis DC., Mém. Soc. Phys. Genève 1: 421. 1822.

Trees, young stem and branches rusty tomentose; leaves elliptic, oblanceolate or oblong-lanceolate; flowers in axillary panicles, pinkish; berry subglobose to ovoid.

Fls. & Frts.: April–August.

Latapanchar, S. Chandra & party 10839.

16. DIPTEROCARPACEAE**Shorea** Roxb. ex C.F. Gaertn.

Shorea robusta C.F. Gaertn., Suppl. Carp. 48 (t. 186, f. 1). 1805. 'Sal' (Beng.).

Trees; leaves ovate-oblong, pinkish when young; flowers in lax, terminal or axillary panicles, creamy-white; fruits ovoid, winged, wings unequal, linear-oblong or spatulate.

Fls.: March–April; *Frts.:* May–June. In dense primary forest.

Sukna, T.K. Paul & A. Kumar 43771.

17. MALVACEAE

- | | |
|--|-----------------------|
| 1a. Style branches as many as carpels or style undivided | 2 |
| 1b. Style branches twice as many as carpels; mericarps with glochidiate spines | 6. Urena |
| 2a. Fruit a capsule; staminal column 5-partite at apex | 3 |
| 2b. Fruit a schizocarp breaking into mericarps at maturity; staminal column without any tooth, apex split up into numerous anthers | 4 |
| 3a. Calyx regularly 5-toothed or lobed, not spathaceous, persistent | 3. Hibiscus |
| 3b. Calyx irregularly 2–3-lobed, spathaceous, deciduous | 1. Abelmoschus |
| 4a. Stigmas decurrent on the adaxial side of the style; style branches filiform to narrowly clavate | 4. Malva |
| 4b. Stigmas apical or nearly so, capitate, discoid or obliquely truncate | 5 |
| 5a. Seeds 2 or more in each mericarp | 2. Abutilon |
| 5b. Seed one in each mericarp | 5. Sida |

1. Abelmoschus Medik.

Abelmoschus manihot (L.) Medik. subsp. **tetraphyllus** Roxb. var. **pungens** (Roxb.) Hochr., Candollea 2: 87. 1924. *Hibiscus pungens* Roxb., Fl. Ind. 3: 213. 1832.

Herbs or undershrubs; leaves 3–9-lobed or parted, sometimes entire; flowers yellow with dark purple center, axillary, solitary or in terminal racemes; capsules oblong, beaked.

Fls. & Frts.: July–December. Occasional, along forest edges.

Sevoke (N), T.K. Paul & A. Kumar 42483.

2. Abutilon Mill.

Abutilon indicum (L.) Sweet, Hort. Brit. 1: 54. 1826. *Sida indica* L., Cent. Pl. 2: 26. 1756.

Herbs or undershrubs; leaves ovate to suborbicular; flowers yellow to orange, solitary, axillary; schizocarps globular, flat or slightly indented at apex; mericarps reniform; seeds reniform.

Fls. & Frts.: September–April. Occasional in dry, open places.

Sukna, T.K. Paul & A. Kumar 43122.

3. Hibiscus L.

Hibiscus vitifolius L., Sp. Pl. 2: 696. 1753. 'Ban-kapus' (Beng.).

Undershrubs; leaves orbicular, ovate or oblong, 3-lobed or unlobed; flowers yellow with dark purple at base, solitary, axillary or clustered at apex, pendent; capsules globular with scarious, strongly veined wings; seeds reniform.

Fls. & Frts.: Throughout the year, particularly after rains. Occasional, mostly nearby railway tracks.

Sukna, T.K. Paul & A. Kumar 43125.

4. Malva L.

- 1a. Pedicels 1–3 mm long; petals twice the length of calyx lobes; calyx slightly accrescent **1. M. neglecta**
 1b. Pedicels 0.3–0.5 (–1) cm long; petals less than twice the length of calyx lobes; calyx accrescent **2. M. verticillata**

1. Malva neglecta Wallr., Syll. Pl. Nov. 1: 140. 1824.

Herbs; leaves reniform to orbicular, shallowly 5–7-lobed; flowers pale lilac to whitish, 2–5 in axillary loose fascicles; schizocarps globular, mericarps 12–14, reniform; seeds reniform.

Fls. & Frts.: April–September. Occasional in open places.

Latapanchar, *T.K. Paul & A. Kumar* 43797.

2. Malva verticillata L., Sp. Pl. 2: 689. 1753. 'Lapha', 'Napha' (Beng.).

Herbs; leaves suborbicular, 5–6-lobed; flowers axillary, glomeratus, purplish; mericarps 10–12, reniform; seeds reniform.

Fls. & Frts.: September–January. Occasional.

Latapanchar, *T.K. Paul & A. Kumar* 43796.

5. Sida L.

- 1a. Prostrate herbs; styles and mericarps 5 **2. S. cordata**
 1b. Erect herbs; styles and mericarps 6–12 **2**
 2a. Stipules of each pair different, one linear to lanceolate, 3–6 nerved and the other linear to filiform and shorter **1. S. acuta**
 2b. Stipules not as above **3**
 3a. Calyx tomentose; mericarps with distinct retrorsely hairy awns **3. S. cordifolia**
 3b. Calyx velutinous to glabrous; mericarps with or without awn, never retrorsely hairy **4. S. rhombifolia**

1. Sida acuta Burm.f., Fl. Indica 147. 1768.

Undershubs or herbs; leaves lanceolate to linear, elliptic-lanceolate or ovate-oblong; flowers light yellow, solitary, axillary or in clusters of 2–3; schizocarps globular; seeds dark-brown.

Fls. & Frts.: September–May. Common weed in forest edges.

Sukna west, *T.K. Paul & A. Kumar* 43608.

2. Sida cordata (Burm.f.) Borss., Blumea 14: 182. 1996. *Melochia cordata* Burm.f., Fl. Indica 143. 1768.

Prostrate or semiprostrate herbs; leaves ovate to orbicular; flowers solitary, axillary, ultimately in few-flowered racemes, yellow; schizocarp globose, mericarps 5; seeds obovoid, brownish black.

Fls. & Frts.: Throughout the year, mainly at the end of rainy season. Common.

Sukna, *T.K. Paul & A. Kumar* 45664.

3. Sida cordifolia L., Sp. Pl. 684. 1753. 'Berela, Swet Berela (Beng.).'

Undershubs; leaves ovate-oblong, orbicular; flowers solitary, axillary or in axillary clusters of 2–5 flowers, pale yellow to nearly white; schizocarp globose, mericarps 8–10, flattened-trigonal, awns retrorsely hairy; seeds flattened reniform, dark 4. or black.

Fls. & Frts.: Throughout the year. Occasional in open places.

Sevoke, *T.K. Paul & A. Kumar* 41380.

4. Sida rhombifolia L., Sp. Pl. 2: 684. 1753.

- 1a. Erect herbs or undershrubs; leaves ovate to oblong, rhomboid or lanceolate; pedicels longer than petioles; corolla 1–1.8 cm across **4.1.** subsp. **rhombifolia**
 1b. Prostrate or ascending undershrubs; leaves obovate to orbicular; pedicels as long as the petioles; corolla 2–2.5 cm across **4.2.** subsp. **retusa**

4.1. subsp. **rhombifolia**

Herbs or undershrubs; leaves ovate-oblong; flowers axillary, solitary or in clusters of 2–5, yellow to pale orange; schizocarp globose, mericarps 7–12, 2-awned at apex; seeds brown or black.

Fls. & Frts.: July–December. Common.

Sukna, *T.K. Paul & A. Kumar* 41204.

4.2. subsp. **retusa** (L.) Borss., Blumea 14: 198. 1966. *Sida retusa* L., Sp. Pl. ed. 2, 961. 1763.

Prostrate or ascending undershrubs; leaves ovate-orbicular to ovate, rhomboid-truncate with dentate apex; flowers yellow; seeds brownish black.

Fls. & Frts.: July–December. Occasional.

Sukna, *T.K. Paul & A. Kumar* 42402.

6. Urena L.

Urena lobata L., Sp. Pl. 2: 692. 1753.

Undershubs; leaves ovate to orbicular, angular or shallowly lobed; flowers axillary, solitary or in clusters of 2–3, pink; schizocarps globular, covered with glochidia (spine with 4–5 retrorse short sharp hooks at the top), mericarps 5, obovoid; seeds reniform, brownish black.

Fls. & Frts.: October–December. Occasional in shady places.

Sukna, *T.K. Paul & A. Kumar* 45607.

18. BOMBACACEAE**Bombax L.**

Bombax ceiba L., Sp. Pl. 1: 511. 1753 *p.p.* 'Simul' (Beng.).

Trees, trunk aculeate with woody conical prickles; leaves digitate, leaflets 5–7, lanceolate-acuminate; flowers solitary or in clusters of 2–4 towards the end

of the branchlets, bright red or pink; capsules oblong, dehiscent by 5 woody valves; seeds dark brown, embedded in cotton.

Fls.: February–March; *Frts.*: April–May. Occasional in open places.

Sukna, T.K. Paul & A. Kumar 43789.

19. STERCULIACEAE

- | | |
|--|------------------------|
| 1a. Trees or shrubs | 2 |
| 1b. Herbs or undershrubs | 3. Melochia |
| 2a. Stamens on columns; ovaries on androgynophore | 3 |
| 2b. Stamens on a basal staminal cup; ovaries not on androgynophore | 1. Abroma |
| 3a. Flowers unisexual or polygamous | 5. Sterculia |
| 3b. Flowers bisexual | 4 |
| 4a. Stamines club-shaped; capsule not beaked | 4. Pterospermum |
| 4b. Stamines scale like; capsules beaked | 2. Helicteres |

1. **Abroma** Jacq.

Abroma augustum (L.) L.f., Suppl. Pl. 341. 1781. *Theobroma augustum* L., Syst. Nat., ed. 12, 233. 1770. 'Ulatkambal' (Beng.).

Shrubs; leaves ovate-lanceolate, ovate-oblong or repand-denticulate; flowers in few-flowered axillary peduncled cymes, purple; capsules membranous, 5-angled, 5-winged, truncate at apex, septically 5-valved, valves villous at the edges; seeds reniform, blackish.

Fls. & Frts.: June–February.

Sukna, T.K. Paul & A. Kumar 41298.

2. **Helicteres** L.

Helicteres plebeia Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 39(2): 67. 1870.

Diffuse shrubs; leaves ovate-oblong, obliquely lanceolate; flowers few in short spikes, Petals slightly longer than calyx. Ripe carpels oblong, beaked, densely stellate hairy, mucicard.

Fls.: June–November; *Frts.*: December–February. Occasional in forest margin.

Sukna, T.K. Paul & A. Kumar 41290.

3. **Melochia** L.

Melochia corchorifolia L., Sp. Pl. 2: 675. 1753. 'Tiki-okra' (Beng.).

Herbs or undershrubs; leaves ovate, oblong-ovate or sub-orbicular; flowers yellow in densely crowded terminal peduncled heads, surrounded by 4–5 bracteoles; capsules depressed-globose; seeds trigonous.

Fls. & Frts.: May–October. Common.

South range, T.K. Paul & A. Kumar 42424.

4. **Pterospermum** Schreb.

Pterospermum acerifolium Willd., Sp. Pl. 3: 799. 1800. 'Kanak-champa' (Beng.).

Medium sized trees; leaves orbicular or oblong, entire or variously lobed. Flowers solitary or 2–3 flowered cyme, white; capsules 5-angled; seeds obliquely ovoid, winged above.

Fls.: March–September; *Frts.*: January–March.

Latapanchar, S. Chandra & party 20758.

5. **Sterculia** L.

1a. Leaves simple, oblanceolate; flowers in axillary panicles, creamy yellow

1. **S. hamiltonii**

1b. Leaves 5–7-lobed; flowers in terminal panicles, brownish yellow

2. **S. villosa**

1. **Sterculia hamiltonii** (Kuntze) Adelb. in Backer, Beknopte Fl. Java, Afl. iv b. Fam. 107, 23. 1944. *Clampanus hamiltonii* Kuntze., Rev. Gen. 77. 1891.

Trees; leaves oblanceolate, lanceolate to elliptic-lanceolate, acuminate; flowers in axillary to supra axillary panicles, sparsely stellate; follicles crimson, 2–5, oblong-lanceolate; seeds ovoid.

Fls. & Frts.: April–November. Occasional in primary forest.

Way to Kalijhora, T.K. Paul & A. Kumar 42517.

2. **Sterculia villosa** Roxb., Fl. Ind 3: 153. 1832. 'Odlā' (Beng.).

Trees; leaves palmately 5–7-lobed; flowers in terminal panicles, pendent, brownish-yellow; follicles 5, oblong, spreading, rusty villous.

Fls. & Frts.: February–May. Occasional in primary forest.

Sevoke, T.K. Paul & A. Kumar 41483.

20. TILIACEAE

1a. Large shrubs; drupes lobed

1. **Grewia**

1b. Herbs or undershrubs; capsules with hooked spines or bristles

2. **Triumfetta**

1. **Grewia** L.

Grewia serrulata DC., Prodr. 1: 510. 1824. 'Panisara' (Beng.).

Shrubs; leaves obovate to elliptic-lanceolate; inflorescence in axillary, 3-flowered cymes; flowers white; drupes 2-lobed, globose, black.

Fls.: June–August; *Frts.*: September–November. In dry mixed forest.

Kalijora road, T.K. Paul & A. Kumar 42557.

2. Triumfetta L.

- 1a. Capsules covered with only hooked spines; stem with a line of hairs on one side
1. T. annua
- 1b. Capsules covered with hairs and hooked spines; stems tomentose to villous **2**
- 2a. Flowers c. 10 mm long; capsules c. 1.3 cm across **2. T. pilosa**
- 2b. Flowers c. 3 mm long; capsules less than 0.7 cm across **3. T. rhomboidea**

1. Triumfetta annua L., Mant. Pl. 73. 1767.

Herbs; leaves ovate; flowers orange in leaf-opposed 3-flowered cymes; capsules globose, 4-loculed, covered with long hooked spines.

Fls.: July–September; *Frts.*: October–December. Occasional.

Sukna, *T.K. Paul & A. Kumar* 41226.

2. Triumfetta pilosa Roth, Nov. Pl. Sp. 223. 1821.

Shrubs; leaves lanceolate or ovate-lanceolate; flowers in axillary cymes, yellow; capsules globose or oblong with hooked spines; seeds wedge-shaped, black.

Fls.: August–October; *Frts.*: January–November. Occasional.

Latapanchar, *T.K. Paul & A. Kumar* 41227.

3. Triumfetta rhomboidea Jacq., Enum. Syst. Pl. 22. 1760. 'Bon okhra', 'Chikiti' (Beng.).

Herbs or undershrubs; lower leaves usually 3-lobed, ovate-rhomboid, upper leaves unlobed; flowers yellow in dense cymes; capsules globose, villous or hispid between the spines, bristles glabrous.

Fls.: August–October; *Frts.*: September–October. Occasional.

Sukna, *T.K. Paul & A. Kumar* 41225.

21. BALSAMINACEAE**Impatiens L.**

- 1a. Capsules densely hairy; leaf margins distinctly serrate, petiole base without any stipular structures **1. I. balsamina**
- 1b. Capsules glabrous; leaf margins shallowly serrate with filiform appendages, petiole base with fimbriate stipular structures **2. I. trilobata**

1. Impatiens balsamina L., Sp. Pl. 2: 938. 1753.

Herbs; leaves linear-lanceolate; flowers rose coloured, axillary, solitary; capsules fusiform, turgid in the middle; seeds numerous, globose.

Fls. & Frts.: March–October. Occasional, running wild.

Sukna, *T.K. Paul & A. Kumar* 42571.

2. Impatiens trilobata Colebr. in Hook.f., Exot. Fl. 2: t. 141. 1825.

Herbs; leaves elliptic-lanceolate or ovate-lanceolate; flowers axillary, 2–3 together, pink; capsules c. 1 cm long, turgid in the middle.

Fls. & Frts.: July–October. Occasional.

Latapanchar, *T.K. Paul & A. Kumar* 42515.

22. OXALIDACEAE

- 1a. Leaves with 4–20 pairs of sensitive leaflets; capsule valves separating from axis **1. Biophytum**
- 1b. Leaves with 3 non-sensitive leaflets; capsule valves cohering with axis **2. Oxalis**

1. Biophytum DC.

Biophytum reinwardtii (Zucc.) Klotzsch, Naturw. Reise Mossambique 6(Bot., 1): 85. 1861. *Oxalis reinwardtii* Zucc., Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 1: 274. 1831.

Herbs; leaves pinnate; leaflets 7–12 pairs; flowers in umbels, yellow; capsules dehiscent into 5 valves, globose; seeds cristate.

Fls.: December–July; *Frts.*: August–October. Frequent.

Latapanchar, *S. Chandra* 803.

2. Oxalis L.

- 1a. Petals yellow **1. O. corniculata**
- 1b. Petals pink **2. O. debilis** var. **corymbosa**

1. Oxalis corniculata L., Sp. Pl. 1: 435. 1753. 'Amrul shak' (Beng.).

Herbs; leaves 3-foliolate; flowers yellow, in 2–4-flowered umbels on axillary peduncles; fruit a narrow cylindrical capsule; seeds ovoid.

Fls. & Frts.: Almost throughout the year. Commonly growing on wet soils.

Sukna, *T.K. Paul & A. Kumar* 43606.

2. Oxalis debilis Kunth var. **corymbosa** (DC.) Lourteig, Ann. Missouri Bot. Gard. 67: 840 1980 (publ. 1981). *Oxalis corymbosa* DC., Prodr. 1: 696. 1824.

Herbs; leaves radical with long petioles, leaflets obcordate; flowers pink, in 3-flowered umbels; fruit capsule; seeds ovoid.

Fls.: February–March. Occasional in wet places. Native of South America.

Sukna, *T.K. Paul & A. Kumar* 45623.

23. AVERRHOACEAE**Averrhoa L.**

Averrhoa carambola L., Sp. Pl. 1: 428. 1753.

Trees; leaves with 3–6 pairs of ovate leaflets; flowers pink in panicles; berry ovoid, or ellipsoid, ribbed.

Fls. & Frts.: July–November. Cultivated. Native of Java.

Sukna, *S. Chandra & party* 10900.

24. RUTACEAE

- | | |
|---|----------------------|
| 1a. Shrubs or small trees, unarmed | 2 |
| 1b. Climbing shrubs, often with axillary recurved thorns | 5. Paramignya |
| 2a. Leaves unifoliolate; flowers polygamous | 1. Acronychia |
| 2b. Leaves many foliolate; flowers usually bisexual | 3 |
| 3a. Petals imbricate | 4 |
| 3b. Petals valvate | 3. Micromelum |
| 4a. Filaments dilated at base; ovary grooved, 4-celled | 2. Clausena |
| 4b. Filaments not as above (linear); ovary entire, 2-celled | 4. Murraya |

1. Acronychia J.R. Forst. & G. Forst., *nom. cons.*

Acronychia pedunculata (L.) Miq., Fl. Ned. Ind., Eerste Bijv. 3: 532. 1861. *Jambolifera pedunculata* L., Sp. Pl. 1: 349. 1753.

Trees; leaflets elliptic-oblong; flowers greenish white, in peduncled axillary corymbs, polygamous; fruit a 4-celled drupe, subglobose; seed one in each locule.

Fls. & Frts.: April–November. Occasional.

South range, *T.K. Paul & A. Kumar* 42460.

2. Clausena Burm.f.

Clausena excavata Burm.f., Fl. Indica 89, t. 29, f. 2. 1768.

Undershrubs or small trees; leaflets ovate to oblong or lanceolate; flowers in panicles; fruit a berry, ellipsoid; seed(s) 1 or 2.

Fls. & Frts.: April–August. Occasional. Fruits edible.

Uchrit, near Sukna, *S. Chandra & party* 10881.

3. Micromelum Blume, *nom. cons.*

Micromelum integerrimum (Roxb. ex DC.) Wight & Arn. ex Voigt, Hort. Suburb. Calcutt. 140. 1845. *Bergera integerrima* Roxb. ex DC., Prodr. 1: 537. 1824.

Trees, often shrubby; leaflets ovate-lanceolate or oblong-lanceolate; flowers in terminal corymbose panicles, white; fruit an ellipsoid berry; seeds 2 or 3, green.

Fls. & Frts.: January–September. In semi-evergreen secondary forest.

Sukna, *T.K. Paul & A. Kumar* 41247.

4. Murraya Koenig ex L., *nom. cons.*

Murraya koenigii (L.) Spreng., Syst. Veg. 2: 315. 1826. *Bergera koenigii* L., Mant. Pl. 68. 1767. "Karipata" (Beng.).

Shrubs or undershrubs. Leaflets 11–35, ovate-lanceolate; flowers in terminal corymbs, white; berry ovoid, blackish purple.

Fls. & Frts.: April–September. Occasional in outskirts of secondary forest.

Sukna, *T.K. Paul & A. Kumar* 41339.

5. Paramignya Wight

Paramignya monophylla Wight, Ill. Ind. Bot. 1: 109, t. 42. 1840.

Climbing shrubs with recurved spines; leaves simple, elliptic or elliptic-lanceolate; flowers in axillary fascicles, white, fragrant; berry ovoid, yellow.

Fls. & Frts.: April–August.

Bandarjhol, *S. Chandra & party* 8940.

25. OCHNACEAE**Ochna** L.

Ochna pumila Buch.-Ham. ex DC., Prodr. 1: 736. 1824.

Undershrubs; leaves oblong, obovate or obovate-oblong; flowers yellow in cymes; fruit a drupe, turning red to black on ripening.

Fls.: March–June; *Frts.:* April–August.

Sevoke range, *T.K. Paul & A. Kumar* 41386.

26. BURSERACEAE**Garuga** Roxb.

Garuga pinnata Roxb., Pl. Coromandel 3: 5, t. 208. 1819.

Trees; leaflets 4–5 pairs, elliptic-oblong; flowers in panicles; drupes globose black, with 1–5 pyrenes.

Fls.: April–May; *Frts.:* July.

Sevoke, *T.K. Paul & A. Kumar* 43666.

27. MELIACEAE

- | | |
|---|-----------------------|
| 1a. Leaves penta or more foliately compound | 1. Aglaia |
| 1b. Leaves pinnately compound | 2 |
| 2a. Seeds winged | 6. Toona |
| 2b. Seeds not winged | 3 |
| 3a. Flowers and staminal tube linear | 4 |
| 3b. Flowers and staminal tube globose to oblong | 5 |
| 4a. Disc large; petals 4 | 5. Dysoxylum |
| 4b. Disc absent; petals 5 | 3. Azadirachta |
| 5a. Disc obsolete; petals 3 | 2. Aphnamixis |
| 5b. Disc short; petals 4–5 | 4. Chisocheton |

1. Aglaia Lour.

Aglaia perviridis Hiern in Hook.f., Fl. Brit. India 1: 556. 1875. [Plate 5B]

Trees; leaves imparipinnate; leaflets ovate-lanceolate; flowers yellow, in lax axillary panicles, polygamodioecious; fruit a berry, asymmetrically ellipsoid, 1-seeded.

Fl.: June–July.

Sevoke range, near railway line, T.K. Paul & A. Kumar 43730.

2. *Aphanamixis* Blume

Aphanamixis polystachya (Wall.) R.Parker, Indian Forester 57: 486. 1931.
Aglaia polystachya Wall. in Roxb., Fl. Ind. 2: 429. 1824.

Trees; leaves imparipinnate, leaflets 4–8 pairs; flowers polygamous in panicles. Capsules subglobose, pale reddish, 1-seeded.

Fls.: August–September.

Sukna West T.K. Paul & A. Kumar 43617.

3. *Azadirachta* A. Juss.

Azadirachta indica A. Juss., Mém. Mus. Hist. Nat. 19: 221. 1830.

Trees; leaves paripinnate; leaflets 6–12 pairs, obliquely lanceolate; flowers in panicles, fragrant, white; drupes ovoid, 1-seeded.

Fls.: Mar–April; Frts.: May–June.

Latapanchar, T.K. Paul & A. Kumar 43789.

4. *Chisocheton* Blume

Chisocheton paniculatus (Roxb.) Hiern. in Hook.f., Fl. Brit. India 1: 552. 1875.
Guarea paniculata Roxb., Fl. Ind. 2: 242. 1832.

Trees; leaves imparipinnate; leaflets subopposite, ovate-oblong or lanceolate; flowers in panicles, pale yellow; capsules obpyramidal, 1 or 2-seeded.

Fls.: June–July.

Latapanchar, T.K. Paul & A. Kumar 43797.

5. *Dysoxylum* Blume

Dysoxylum binectariferum Hook.f. ex Bedd., Trans. Linn. Soc. London 25(2): 212. 1865.

Medium sized trees; leaves paripinnate, leaflets 6–8, obliquely ovate-oblong; flowers in panicles, dull white, tetramerous; capsules globose with a narrowed base, pale yellow, then deep orange, 4-seeded.

Fls. & Frts.: July–December.

Kalijhora, T.K. Paul & A. Kumar 43707.

6. *Toona* (Endl.) M. Roem.

Toona ciliata M. Roem., Fam. Nat. Syn. Monogr. 1: 139. 1846.

Trees; leaves paripinnate; leaflets 6–12 pairs, ovate-lanceolate; panicles drooping; capsules oblong or globose, pale green with minute dots; seeds winged at both ends.

Fls.: January–March. Planted.

Golaghat, S. Chandra & party 10898.

28. ICACINACEAE

Natsiatum Buch.-Ham. ex Wall.

Natsiatum herpeticum Buch.-Ham. ex Arn., Edinburgh New Philos. J. 16: 314. 1834.

Climbing shrubs with tuberous roots, dioecious; leaves broadly ovate; flowers in supra-axillary spiciform raceme, greenish yellow; drupes compressed, somewhat oblique and tapering, rugose.

Fls. & Frts.: December–February.

Sevoke, T.K. Paul & A. Kumar 41367.

29. AQUIFOLIACEAE

Ilex L.

Ilex umbellulata (Wall.) Loes., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 99. 1901. *Ehretia umbellulata* Wall. in Roxb., Fl. Ind. 2: 344. 1824.

Trees; leaves ovate, elliptic or oblong; flowers white in simple or panicle umbel, fragrant; pyrenes 6–10, sulcate.

Fls.: March–May; Frts.: April–June.

Latapanchar, T.K. Paul & A. Kumar 43710.

30. RHAMNACEAE

- 1a. Climbing shrubs with tendrils; fruits 3-winged at maturity
1b. Erect shrubs without tendrils; fruits not winged`

1. ***Gouania***
2. ***Ziziphus***

1. *Gouania* Jacq.

Gouania tiliifolia Lam., Encycl. 3(1): 4. 1789.

Woody climbers with few tendrils; leaves ovate or ovate-orbicular; flowers in axillary racemes or terminal panicles, white or greenish yellow; capsules crowned by persistent calyx.

Fls.: July–September; Frts.: September–December.

Sevoke, T.K. Paul & A. Kumar 43705.

2. *Ziziphus* Adans.

Ziziphus mauritiana Lam., Encycl. 3(1): 319. 1797. 'Kool', 'Ber' (Beng.).

Shrubs or small trees; leaves obliquely ovate or orbicular; flowers in short fascicles or cymes, greenish yellow. Drupes globose, orange-yellow at ripening.

Fls. & Frts.: March–December. Fruits are edible.

Latapanchar, *T.K. Paul & A. Kumar* 41463.

31. VITACEAE

- | | |
|---|-----------------------|
| 1a. Flowers unisexual; stigma 4-lobed | 3. Tetrastigma |
| 1b. Flowers bisexual; stigma simple or 2-lobed | 2 |
| 2a. Berry 2–4-seeded; inflorescence axillary; leaves compound, pedate or digitate | 1. Cayratia |
| 2a. Berry usually 1-seeded, rarely 2-seeded; inflorescence leaf opposed; leaves usually simple, sometimes 3-foliolate or digitate | 2. Cissus |

1. Cayratia Juss.

- | | |
|-----------------------------------|-----------------------|
| 1a. Leaves digitately 3-foliolate | 2. C. trifolia |
| 1b. Leaves pedately 5-foliolate | 1. C. japonica |

1. Cayratia japonica (Thunb.) Gagnep., Notul. Syst. (Paris) 1: 349. 1911. *Vitis japonica* Thunb., Syst. Veg., ed. 14, 244. 1784.

Climbers, tendril leaf-opposed, simple or forked; leaves pedately 5-foliolate; leaflets ovate, ovate-lanceolate to obovate; inflorescence an umbellate cymose panicle, flowers white; berries white, turning purple, 1–4-seeded; seeds pyriform.

Fls. & Frts.: April–August. Common on hedges and shrubs.

Sukna, *T.K. Paul & A. Kumar* 41234.

2. Cayratia trifolia (L.) Domin., Biblioth. Bot. 89: 371. 1927. *Vitis trifolia* L., Sp. Pl. 1: 203. 1753. 'Amal-lata' (Beng.).

Climbers, tendril wiry, 2–3 times forked; leaves trifoliolate; leaflets ovate or elliptic ovate; inflorescence a corymbiform divaricate cyme, flowers greenish white; berries globose or discoid, fleshy, shining black, 3–4-seeded; seeds trigonous.

Fls. & Frts.: June–November.

Sevoke, *T.K. Paul & A. Kumar* 41390.

2. Cissus L.

- | | |
|---|----------------------|
| 1a. Leaves glabrous; berries ellipsoid, not beaked | 2. C. repens |
| 1b. Leaves pubescent or tomentose; berries pyriform, beaked | 1. C. repanda |

1. Cissus repanda Vahl, Symb. Bot. 3: 18. 1794.

Climbers, tendril twisted, forked with flattened disc; leaves ovate-orbiculate or repand; inflorescence leaf opposed, subcorymbose, flowers pink; berries pyriform, 1-seeded.

Fls. & Frts.: April–July. The stem on cutting yields good quantity of drinking water.

Sukna, *T.K. Paul & A. Kumar* 41239.

2. Cissus repens Lam., Encycl. 1(1): 31. 1783.

Climbers; leaves ovate to triangular; flowers greenish red, in compound umbellate cyme; berries ellipsoid, 1.5–2 cm diam., black when ripe, 1-seeded; seed globose, pale brown.

Fls.: June–September; *Frts.*: October–December.

Sukna, *T.K. Paul & A. Kumar* 41245.

3. Tetrastigma (Miq.) Planch.

- | | |
|--|------------------------------|
| 1a. Leaves 3-foliolate | 1. T. bracteolatum |
| 1b. Leaves 5–7-foliolate | 2 |
| 2a. Slender climbers with bifid tendrils; leaflets 2–10 × 1–3 cm | 3. T. serrulatum |
| 2b. Robust climbers with simple or bifid tendrils; leaflets large, 7–20 × 3–8.5 cm | 2. T. leucostaphyllum |

1. Tetrastigma bracteolatum (Wall.) Planch. in A. DC. & C. DC., Monogr. Phan. 5(2): 428. 1887. *Vitis bracteolata* Wall. in Roxb., Fl. Ind. 2: 483. 1824.

Climbers; leaves trifoliolate; leaflets lanceolate or ovate-lanceolate; flowers pale green, in axillary trichotomous, puberulous, lax cymes; berries orange, ovoid, succulent; seeds 1–2, ovoid.

Fls. & Frts.: August–March.

Sukna west, *T.K. Paul & A. Kumar* 43640.

2. Tetrastigma leucostaphyllum (Dennst.) Alston ex Mabb., Taxon 20: 539. 1977. *Cissus leucostaphyla* Dennst., Schlüssel Hortus Malab. 17, 19, 33. 1818.

Climbers; Leaves 5–7-foliolate; leaflets elliptic or narrowly ovate; flowers yellow, in axillary cymes; male cyme paniculate but female ones corymbose; berries globose, brown-red; seeds 2, subpyriform.

Fls. & Frts.: March–October. Fruits edible.

Sukna, *T.K. Paul & A. Kumar* 41254.

3. Tetrastigma serrulatum (Roxb.) Planch. in A. DC. & C. DC., Monogr. Phan. 5: 432. 1887. *Cissus serrulata* Roxb., Fl. Ind. 1: 432. 1820.

Scandent dioecious creepers, tendrils leaf-opposed, glabrous, forked near the apex; leaves pedately 5-foliolate; leaflets obovate; flowers yellow-green in umbellate cyme; berries globose, green to reddish brown when ripe; seeds 2–4, obovoid.

Fls. & Frts.: June–December. Fruits edible.

Kalijhora, *T.K. Paul & A. Kumar* 45697.

32. LEEACEAE

Leea D. Royen

Leea crispa L., Mant. Pl. 124. 1767.

Undershrubs; leaves 3–5-foliolate; leaflets oblong or oblong-elliptic; flowers in terminal corymbs, dull white to pale yellow; berries discoid-globose, purple to black when ripe.

Fls.: May–August; *Frts.*: August–November.

Sukna, *T.K. Paul & A. Kumar* 41244.

33. SAPINDACEAE

- 1a. Flowers irregular; disc unilateral
1b. Flowers regular; disc annular

1. *Allophylus*

2. *Lepisanthes*

1. *Allophylus* L.

Allophylus chartaceus (Kurz) Radlk. in Engler & Prantl, Nat. Pflanzenfam. 3(5): 313. 1895. *Schmidelia chartacea* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 43(3): 183. 1874.

Shrubs; leaves oblong or obovate; flowers white, in racemes; fruit subglobose, fleshy, red when ripe.

Fls.: April–September; *Frts.*: October–December.

Kalijhora road, *T.K. Paul & A. Kumar* 45702.

2. *Lepisanthes* Blume

Lepisanthes senegalensis (Juss. ex Poir.) Leenh., Blumea 17: 85. 1969. *Sapindus senegalensis* Juss. ex Poir., Encycl. 6(2): 666. 1805. **[Plate 9C]**

Trees; leaves pinnate; leaflets 8–10, ovate-lanceolate, elliptic or oblong; flowers in axillary or terminal panicles, red; fruits 1–2-lobed, ellipsoid, red.

Fls.: December–March; *Frts.*: April–May.

Way to Kalijhora, *T.K. Paul & A. Kumar* 41234.

34. SABIACEAE

Meliosma Blume

Meliosma simplicifolia (Roxb.) Walp., Repert. Bot. Syst. 1: 423. 1842. *Millingtonia simplicifolia* Roxb., Pl. Coromandel 3: 50, t. 254. 1820.

Trees; leaves ovate-oblong to obovate-lanceolate; flowers in terminal panicles, yellow or dull white; drupes subglobose.

Fls.: November–February; *Frts.*: March–June.

Way to Kalijhora, *T.K. Paul & A. Kumar* 41244.

35. ANACARDIACEAE

- 1a. Leaves simple
1b. Leaves imparipinnate

1. *Mangifera*

2. *Pegia*

1. *Mangifera* L.

Mangifera indica L., Sp. Pl. 1: 200. 1753.

Evergreen trees; leaves crowded at branch ends, oblong to elliptic-lanceolate; flowers in axillary, pubescent panicles, polygamous; drupes ovoid with curved tip, fleshy, yellow to orange yellow when ripe.

Fls.: January–March; *Frts.*: April–July.

Sukna, *T.K. Paul & A. Kumar* 40229.

2. *Pegia* Colebr.

Pegia nitida Colebr., Trans. Linn. Soc. London 15(2): 364. 1827.

Scandent shrubs, more or less tomentose. Leaves 15–30 cm long; leaflets 6–8 pairs, oblong, base cordate, apex acuminate, margins serrate; panicles villose; bracts ovate-lanceolate; drupes oblong, 4–7 mm long.

Fls.: January–March; *Frts.*: April–May.

Way to Kalijhora, *T.K. Paul & A. Kumar* 41125.

36. MORINGACEAE

Moringa Adans.

Moringa oleifera Lam., Encycl. 1: 398. 1785. 'Sajina' (Beng.).

Trees; leaves usually 3-pinnate; pinnae opposite; leaflets ovate, obovate or oblong, terminal leaflets larger than lateral ones; flowers in panicles, white; capsules pendulous, sub-torulose, longitudinally deeply striate; seeds triangular, winged on angles.

Fls. & Frts.: January–April. Leaves and unripe fruits used as vegetable.

Sukna, *T.K. Paul & A. Kumar* 41235.

37. FABACEAE

- | | |
|---|-----------------------|
| 1a. Plants erect, suberect or prostrate but not climbing | 2 |
| 1b. Plants climbing or twining | 14 |
| 2a. Trees | 3 |
| 2b. Shrubs, undershrubs or herbs; erect, diffuse or prostrate | 5 |
| 3a. Leaves 3-foliolate | 4 |
| 3b. Leaves more than 3-foliolate | 6. <i>Dalbergia</i> |
| 4a. Plants armed; pods turgid, torulose | 9. <i>Erythrina</i> |
| 4b. Plants unarmed; pods flat, not torulose | 3. <i>Butea</i> |
| 5a. Flowers yellow, creamy-yellow, spotted purple | 6 |
| 5b. Flowers orange-red, red, reddish-purple, bluish purple, mauve or blue | 9 |
| 6a. Joints of pods turgid | 7 |
| 6b. Joints of pods flat | 8 |
| 7a. Leaves gland dotted beneath | 10. <i>Flemingia</i> |
| 7b. Leaves not gland dotted beneath | 5. <i>Crotalaria</i> |
| 8a. Pods joints 2–6, echinate | 20. <i>Zornia</i> |
| 8b. Pods joints 1–2, not echinate | 11. <i>Geissaspis</i> |

- 9a. Pods jointed **10**
 9b. Pods not jointed **11**
 10a. Joints of pods folded one above the other **18. Uraria**
 10b. Joints of pods not folded one above the other **12**
 11a. Calyx glumaceous, twice the pedicel length or more; imbricate; pods turgid, straight **2. Alysicarpus**
 11b. Calyx not glumaceous, less than half of the pedicel length, valvate; pods flattened, curved **8. Desmodium**
 12a. Plants climbing; flowers resupinate **4. Clitoria**
 12b. Plants not climbing; flowers not as above **13**
 13a. Leaves odd pinnate, 9–23; flowers mauve or white; pods with 7–10-seeded **17. Tephrosia**
 13b. Leaves 3-foliolate; flowers orange red; pods 1-seeded **12. Meizotropis**
 14a. Stamens monadelphous (stamens 9, 10th stamen absent) **1. Abrus**
 14b. Stamens diadelphous **15**
 15a. Pods linear or oblong **13. Milletia**
 15b. Pods strap-shaped **16**
 16a. Scandent shrubs **7. Derris**
 16b. Herbs or erect shrubs **17**
 17a. Pods turgid, constricted between seeds **15. Pueraria**
 17b. Pods not turgid, if flat not constricted between seeds **18**
 18a. Racemes congested mostly at apex **19**
 18b. Racemes lax **14. Mucuna**
 19a. Styles bearded **19. Vigna**
 19b. Styles not bearded **16. Shuteria**

1. Abrus Adans.

- 1a. Pods 5–10-seeded; seeds dark brown to black, without any blotch around the hilum **1. A. fruticulosus**
 1b. Pods 3–5-seeded; seeds red, with a black blotch around the hilum **2. A. precatorius**

1. Abrus fruticulosus Wall. ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 236. 1834.

Twiner; leaves with 9–15 pairs of leaflets; leaflets oblong; flowers in fascicles, pale-purple or violate at first, afterwards yellowish red; pods strap shaped, rather flat, slightly incurved at the top; seeds black or dark-brown.

Fls. & Frts.: September–December.

Way to Kalijhora, *T.K. Paul & A. Kumar* 41204.

2. Abrus precatorius L., Syst. Nat., ed. 12, 2: 472. 1767. 'Kunch' (Beng.).

Twiner; leaves with 8–20 pairs of leaflets; leaflets oblong; flowers in fascicles pale violate at first and reddish afterwards; pods oblong, truncate at base; seeds red with black tips.

Fls. & Frts.: August–February.

Way to Kalijhora, *T.K. Paul & A. Kumar* 41244.

2. Alysicarpus Neck. ex Desv.

Alysicarpus vaginalis (L.) DC., Prodr. 2: 353. 1825. *Hedysarum vaginae* L., Sp. Pl. 2: 746. 1753.

Herbs; leaves simple, oblong or elliptic; flowers usually in pairs, pinkish or yellow, in axillary or terminal racemes; pods puberulous with 5–6 joints; seeds globose.

Fls.: August–November; *Frts.*: November–May.

North range, *T.K. Paul & A. Kumar* 42497.

3. Butea Roxb. ex Willd., nom. cons.

Butea monosperma (Lam.) Taub. in Engl. & Prantl, Nat. Pflanzenfam. 3(3): 365. 1894. *Erythrina monosperma* Lam., Encycl. 2: 391. 1783.

Trees, leaves 3-foliolate; terminal leaflet obovate, lateral leaflets oblique; flowers bright orange red in densely brown velvety racemes on leafless branches; pods oblong or broadly linear, velvety brown, 1-seeded; seeds suborbicular, flat.

Fls. & Frts.: February–July.

Sukna, *T.K. Paul & A. Kumar* 41334.

4. Clitoria L.

Clitoria ternata L., Sp. Pl. 2: 753. 1753. 'Aparajita' (Beng.).

Climbers; leaves odd pinnate; leaflets 3–7, elliptic-oblong, obovate; flowers white, bluish, solitary or in axillary racemes; pods oblong, slightly curved; seeds 7–10, oblong-orbicular, black-brown.

Fls. & Frts.: Throughout the year. Common in hedges during and after the rains. Plant is used for remedy of snake-bite. Roots are used as medicine for leprosy.

Sevoke, *T.K. Paul & A. Kumar* 41434.

5. Crotalaria L.

- 1a. Leaves 3-foliolate **4. C. cystisoides**
 1b. Leaves simple **2**
 2a. Stipules decurrent as a persistent wing to the branchlets **2. C. alata**
 2b. Stipules small, not decurrent **3**
 3a. Plants ascending; racemes lateral, leaf-opposed, few flowered **4**
 3b. Plants erect; racemes terminal, many flowered **5**
 4a. Ascending undershrubs; stems ferruginous-villous; stipules foliaceous, lanceolate, spreading **5. C. ferruginea**
 4b. Prostrate or procumbent herbs; stems not ferruginous-villous; stipules not as above **1. C. acicularis**
 5a. Pods hairy **6. C. juncea**
 5b. Pods glabrous **3. C. albida**

1. Crotalaria acicularis Buch.-Ham. ex Benth., London J. Bot. 2: 476. 1843.

Herbs; leaves simple, ovate-oblong or orbicular-oblong; racemes leaf-opposed or terminal, yellow, intruded; pods oblong, brown or blackish; seeds reniform, brown, polished.

Fls. & Frts.: September–February.

Sevoke, T.K. Paul & A. Kumar 41424.

2. Crotalaria alata Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 241. 1825.

Undershrubs; leaves simple, obovate, elliptic or elliptic-lanceolate; racemes leaf-opposed, flowers yellow, not exerted; pods oblong or obovate-oblong, beaked, brown or black; seeds brown.

Fls. & Frts.: May–October.

Sevoke, T.K. Paul & A. Kumar 41134.

3. Crotalaria albida B. Heyne ex Roth, Nov. Pl. Sp. 333. 1821 'Atasi' (Beng.).

Herbs; leaves simple, linear, oblong-lanceolate or oblanceolate; racemes terminal or rarely axillary, flowers yellow; pods sub-sessile, obovate-oblong, brown or yellowish-brown, glabrous; seeds brown.

Fls. & Frts.: September–February.

Kalijhora road, T.K. Paul & A. Kumar 45727.

4. Crotalaria cytisoides Roxb. ex DC., Prodr. 2: 131. 1825.

Undershrubs; leaves 3-foliolate; inflorescence leaf-opposed and terminal racemes; flowers pale-yellow; pods oblong, distinctly stalked; seeds 5–6.

Fls. & Frts.: July–December.

Sukna, T.K. Paul & A. Kumar 41289.

5. Crotalaria ferruginea Graham ex Benth., London J. Bot. 2: 476. 1843.

Undershrubs; leaves simple obovate-oblong, elliptic-oblong; racemes terminal or leaf-opposed, yellow; pods oblong or elliptic-oblong, brown; seeds reniform, brown.

Fls. & Frts.: August–October. Occurs amongst grasses.

Sukna, T.K. Paul & A. Kumar 41229.

6. Crotalaria juncea L., Sp. Pl. 2: 714. 1753. 'Sanai' (H.); 'Sann (Sunn) Hemp' (Eng.).

Undershrubs; leaves oblong-elliptic or linear-oblong; inflorescence in terminal racemes, bright yellow; Pods oblong-terete; seeds 10–15.

Fls.: August–October; *Frts.*: November–January. Frequent as an escape.

Sukna, T.K. Paul & A. Kumar 45637.

6. Dalbergia L.f.

1a. Trees; leaflets 5–7

1b. Scandent shrubs to small trees; leaflets 17–23

2a. Pods linear-oblong, strap-shaped

2b. Pods oblong-lanceolate

2

3. D. stipulacea**2. D. sissoo****1. D. latifolia****1. Dalbergia latifolia** Roxb., Pl. Coromandel 2: 7, t. 113. 1799.

Trees; leaflets 3–7, orbicular to widely obovate; flowers in corymbose panicles, white; pods oblong, 3–4-seeded.

Fls.: August–September; *Frts.*: October–April.

Sukna, T.K. Paul & A. Kumar 45657.

2. Dalbergia sissoo Roxb. ex DC., Prodr. 2: 416. 1825. 'Shisu' (Beng.); 'Sisam', 'Tanach' (H.).

Deciduous trees; leaflets usually 5, at times 3, suborbicular, glabrous, distal leaflet always larger than laterals; flowers in axillary panicles, yellowish white, shortly pedicellate; pods linear-oblong, strap-shaped, glabrous, 1–3-seeded.

Fls.: March–June; *Frts.*: November–February.

Sukna, T.K. Paul & A. Kumar 45658.

3. Dalbergia stipulacea Roxb., Fl. Ind. 3: 233. 1832.

Shrubs to small trees; leaflets 15–21, elliptic; panicles axillary; flowers long, pale blue; pods oblong, mostly 1-seeded; seeds reticulate on surface.

Fls.: April–June; *Frts.*: December–February.

Sevoke, T.K. Paul & A. Kumar 44657.

7. Derris Lour.**Derris cuneifolia** Benth. var. **longipedicellata** Thoth., Bull. Bot. Surv. India 3(2): 191. 1961(1962).

Climbers; leaflets 7–9, obovate; racemes axillary; flowers red; pods ovate to oblong, distinctly winged on the dorsal suture with an obscure one on the ventral suture, 1–2-seeded.

Fls.: April–May; *Frts.*: June–July.

Sevoke, T.K. Paul & A. Kumar 44677.

8. Desmodium Desv., *sensu lato*

1a. Petioles winged

1b. Petioles terete

2a. Base of raceme with 1 or 2 lanceolate scarioso bract

2b. Base of each umbel with 2 orbicular foliar bracts

3a. Stamens monadelphous

3b. Stamens diadelphous

2

3

8. D. triquetrum**5. D. pulchellum****6. D. triangulare**

4

- 4a. Terminal leaflets 3-times larger than lateral leaflets; joints of pods not distinct
2. D. gyroides
- 4b. Terminal leaflets more or less one and half times larger than lateral leaflets; joints of pods prominent **5**
- 5a. Pods linear **4. D. laxiflorum**
- 5b. Pods narrowly oblong **6**
- 6a. Leaflets very small, 2–7 × 2–6 mm, elliptic or orbicular **7. D. triflorum**
- 6b. Leaflets larger, 3–14 × 2–9 cm, elliptic to round **7**
- 7a. Leaflets usually 3, rarely 1, apex emarginate; inflorescence 1.5–6 cm long
3. D. heterocarpon
- 7b. Leaflets 1-foliolate, apex obtuse or rounded; inflorescence up to 17 cm long
1. D. gangeticum

1. Desmodium gangeticum (L.) DC., Prodr. 2: 327. 1825. *Hedysarum gangeticum* L., Sp. Pl. 2: 746. 1753. 'Salpan', 'Salpani' (Beng.).

Shrubs; leaves 1-foliolate, ovate to elliptic, racemes axillary or terminal, very slender; flowers pinkish violet; pods with 2–5 joints, covered with minute hooked hairs.

Fls.: March–August; *Frts.*: October–December.

Sukna, T.K. Paul & A. Kumar 43657.

2. Desmodium gyroides (Roxb. ex Link) DC., Prodr. 2: 326. 1825. *Hedysarum gyroides* Roxb. ex Link, Enum. Hort. Berol. Alt. 2: 247. 1822.

Shrubs; leaves 1 or 3-foliolate; lateral leaflets elliptic; terminal leaflet obovate to elliptic; flowers orange, or red, in axillary or terminal racemes; pods with 8–12 joints, densely brownish pubescent.

Fls.: August–September; *Frts.*: November–December.

Sukna, T.K. Paul & A. Kumar 41657.

3. Desmodium heterocarpon (L.) DC., Prodr. 2: 337. 1825. *Hedysarum heterocarpon* L., Sp. Pl. 2: 747. 1753.

Shrubs; leaves trifoliolate; lateral leaflets elliptic; terminal leaflet usually obovate; flowers light yellow, in racemes with densely greyish long woolly hooked hairs; pods with 6–7 joints, flat, both sutures covered with hooked hairs.

Fls.: May–September; *Frts.*: September–February.

Sukna, T.K. Paul & A. Kumar 41322.

4. Desmodium laxiflorum DC., Ann. Sci. Nat. (Paris) 4: 100. 1825.

Shrubs; leaves 3-foliolate; leaflets elliptic to ovate-lanceolate; flowers violet or blue-violet, in axillary or terminal racemes; pods with 5–8 joints, densely puberulous, swollen on seeds; seeds elliptic.

Fls.: May–September; *Frts.*: November–December.

Sukna, T.K. Paul & A. Kumar 41320.

5. Desmodium pulchellum (L.) Benth., Fl. Hongk. 83. 1861. *Hedysarum pulchellum* L., Sp. Pl. 2: 747. 1752.

Shrubs; leaves 3-foliolate; lateral leaflets elliptic to lanceolate; terminal leaflets lanceolate; racemes with 20–50 umbels in alternate position; pods usually with two joints, glabrous.

Fls.: July–September; *Frts.*: December–February.

Sevoke near river bank, T.K. Paul & A. Kumar 42416.

6. Desmodium triangulare (Retz.) Merr., J. Arnold Arbor. 23: 170. 1942. *Hedysarum triangulare* Retz., Observ. Bot. 3: 40. 1783.

Herbs or shrubs; leaves 3-foliolate; flowers in umbel; pods in fascicles, each with 3–4 joints, whitish villous.

Fls.: July–September; *Frts.*: November–February.

Sukna, T.K. Paul & A. Kumar 41210.

7. Desmodium triflorum (L.) DC., Prodr. 2: 334. 1825. *Hedysarum triflorum* L., Sp. Pl. 2: 749. 1753.

Herbs; leaves 3-foliolate, rarely 1-foliolate; flowers yellow, in axillary or fascicle of 3 to 5 flowers; pods with 3–4 joints, flat, constricted only on one side, glabrous or slightly minutely hooked hairy, reticulate.

Fls.: October–November; *Frts.*: January–March.

Sevoke west, T.K. Paul & A. Kumar 42470.

8. Desmodium triquetrum (L.) DC., Prodr. 2: 326. 1825. *Hedysarum triquetrum* L., Sp. Pl. 2: 746. 1753. **[Plate 7B]**

Shrubs; leaves 1-foliolate, ovate-oblong or lanceolate; flowers violet in simple or paniculate racemes; pods oblong with 7–8 joints, villous.

Fls.: September; *Frts.*: December–January.

Sukna, T.K. Paul & A. Kumar 42657.

9. Erythrina L.

Erythrina arborescens Roxb., Fl. Ind. 3: 256. 1832. **[Plate 7F]**

Trees; stems with few prickles; leaves 3-foliolate; leaflets ovate; flowers scarlet, in axillary peduncled racemes, c. 4 cm long; pods oblong-ellipsoid, narrowed gradually at apex into a beak and stalk at base, 4–6-seeded; seeds reniform, black.

Fls. & Frts.: July–August.

Near Sevoke railway station, T.K. Paul & A. Kumar 40657.

10. Flemingia Roxb. ex W.T. Aiton

Flemingia strobilifera (L.) W.T. Aiton, Hort. Kew., ed. 2, 4: 350. 1812. *Hedysarum strobiliferum* L., Sp. Pl. 2: 764. 1753. 'Bolu' (Beng.).

Undershrubs; leaves unifoliolate, oblong; inflorescence axillary and terminal; flowers with membranous bracts; pods oblong, densely pubescent, 2-seeded.

Fls. & Frts.: October–June.

Sevoke, T.K. Paul & A. Kumar 42647.

11. *Geissaspis* Wight & Arn.

Geissaspis cristata Wight & Arn., Prodr. Fl. Ind. Orient. 1: 218. 1834. [Plate 8A]

Herbs, procumbent with thick root stalk; leaves imparipinnate; leaflets obovate; flowers yellow in terminal racemes; pods flat, moniliform, 1–2 jointed, 1-seeded.

Fls. & Frts.: August–March.

Sevoke, T.K. Paul & A. Kumar s.n.

12. *Meizotropis* Voigt

Meizotropis buteiformis Voigt, Hort. Suburb. Calcutt. 239. 1845 ('buteaeformis'). [Plate 9G]

Erect or scandent shrubs; leaves 3-foliolate; terminal leaflet scalariform; lateral leaflets smaller; flowers orange-red, 3–5 together in long racemes; pods rigid, slightly narrowed towards ends, rusty-tomentose, bearing single seed towards the end of pod; seeds reniform, pitted.

Fls.: April–July; *Frts.*: August–January.

Way to Kalijhora, T.K. Paul & A. Kumar 42513.

13. *Millettia* Wight & Arn.

Millettia extensa (Benth.) Benth. ex Baker in Hook.f., Fl. Brit. India 2(4): 109. 1876. *Otosema extensa* Benth. in Miq., Pl. Jungh. 2: 249. 1852. 'Canj', 'Gonj' (H.).

Scandent shrubs to large climbers; leaflets 7–9, ovate, obovate to elliptic; flowers white in spike-like axillary racemes; pods linear-oblong, woody, flat, sutures thickened, densely ferruginous; seeds rounded.

Fls.: March–June; *Frts.*: September–March.

Sukna, T.K. Paul & A. Kumar 42590.

14. *Mucuna* Adans.

1a. Pods woody, linear, often torulose, always without projecting lamellae

2. *M. macrocarpa*

1b. Pods coriaceous or fleshy, shapes variable, with or without oblique lamellae projecting from surface 2

2a. Pods with 8–16 conspicuous oblique lamellae; margins winged 1. *M. imbricata*

2b. Pods without lamellae, with or without wrinkles or winged margin 3. *M. pruriens*

1. ***Mucuna imbricata*** DC. ex Baker in Hook.f., Fl. Brit. India 2(4): 185. 1876.

Woody climbers; leaflets ovate-oblong; flowers dull purple in pendulous long peduncled racemes; pods sparsely covered with reddish brown irritant bristles; seeds oval, slightly rough.

Fls. & Frts.: August–February.

North range, T.K. Paul & A. Kumar 42757.

2. ***Mucuna macrocarpa*** Wall., Pl. Asiat. Rar. 1: 41, t. 47. 1830.

Woody twiners; leaflets ovate or elliptic; flowers greenish white, in racemes borne on old leafless stem; pods compressed, woody, constricted between seeds, finely appressed brown pubescent, glabrescent in parts, 8–15-seeded; seeds discoid, black.

Fls. & Frts.: March–November.

Way to Kalijhora, T.K. Paul & A. Kumar 43757.

3. ***Mucuna pruriens*** (L.) DC., Prodr. 2: 405. 1825. *Dolichos pruriens* L., Herb. Amboin. 23. 1754.

Climbers; leaves 3-foliolate; leaflet obovate, rhomboid or ovate; flowers purple, solitary or 2–3 together in axillary racemes; pods linear-oblong, densely covered with grey to brown stinging hairs, 5–6-seeded; seeds ovoid, brown.

Fls. & Frts.: August–April.

North range, T.K. Paul & A. Kumar 42757.

15. *Pueraria* DC.

Pueraria phaseoloides (Roxb.) Benth., J. Linn. Soc., Bot. 9: 125. 1865. *Dolichos phaseoloides* Roxb. Fl. Ind. 3: 316. 1832.

1a. Pods cylindrical with unthickened sutures

15.1. var. ***phaseoloides***

1b. Pods not cylindrical with thickened sutures

15.2. var. ***subspicata***

15.1. var. ***phaseoloides***

Twining herbs; leaves pinnately 3-foliolate; leaflets rhomboid to broadly ovate; flowers pale blue or reddish in peduncled racemes; pods linear, reflexed, straight, black when ripe, 10–20-seeded; seeds transversely oblong, smooth, black.

Fls. & Frts.: September–December.

Sukna, T.K. Paul & A. Kumar 41360.

15.2. var. ***subspicata*** (Benth.) Maesen, Agric. Univ. Wageningen Pap. 85(1): 84. 1985. *Neustanthus subspicata* Benth. in Miq., Pl. Jungh. 2: 234. 1852.

Climbers; leaflets deeply lobed, sub-rhomboid to broadly ovate; flowers pale blue in long racemes; pods linear, appressed pubescent with thickened sutures; seeds black.

Fls. & Frts.: September–December.

Sukna, T.K. Paul & A. Kumar 41460.

16. Shuteria Wight & Arn., *nom. cons.***Shuteria hirsuta** Baker in Hook.f., Fl. Brit. India 2(4): 182. 1876.

Climbers with brown hirsute stems; leaves 3-foliolate; flowers blue in up to 50-flowered elongate lax racemes; pods recurved, densely hairy, 12–14-seeded.

Fls. & Frts.: September–December.

Sukna, T.K. Paul & A. Kumar 41560.

17. Tephrosia Pers.**Tephrosia candida** DC., Prodr. 2: 249. 1825. 'Bangara' (Beng.); 'Lashtra', 'Masethi', 'Kulthi' (H.) **[Plate 11C]**

Shrubs; leaves imparipinnate, leaflets narrowly ovate to elliptic; flowers white tinged with red in terminal and axillary racemes; pods linear, flat, strap-shaped, ferruginous, 9–12-seeded.

Fls.: August–October; *Frts.*: November–December.

Sevoke, T.K. Paul & A. Kumar 31360.

18. Uria Desv.

1a. Petioles 2.5–7 cm long; racemes up to 29.5 cm long; pedicels 8–10 mm long

1. U. lagopus

1b. Petioles 2–2.5 cm long; racemes up to 14 cm long; pedicels 2.5–6 mm long

2. U. rufescens**1. Uria lagopus** DC., Ann. Sci. Nat. (Paris) 4: 100. 1825.

Herbs or shrubs; leaves 3-foliolate; leaflets elliptic-obovate; flowers in racemes; pods with 5–6 joints, joints of seeds slightly pubescent, black.

Fls. & Frts.: September–October.

Sukna, T.K. Paul & A. Kumar 41700.

2. Uria rufescens (DC.) Schindl., Repert. Spec. Nov. Regni Veg. 21: 14. 1925. *Desmodium rufescens* DC., Ann. Sci. Nat. (Paris) 4: 101. 1825. 'Salpan' (Beng.).

Shrubs; leaves 3-foliolate; flowers pink or purple, usually 2 or 1, in simple or paniculate racemes; pods with 5–6 joints, finely pubescent; seeds with fine hairs.

Fls.: July–September; *Frts.*: October–January.

Bandarjhola, T.K. Paul & A. Kumar 43760.

19. Vigna Savi**Vigna pilosa** (J.G.Klein ex Willd.) Baker in Hook.f., Fl. Brit. India 2(4): 207. 1876. *Dolichos pilosus* J.G.Klein ex Willd., Sp. Pl. 3(2): 1043. 1802. 'Jhikrai', 'Malkonia' (Beng.).

Twining; leaflets ovate to ovate-lanceolate, asymmetric, sometimes symmetric; flowers lilac; pods linear-oblong, subcompressed, densely clothed with brown spreading hairs, up to 12-seeded; seeds quadrate.

Frts.: October–December.

Sevoke, T.K. Paul & A. Kumar 41399.

20. Zornia J.F. Gmel.**Zornia diphylla** (L.) Pers., Syn. Pl. 2(2): 318. 1807. *Hedysarum diphyllum* L., Sp. Pl. 2: 747. 1753.

Herbs; leaves with 2-leaflets; leaflets ovate; stipules lanceolate with a long spur; flowers yellow in axillary racemes; pods compressed.

Fls. & Frts.: September–November.

Sevoke, T.K. Paul & A. Kumar 41369.

38. CAESALPINIACEAE

- | | |
|---|-----------------------|
| 1a. Leaves simple, deeply bilobed or unipinnate | 2 |
| 1b. Leaves bipinnate | 5 |
| 2a. Leaves deeply bilobed | 3 |
| 2b. Leaves unipinnate | 4 |
| 3a. Trees; seeds many | 2. Bauhinia |
| 3b. Climbers; seeds 1 or 2 | 7. Phanera |
| 4a. Filaments of 3 abaxial antepalous stamens sigmoidly curved and many times longer than anthers; anthers introrsely dehiscent by slits or basal pores; bracteoles 1 or 2, at or towards the base of pedicel | 4. Cassia |
| 4b. Filaments of all stamens straight or simply curved; anthers dehiscent terminally by slits or pores; bracteoles absent | 8. Senna |
| 5a. Sepals inserted on margin of campanulate receptacle | 1. Acrocarpus |
| 5b. Sepals not as above | 6 |
| 6a. Sepals valvate | 5. Delonix |
| 6b. Sepals imbricate | 7 |
| 7a. Pods elliptic, broadly winged along both sutures; sepals and petals all similar | 6. Peltophorum |
| 7b. Pods oblong, narrowly winged along dorsal suture only; lowest sepal longer than other, hooded and enclosing bud, upper petal differing in size and shape from others | 1. Caesalpinia |

1. Acrocarpus Wight & Arn.**Acrocarpus fraxinifolius** Wight & Arn., Mag. Zool. Bot. 2(12): 547. 1839. **[Plate 5A]**

Trees; leaves bipinnate; leaflets oblong-ovate or oblong-elliptic; flowers dull red-orange in dense racemes; pods 15–20-seeded; seeds ellipsoid, brown.

Fl. & Frts.: February–June.

Kalijhora road, T.K. Paul & A. Kumar 45713.

2. Bauhinia L.

- 1a. Leaves divided halfway down; bud obovoid, apex obtuse; petals similar
1. B. purpurea
- 1b. Leaves divided to about 2/3 down; bud ovoid, apex beaked; petals dissimilar,
upper petal variegated **2. B. variegata**

1. Bauhinia purpurea L., Sp. Pl. 1: 375. 1753. 'Rakta Kanchan' (Beng.).

Trees; leaves broadly elliptic; flowers purple in terminal paniced racemes; pods linear-oblong, 12–15-seeded; seeds ellipsoid, brown.

Fls.: September–November; *Frts.*: January–March.

Sukna, T.K. Paul & A. Kumar 41235.

2. Bauhinia variegata L., Sp. Pl. 1: 375. 1753. 'Kanchan' (Beng.).

Trees; leaves broadly ovate; flowers purple or purplish-white in terminal panicles, few on short racemes or corymbs; pods linear-oblong; seeds ellipsoid.

Fls.: February–March; *Frts.*: April–June.

Sevoke, T.K. Paul & A. Kumar 43701.

3. Caesalpinia L.

Caesalpinia cucullata Roxb., Fl. Ind. 2: 358. 1832.

Climbing shrubs; stems with dark coloured hooked spines; pinnae 2–6 pairs; leaflets 4–5 pairs, ovate; flowers yellow in terminal panicles; pods oblong, winged along upper sutures; seed 1 or 2 in the middle of pod.

Fls. & Frts.: November–June.

Latapanchar, T.K. Paul & A. Kumar 41430.

4. Cassia L.

Cassia fistula L., Sp. Pl. 1: 377. 1753. 'Amaltas', 'Banarathi', 'Sundali' (Beng.); 'Nurnic' (Sant.).

Trees, 8–10 m tall; leaflets 4–8 pairs, ovate, ovate-elliptic or elliptic-lanceolate; flowers yellow, numerous in long axillary pendulous lax racemes; pods cylindrical, indehiscent, black when ripe; seeds numerous ovate, flat.

Fls.: March–April; *Frts.*: August–October.

Sukna, T.K. Paul & A. Kumar 41299.

5. Delonix Raf.

Delonix regia (Bojer ex Hook.) Raf., Fl. Tellur. 2: 92. 1837. *Poinciana regia* Bojer ex Hook., Bot. Mag. 56: 5, t. 2884. 1829. 'Krishnachura' (Beng.).

Trees; pinnae 12–25 pairs; leaflets 12–25 pairs, oblong; flowers bright scarlet or orange-red in racemes; pods flat; seeds 20–50, oblong, brown.

Fls.: April–June; *Frts.*: June–July. Cultivated.

Sukna, T.K. Paul & A. Kumar 41239.

6. Peltophorum (Vogel) Benth., nom. cons.

Peltophorum pterocarpum (DC.) Backer ex K. Heyne, Nutt. Pl. Ned.-Ind., ed. 2, 2: 755. 1927. *Inga pterocarpa* DC., Prodr. 2: 441. 1825. 'Radhachura' (Beng.).

Trees; pinnae 12–20; leaflets 7–24, oblong; flowers yellow in panicles or racemes; pods winged all round, with an acumen at the apex, brownish.

Fls.: March–August; *Frts.*: November–January. Commonly planted on roadsides and gardens.

Sukna, T.K. Paul & A. Kumar 41249.

7. Phanera Lour.

Phanera vahlii (Wight & Arn.) Benth. in Miq., Pl. Jungh. 263. 1852. *Bauhinia vahlii* Wight & Arn., Cat. Pl. Ind. 38. 1833.

Lianas; branchlets terminating in pair of opposite revolute tendrils; leaves suborbicular, cleft to about 1/3 way down, lobes rounded with a broad sinus; flowers in terminal dense corymbose racemes; pods oblong, 8–12-seeded; seeds oblong, ellipsoid, to compressed, dark-brown.

Fls.: April–June; *Frts.*: October–February.

South range, T.K. Paul & A. Kumar 42453.

8. Senna Mill.

- 1a. Foliar glands present on leaf rachis **2**
- 1b. Foliar glands absent on the petiole and on rachis **1. S. alata**
- 2a. Leaflets 3 pairs, foliar gland on leaf-rachis between the pairs of leaflets **3. S. tora**
- 2b. Leaflets 3–5 pairs, foliar gland some where on the petiole **2. S. occidentalis**

1. Senna alata (L.) Roxb., Fl. Ind. 2: 349. 1832. *Cassia alata* L., Sp. Pl. 1: 378. 1753. 'Dadmari', 'Dadmardan' (Beng.).

Shrubs; leaflets 5–12 pairs; flowers orange-yellow in racemes; pods linear, transversely septate, longitudinally winged along the middle of each valve, 40–60-seeded; seeds deltoid-rhombic.

Fls.: September–October; *Frts.*: October–December.

Sukna, T.K. Paul & A. Kumar 41219.

2. Senna occidentalis (L.) Link, Handbuch 2: 140. 1831. *Cassia occidentalis* L., Sp. Pl. 1: 377. 1753.

Herbs or undershrubs; leaflets 3–5 pairs, ovate or ovate-lanceolate; flowers yellow in axillary and terminal corymbose-racemes; pods linear, recurved; seeds obovate to suborbicular.

Fls.: September–March; *Frts.*: December–April.

Sukna, T.K. Paul & A. Kumar 41239.

3. *Senna tora* (L.) Roxb., Fl. Ind. 2: 340. 1832. *Cassia tora* L., Sp. Pl. 1: 376. 1753. 'Chakunda', 'Chakuna', 'Penevar' (Beng.).

Herbs or undershrubs; leaflets 3 pairs, obovate or obovate-oblong; flowers yellow, solitary or 2–3 together; pods linear-cylindric, beaked, 25–30-seeded; seeds rhomboidal.

Fls.: September–November; *Frts.*: November–December.

Sukna, T.K. Paul & A. Kumar 41259.

39. MIMOSACEAE

- | | |
|--|--------------------------|
| 1a. Stamens 4, 8 or 10 | 3. Mimosa |
| 1b. Stamens indefinite | 2 |
| 2a. Stamens free or nearly so | 1. Acacia |
| 2b. Stamens jointed into a tube | 3 |
| 3a. Pods straight | 4 |
| 3b. Pods circinate or spirally twisted | 4. Pithecellobium |
| 4a. Pods thin, not succulent | 2. Albizia |
| 4b. Pods rather succulent | 5. Samanea |

1. *Acacia* Willd.

- | | |
|---------------------------------|-----------------------------|
| 1a. Trees | 1. A. auriculiformis |
| 1b. Climbing or scandent shrubs | 2 |
| 2a. Leaflets 40–60 pairs | 3. A. pennata |
| 2b. Leaflets 15–35 pairs | 2. A. caesia |

1. *Acacia auriculiformis* A. Cunn. ex Benth., London J. Bot. 1: 377. 1842. 'Akashmoni' (Beng.).

Trees; phyllode alternate, falcate, elliptic; flowers yellow; pods twisted, margins undulate.

Fls. & Frts.: September–March.

North range, T.K. Paul & A. Kumar 42507.

2. *Acacia caesia* (L.) Willd., Sp. Pl., ed. 2, 4(2): 1090. 1806. *Mimosa caesia* L., Sp. Pl. 1: 522. 1753, *p.p.*

Shrubs or woody climbers, armed with numerous hooked and straight prickles; leaves bipinnate; pinnae 8–15 pairs; leaflets oblong or obliquely obovate; flowers creamy white in terminal panicles; pods strap shaped, oblong, 5–12-seeded.

Fls.: March–November; *Frts.*: November–April.

Sukna, T.K. Paul & A. Kumar 41239.

3. *Acacia pennata* (L.) Willd., Sp. Pl., ed. 2, 4(2): 1090. 1806. *Mimosa pennata* L., Sp. Pl. 522. 1753.

Scandent shrubs; leaves bipinnate; leaflets 40–60 pairs, oblong to linear-oblong; inflorescence heads in terminal or axillary panicle; flowers white, sessile; pods strap shaped, 3–10-seeded.

Fls.: May–September; *Frts.*: July–February.

Sukna, T.K. Paul & A. Kumar 41237.

2. *Albizia* Durazz.

- | | |
|---|-----------------------|
| 1a. Pinnae 2 pairs with large elliptic-ovate to lanceolate leaflets; leaflets 1–3 pairs | 2. A. lucidior |
| 1b. Pinnae 2–12 pairs with small linear-oblong to oblong-obtuse leaflets; leaflets 3–35 pairs | 1. A. lebbeck |

1. *Albizia lebbeck* (L.) Benth., London J. Bot. 3: 87. 1844, *p.p.* ('lebbeck'). *Mimosa lebbeck* L., Sp. Pl. 1: 516. 1753. 'Siris', 'Karai Khiris' (Beng.).

Trees; leaves bipinnate; pinnae 2–4 pairs; leaflets 3–9 pairs, oblong to obovate; flowers yellowish green to creamy white in terminal globose heads, fragrant; pods strap shaped, flat, 1–9-seeded; seeds elliptic-ovate to oblong, pale brown, compressed.

Fls.: January–April; *Frts.*: August–February.

Sevoke, T.K. Paul & A. Kumar 41236.

2. *Albizia lucidior* (Steud.) I.C. Nielson, Adansonia ser. 2, 19(2): 222. 1979. *Inga lucidior* Steud., Nomencl. Bot., ed. 2, 1: 810. 1840. 'Silkoro'i' (Beng.).

Trees; leaves bipinnate; leaflets 1–3 pairs, elliptic ovate to lanceolate; flowers creamy, in terminal axillary heads; pods strap shaped, straight, flattened, 4–10-seeded; seeds orbicular, flattened.

Fls.: April–September; *Frts.*: November–February.

Sukna, T.K. Paul & A. Kumar 43239.

3. *Mimosa* L.

- | | |
|---|-------------------------|
| 1a. Stamens 4; pinnule margin and below more or less glabrous or setulose | 2. M. pudica |
| 1b. Stamens 8; pinnule margin ciliate, pubescent to puberulous below | 1. M. himalayana |

1. *Mimosa himalayana* Gamble, Bull. Misc. Inform. Kew 1920(1): 4. 1920. 'Shia-Kanta', 'Kuchi-Kanta' (Beng.).

Straggling shrubs; stems angular, furrowed, with broad based \pm straight or hooked prickles; leaves bipinnate; pinnules 11–16 pairs, oblong, oblong to oblong-elliptic; flowers in heads, pink; pods 3–9-seeded; seeds suborbicular.

Fls.: July–October.

Sukna, T.K. Paul & A. Kumar 41343.

2. *Mimosa pudica* L., Sp. Pl. 1: 518. 1753. 'Lajjaboti lata' (Beng.).

Herbs or undershrubs, prostrate, scandent to decumbent; stems \pm sparsely armed with hooked broad pickles; leaves bipinnate; leaflets 10–25 pairs; flowers pink, in shortly ovoid pedunculate heads; pods clustered, sub-falcate, 3–4-seeded; seeds orbicular, glabrous, black.

Fls. & Frts.: March–November.

Sukna, T.K. Paul & A. Kumar 41231.

4. *Pithecellobium* Mart.

1a. Stipules spinose

1. P. dulce

1b. Stipules not spinose

2. P. heterophyllum

1. *Pithecellobium dulce* (Roxb.) Benth., London J. Bot. 3: 199. 1844 (*'Pithecolobium'*). *Mimosa dulcis* Roxb., Pl. Coromandel 1: 67, t. 99. 1798. 'Sain babla', 'Kankra badam' (Beng.).

Trees; leaves bipinnate; leaflet one pair, oblique or ovate-oblong; flowers creamy white, in terminal panicles or axillary racemes; pods twisted, 5–8-seeded; seeds oval or rhomboidal, black, embedded in pulpy whitish aril.

Fls.: February–May; *Frts.*: April–August.

Sukna, T.K. Paul & A. Kumar 42539.

2. *Pithecellobium heterophyllum* (Roxb.) J.F. Macbr., Contr. Gray Herb. 59: 3. 1919. *Mimosa heterophylla* Roxb., Fl. Ind. 2: 545. 1832. 'Belati amlī' (Beng.).

Trees; leaves bipinnate; pinnae 2–4 pairs; leaflets elliptic-lanceolate or oblanceolate; flowers yellowish white in umbellate corymbs; pods spirally twisted, 4–13-seeded; seeds purplish or bluish black.

Fls.: April–November; *Frts.*: January–March.

Sukna, T.K. Paul & A. Kumar 42739.

5. *Samanea* (DC.) Merr.

Samanea saman (Jacq.) Merr., J. Wash. Acad. Sci. 6(2): 47. 1916. *Mimosa saman* Jacq., Fragm. Bot. pt. 1: 15, t. 9. 1800. 'Siris' or 'Khris' (Beng.); 'Rain tree' (Eng.).

Trees; leaves bipinnate; leaflets 2–7 pairs, elliptic-ovate or rhomboid, 1–5 × 0.5–2.5 cm; flowers pink, in solitary globose heads, fragrant; pods brown to blackish brown, apex beaked, 12–22-seeded; seeds smooth.

Fls.: March–October; *Frts.*: April–December.

Sukna, T.K. Paul & A. Kumar 42759.

40. ROSACEAE

1a. Trees; carpels connate and adnate to the floral cup; fruit a pome

2. Pyrus

1b. Herbs or shrubs; carpels free from each other as well as from floral cup; fruit a drupelet or achene

2

2a. Prickly shrubs; each carpel with 2 ovules; fruit aggregate, succulent

3. Rubus

2b. Unarmed herbs; each carpel with 1 ovule; fruit achene

1. Fragaria

1. *Fragaria* L.

Fragaria vesca L., Sp. Pl. 1: 494. 1753. 'Strawberry' (Eng.).

Herbs; stolons with runners; leaves trifoliate; leaflets ovate or obovate; scapes erect; flowers white, bracteate; achenes globose, red, fragrant.

Fls.: May–June; *Frts.*: June–July.

Latapancher, T.K. Paul & A. Kumar 42357.

2. *Pyrus* L.

Pyrus communis L., Sp. Pl. 1: 479. 1753. 'Common pear', 'European pear', 'Pear' (Eng.).

Trees; leaves ovate; inflorescence corymb or umbellate-raceme; fruits pyriform or globose, green or reddish with persistent calyx, sweet after ripening.

Fls.: April–May; *Frts.*: July.

Latapancher, T.K. Paul & A. Kumar 42339.

3. *Rubus* L.

Rubus ellipticus Sm. in A. Rees, Cycl. (London ed.) 30: no. 16. 1819. 'Golden evergreen raspberry' (Eng.).

Shrubs; leaves trifoliate; leaflets obovate to obovate-oblong or suborbicular; flowers white in dense axillary or terminal panicles; drupelets on a cylindrical hairy receptacle, golden yellow, succulent; stone rugose.

Fls.: January–April; *Frts.*: April–May.

Latapancher, T.K. Paul & A. Kumar 42330.

41. COMBRETACEAE

1a. Petals absent

2. Terminalia

1b. Petals 4 or 5

1. Combretum

1. *Combretum* Loefl.

Combretum decandrum Roxb., Pl. Coromandel 1: 43, t. 59. 1795. 'Atang' (Beng.).

Woody climbers with pendant branches; leaves oblong or elliptic-oblong; flowers in panicles of rusty villous spike; fruits elliptic or oblong, with 5 broad membranous wings.

Fls.: November–February; *Frts.*: March–May.

Latapanchar, T.K. Paul & A. Kumar 41462.

2. *Terminalia* L.

1a. Fruits not winged, 2–5 shallowly ridged

2. T. bellirica

1b. Fruits distinctly winged

2

- 2a. Calyx hairy **3. T. crenulata**
 2b. Calyx glabrous **3**
 3a. Fruits 5-winged, wings longer than broad, veins curving upwards **1. T. arjuna**
 3b. Fruits 2-winged, wings broader than long, veins straight **4. T. myriocarpa**

1. Terminalia arjuna (Roxb. ex DC.) Wight & Arn., Prodr. Fl. Ind. Orient.

1: 314. 1834. *Pentaptera arjuna* Roxb. ex DC., Prodr. 3: 114. 1828. 'Arjun' (Beng.)

Trees; leaves oblong or elliptic, with 2 prominent glands at the base of lamina; flowers greenish white in short axillary spikes or in terminal panicles; fruit a drupe, ovoid with 5 hard projecting wings.

Fls. & Frts.: April–June.

Sukna, T.K. Paul & A. Kumar 42462.

2. Terminalia bellirica (Gaertn.) Roxb., Pl. Coromandel 2(4): 54, t. 198. 1805. *Myrobalanus bellirica* Gaertn., Fruct. Sem. Pl. 2: 90, t. 97. 1790. 'Bahera' (Beng.).

Trees; leaves broadly elliptic or elliptic obovate; flowers in axillary slender spikes; fruit a drupe, smooth.

Fls. & Frts.: April–December.

Sevoke, T.K. Paul & A. Kumar 41562.

3. Terminalia crenulata Roth, Nov. Pl. Sp. 380. 1821.

Trees; leaves elliptic or obovate-oblong, with a pair of stalked glands at the base; flowers creamish yellow in mostly terminal or axillary spikes; fruit a drupe, ovoid, wings 5, thin.

Fls.: June–August; *Frts.:* January–February.

Sevoke, T.K. Paul & A. Kumar 41472.

4. Terminalia myriocarpa Van Heurck & Mull.Arg., Observ. Bot. 215. 1871. 'Panisaj' (Beng.).

Trees; leaves oblong to oblong-elliptic, with a pair of stalked glands; flowers small in a large terminal panicles; fruit a drupe, 2-winged, wings broader than long.

Fl. & Frts.: December–April.

Way to Kalijhora, T.K. Paul & A. Kumar 41401.

42. MYRTACEAE Juss.

- 1a. Calyx lobes connate in buds; fruits up to 10 cm across, many seeded **1. Psidium**
 1b. Calyx lobes free in buds; fruits up to 5 cm across; 1–few seeded **2. Syzygium**

1. Psidium L.

Psidium guajava L., Sp. Pl. 1: 470. 1753. 'Piyara' (Beng.).

Trees; leaves ovate or oblong, obovate; flower white, solitary or few flowered raceme; berry globose or pyriform.

Fls.: April–May; *Frts.:* May–December.

Sukna, T.K. Paul & A. Kumar 43217.

2. Syzygium Gaertn., *nom. cons.*

- 1a. Calyx tube with a thickened staminal disc at mouth **2**
 1b. Calyx tube without a thickened staminal disc **2. S. kurzii**
 2a. Leaves pellucid gland dotted in lower surface **3. S. tetragonum**
 2b. Leaves not pellucid gland dotted in lower surface **1. S. cumini**

1. Syzygium cumini (L.) Skeels, Bull. Bur. Pl. Industr. U.S.D.A. 25: 248. 1912. *Myrtus cumini* L., Sp. Pl. 1: 471. 1753. 'Kalla-Jam' (Beng.).

Trees; leaves ovate, obovate, obovate or oblong; flowers creamy white, in thyrsoid panicles; fruit ellipsoid to oblong, bluish black or purple; seed 1, oval.

Fls.: February–May; *Frts.:* July–August.

Sukna, T.K. Paul & A. Kumar 31462.

2. Syzygium kurzii (Duthie) N.P. Balakr., Bull. Bot. Surv. India 22: 174. 1982. *Eugenia kurzii* Duthie, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 46(2): 68. 1877.

Trees; leaves broadly lanceolate; flowers white in cymes; fruits ellipsoid to oblong, smooth.

Fls.: October–December; *Frts.:* February–March.

South range, T.K. Paul & A. Kumar 41062.

3. Syzygium tetragonum (Wight) Wall. ex Walp., Repert. Bot. Syst. 2: 179. 1843. *Eugenia tetragona* Wight, Ill. Ind. Bot. 2: 16. 1841.

Trees; Leaves elliptic-obovate; flowers white in corymb; fruits globose.

Fls. & Frts.: December–March.

Latapanchar, T.K. Paul & A. Kumar 41462.

43. LECYTHIDACEAE

Careya Roxb., *nom. cons.*

Careya arborea Roxb., Pl. Coromandel 3: 14, t. 218. 1811.

Trees; leaves obovate to oblanceolate; flowers white or pale pink, in terminal, few-flowered spike; fruits globose or ovoid, greenish yellow; seeds numerous, immersed in pulp.

Fls. & Frts.: March–August.

Sevoke, T.K. Paul & A. Kumar 31462.

44. MELASTOMATACEAE

- 1a. Fruit a capsule, dehiscing at top by valves; stamens nearly equal **2. Osbeckia**
 1b. Fruit a berry, dehiscing irregularly; stamens unequal **1. Melastoma**

1. Melastoma L.

Melastoma malabathricum L., Sp. Pl. 1: 390. 1753.

Undershrubs; leaves elliptic, ovate-elliptic to lanceolate; flowers in terminal condensed panicle or compound corymbose; berry ovoid or campanulate; seeds many cochleate.

Fls. & Frts.: February–December.

Sukna, *T.K. Paul & A. Kumar* 41221.

2. Osbeckia L.

- | | |
|--|-------------------------|
| 1a. Flowers 5-merous | 2. O. nepalensis |
| 1b. Flowers 4-merous | 2 |
| 2a. Inflorescence a dense or loose terminal cluster closely subtended by 1-few pairs of approximate leaves | 1. O. chinensis |
| 2b. Inflorescence an elongated panicle, not subtended by approximate leaves | 3. O. stellata |

1. Osbeckia chinensis L., Sp. Pl. 1: 345. 1753.

Herbs; leaves elliptic, elliptic-oblong to linear-lanceolate; flowers pink in terminal cluster, subtended by 1–3 pairs of approximate leaves; capsules sunken in calyx tube.

Fls. & Frts.: August–December.

Way to Kalijhora, *T.K. Paul & A. Kumar* 41252.

2. Osbeckia nepalensis Hook., Exot. Fl. 1(2): t. 31. 1822.

Herbs or undershrubs; leaves ovate-lanceolate to oblong; flowers pink in axillary or terminal panicle, rarely fascicled; capsules deeply sunken within fruiting calyx tubes.

Fls. & Frts.: May–December.

Latapanchar, *T.K. Paul & A. Kumar* 41443.

3. Osbeckia stellata Buch.-Ham. ex D. Don, Bot. Reg. 8: t. 674. 1822.
[Plate 10B]

Shrubs; branches subquadrangular; leaves ovate to ovate-lanceolate; flowers purple, usually in terminal cymose panicles; capsules deeply sunken within fruiting calyx-tubes with distinct neck, densely covered with emergences.

Fls. & Frts.: May–October.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42520.

45. LYTHRACEAE

- | | |
|---|------------------|
| 1a. Annual, biennial or perennial herbs | 1. Cuphea |
| 1a. Shrubs or trees | 2 |

- | | |
|--|-------------------------|
| 2a. Flowers zygomorphic; calyx-tube curved; lower surface of leaf black-dotted | 3. Woodfordia |
| 2b. Flowers actinomorphic; calyx-tube straight; lower surface of leaf not black-dotted | 2. Lagerstroemia |

1. Cuphea P. Browne

- | | |
|---------------------------|-----------------------------|
| 1a. Leaves lanceolate | 2. C. procumbens |
| 1b. Leaves elliptic-ovate | 1. C. carthagenensis |

1. Cuphea carthagenensis (Jacq.) J.F. Macbr., Publ. Field Mus. Nat. Hist., Bot. Ser. 8: 124. 1930. *Lythrum carthagenense* Jacq., Enum. Syst. Pl. 22. 1760.

Prostrate herbs; leaves elliptic; flowers pink in axillary or terminal fascicles; capsules ellipsoid; seeds ovoid-rounded, winged around.

Fls. & Frts.: October–December.

Sevoke, *T.K. Paul & A. Kumar* 41366.

2. Cuphea procumbens Cav., Icon. 4: 55, t. 380. 1797 (1798).

Herbs; leaves lanceolate; flowers pink, borne laterally between petioles; capsules ellipsoid.

Fls.: July–August.

Latapanchar, *T.K. Paul & A. Kumar* 41445.

2. Lagerstroemia L.

Lagerstroemia parviflora Roxb. Pl. Coromandel 1: 47, t. 66. 1795.

Trees; leaves ovate-elliptic or ovate-lanceolate; flowers whitish, in axillary or terminal panicles; capsules ellipsoid, woody; seeds numerous, winged.

Fls.: April–May; *Frts.*: September–February.

South range, *T.K. Paul & A. Kumar* 42430.

3. Woodfordia Salisb.

Woodfordia fruticosa (L.) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 40(1): 56. 1871. *Lythrum fruticosum* L., Syst. Nat., ed. 10, 2: 1045. 1759. **[Plate 11H]**

Shrubs; leaves opposite, ovate-lanceolate or ovate; flowers red in axillary cymes; capsules ellipsoid; seeds numerous, triangular.

Fls. & Frts.: March–May.

Sukna west, *T.K. Paul & A. Kumar* 43683.

46. SONNERATIACEAE**Duabanga Buch.-Ham.**

Duabanga grandiflora (Roxb. ex DC.) Walp., Repert. Bot. Syst. 2: 114. 1843. *Lagerstroemia grandiflora* Roxb. ex DC., Mém. Soc. Phys. Genève 3(2): 84. 1826. 'Bandarhulla' (Beng.). **[Plate 7C]**

Trees; leaves opposite, distichous, oblong to oblanceolate; flowers white, in terminal corymbs; capsules sub-globose, turn brown on ripening, split into 5–7 longitudinal clefts; seeds numerous, ellipsoid.

Fl. & Frts.: March–October.

Sukna west, *T.K. Paul & A. Kumar* 43642.

47. ONAGRACEAE

Ludwigia L.

- | | |
|--|---------------------------|
| 1a. Capsules pubescent | 3. L. perennis |
| 1b. Capsules glabrous | 2 |
| 2a. Seeds free, not embedded in endocarp, multiseriate | 1. L. erecta |
| 2b. Seeds embedded in endocarp, uniseriate at least | 2. L. hyssopifolia |

1. Ludwigia erecta (L.) Hara, J. Jap. Bot. 28: 292. 1953. *Jussiaea erecta* L., Sp. Pl. 1: 388. 1753.

Herbs; leaves lanceolate to elliptic; flowers yellow, solitary in upper axils; capsules 4-ribbed, 4-angled; seeds ovoid-oblong.

Fls. & Frts.: October–January.

Sevoke, near river belt, *T.K. Paul & A. Kumar* 41432.

2. Ludwigia hyssopifolia (G. Don) Exell, Garcia de Orta 5: 471. 1957. *Jussiaea hyssopifolia* G. Don, Gen. Hist. 2: 693. 1832.

Annual herbs; leaves linear to lanceolate; flowers yellow to orange-yellow; capsules subterete, lower portion narrower with uniseriate seeds, upper 1/4–1/3 portion of capsule enlarged and with pluriseriate seeds; seeds oblong, brown.

Fls. & Frts.: October–April.

Sukna, *T.K. Paul & A. Kumar* 41341.

3. Ludwigia perennis L., Sp. Pl. 1: 119. 1753.

Herbs or undershrubs; leaves elliptic-lanceolate; flowers yellow, axillary, solitary; capsules oblong, 4-ribbed, 4-angled; seeds elliptic.

Fls. & Frts.: May–August.

Sukna, *T.K. Paul & A. Kumar* 41492.

48. PASSIFORACEAE

Passiflora L.

- | | |
|--|-------------------------|
| 1a. Leaves 3-lobed; sepals ovate-oblong or ovate-lanceolate; coronal filaments in several series | 1. P. foetida |
| 1b. Leaves entire; sepals linear-ovate; coronal filaments in one series | 2. P. napalensis |

1. Passiflora foetida L., Sp. Pl. 2: 959. 1753.

Prostrate or climbing herbs with foetid smell; leaves shallowly or somewhat deeply 3-lobed, suborbicular to ovate in outline; flowers solitary, axillary or

rarely 2–3 together; fruits globose or subglobose; seeds ovoid-cuneiform, coarsely reticulate in the middle.

Fls. & Frts.: April–December.

Sukna, *T.K. Paul & A. Kumar* 49462.

2. Passiflora napalensis Wall., Tent. Fl. Nepal. 1: 20, t. 11. 1824.

Climbing herbs; leaves ovate or ovate-elliptic; flowers with coronal filament in 1 row; fruits globose; seeds 10–15, obovate, reticulately depressed, base narrow, apex pointed and bent.

Fls. & Frts.: July–October.

Kalijhora, *T.K. Paul & A. Kumar* 47462.

49. CARICACEAE

Carica L.

Carica papaya L., Sp. Pl. 2: 1036. 1753.

Deciduous trees, stem soft with latex and prominent leaf scars; leaves palmately 7-lobed; flowers greenish yellow, unisexual on different plant; berries ovoid, oblong, fleshy, with latex in unripe fruit, orange-yellow when ripe; seeds numerous, black.

Fls. & Frts.: Throughout the year. Cultivated, sometimes as an escape.

Sukna, *T.K. Paul & A. Kumar* 41465.

50. CUCURBITACEAE

- | | |
|--|-------------------------|
| 1a. Ovules horizontal or erect | 2 |
| 1b. Ovules pendulous | 5 |
| 2a. Corolla rotate | 3 |
| 2b. Corolla campanulate | 1. Coccinia |
| 3a. Petals fimbriate margined | 6. Trichosanthes |
| 3b. Petals entire | 4 |
| 4a. Calyx with 2–3 scales at base; male flowers with large enveloping bracts | 3. Momordica |
| 4b. Calyx scales absent; male flowers not as above | 2. Diplocyclos |
| 5a. Anther cells incurved or reflexed | 5. Solena |
| 5b. Anther cells straight | 4. Mukia |

1. Coccinia Wight & Arn.

Coccinia grandis (L.) Voigt, Hort. Suburb. Calcutt. 59. 1845. *Bryonia grandis* L., Mant. Pl. 126. 1767. 'Telakucha' (Beng.).

Perennial, scandent, dioecious herbs; leaves entire to palmately lobed; tendrils slender; flowers white; berry oblong or cylindrical; seeds greyish yellow.

Fls. & Frts.: May–November.

Sevoke, *T.K. Paul & A. Kumar* 41262.

2. Diplocyclos (Endl.) T. Post & Kuntze

Diplocyclos palmatus (L.) C. Jeffery, Kew Bull. 15(3): 352. 1962. *Bryonia palmata* L., Sp. Pl. 2: 1012. 1753.

Climbers; leaves palmately 5-lobed; tendrils bifid; flowers greenish yellow; fruits spherical, yellowish-green; seeds obovate.

Fls.: April–August; *Frts.*: July–December.

Sevoke, T.K. Paul & A. Kumar 41221.

3. Momordica L.

Momordica charantia L., Sp. Pl. 2: 1009. 1753.

Twining herbs; leaves orbicular in outline, usually palmately 7-lobed; flowers yellow; fruits ovoid or fusiform, tapering to both ends.

Fls.: June–September; *Frts.*: July–October.

Latapanchar, T.K. Paul & A. Kumar 41490.

4. Mukia L.

Mukia maderaspatana (L.) M. Roem., Fam. Nat. Syn. Monogr. 2: 47. 1846. *Cucumis maderaspatana* L., Sp. Pl. 2: 1012. 1753. 'Bilari' (Beng. & H.).

Climbers; leaves 3–6 angular, broadly ovate, reniform; male and female flowers in clusters; fruits ovoid, globose; seeds warty at faces, tapering at bottom.

Fls. & Frts.: July–December.

Sevoke, T.K. Paul & A. Kumar 41394.

5. Solena Lour.

Solena amplexicaulis (Lam.) Gandhi in Saldanha & Nicolson, Fl. Hassan Dist. 179. 1976. *Bryonia amplexicaulis* Lam., Encycl. 1(2): 496. 1785.

Perennial herbs with tuberous roots; leaves ovate, suborbicular; flowers small; fruits baccate, oblong.

Fls. & Frts.: March–November.

Kalijhora, T.K. Paul & A. Kumar 42568.

6. Trichosanthes L.

Trichosanthes tricuspidata Lour., Fl. Cochinch. 2: 589. 1790. 'Makal' (Beng.).
[Plate 11F]

Climbers; leaves broadly ovate, palmately 3–5(–7)-lobed; tendrils stout, 3-fid; male flowers 5–10 in each cluster; female flowers axillary, solitary; fruits orbicular to broadly ovate, red at maturity; seeds many, ovate-oblong.

Fls.: July–September; *Frts.*: November–December.

Sevoke, T.K. Paul & A. Kumar 43755.

51. BEGONIACEAE**Begonia** L.

- | | |
|---|-------------------------|
| 1a. Leaves symmetrically truncate or cordate at base | 2 |
| 1a. Leaves asymmetrically truncate or cordate | 3 |
| 2a. Plant glabrous; leaves rounded or cordate at base | 4. B. ovatifolia |
| 2b. Plant hairy; leaves distinctly cordate at base | 5. B. picta |
| 3a. Stipules deciduous | 3. B. nepalensis |
| 3b. Stipules persistent | 4 |
| 4a. Stipules 2–3 cm long | 2. B. hatacoa |
| 4b. Stipules c. 1 cm long | 1. B. cathcartii |

1. Begonia cathcartii Hook.f. & Thomson, Illustr. Pl. Himal. t. 13. 1855.

Tuberous herbs; leaves ovate; flowers white to pink, axillary and terminal; capsules with one broad wing and 2 papery wings; seeds ellipsoid.

Fls. & Frts.: March–November.

Way to Kalijhora, T.K. Paul & A. Kumar 43760.

2. Begonia hatacoa Buch.-Ham., Prodr. Fl. Nepal. 223. 1825.

Tuberous herbs; leaves obliquely ovate; flowers axillary, few flowered; capsules broad wing much descending, upper edge concave; seeds ellipsoid.

Fls. & Frts.: June–November.

Way to Kalijhora, T.K. Paul & A. Kumar 43255.

3. Begonia nepalensis (A. DC.) Warb. in Engl. & Prantl, Nat. Pflanzenfam. 3(6A): 142. 1894. *Mezeiera nepalensis* A. DC., Ann. Sci. Nat. Ser. 4, 11: 144. 1859.
[Plate 5F]

Tuberous herbs; leaves lanceolate; flowers pink, axillary and terminal; capsules ellipsoid, one wing large, upper edge concave; seeds ellipsoid.

Fls. & Frts.: June–August.

Sukna, T.K. Paul & A. Kumar 45692.

4. Begonia ovatifolia A. DC., Ann. Sci. Nat., Bot. Ser. 4, 11: 132. 1859.

Tuberous herbs; leaves ovate to orbicular; inflorescence terminal; capsule 3-winged; seeds ellipsoid.

Fls. & Frts.: June–September.

Sukna, T.K. Paul & A. Kumar 42462.

5. Begonia picta Sm., Exot. Bot. 2: 81, t. 101. 1806. [Plate 5G]

Tuberous herbs; leaves ovate; inflorescence scarcely exceeding the leaves, peduncled; capsules 3-winged, one wing larger and other two smaller; seeds ellipsoid, light brown.

Fls. & Frts.: January–October.

South range, *T.K. Paul & A. Kumar* 42440.

52. APIACEAE

Centella L., *nom. cons.*

Centella asiatica (L.) Urb. in Mart., Fl. Bras. 11(1): 287, t. 78, f. 1. 1879.
Hydrocotyle asiatica L., Sp. Pl. 1: 234. 1753.

Perennial, creeping herbs; leaves suborbicular, reniform; flowers red in axillary, umbels; fruits ovoid, laterally compressed, mericarps with 7–9 ridges.

Fls. & Frts.: April–November.

Latapanchar, *T.K. Paul & A. Kumar* 41424.

53. ARALIACEAE

- 1a. Scandent shrubs or climbers
1b. Shrubs or trees

1. ***Schefflera***
2. ***Trevesia***

1. *Schefflera* J.R. Forst. & G. Forst.

Schefflera venulosa (Wight & Arn.) Harms in Engl. & Prantl, Nat. Pflanzenfam. 3(8): 39. 1894. *Paratropia venulosa* Wight & Arn., Prodr. Fl. Ind. Orient. 1: 337. 1834.

Scandent shrubs or climbers, sometimes epiphytic; leaves digitately 3–7-foliolate; leaflets elliptic-oblong; flowers pale green or yellowish in terminal, paniced umbels or racemes.

Fls. & Frts.: February–October.

Latapanchar, *T.K. Paul & A. Kumar* 43760.

2. *Trevesia* Vis.

Trevesia palmata (Roxb.) Vis., Mem. Reale Accad. Sci. Torino Ser. 2, 4: 262. 1842. *Gastonia palmata* Roxb., Fl. Ind. 2: 407. 1824.

Shrubs or trees; leaves palmatifid or palmatisect, lobes serrate; petioles prickly; flowers white in terminal paniced umbels or corymbs; fruits subglobose, glossy, crowned by persistent style.

Fls. & Frts.: February–May.

Latapanchar, *T.K. Paul & A. Kumar* 41762.

54. RUBIACEAE

- 1a. Ovules more than 2, usually numerous in each locule
1b. Ovules solitary in each locule
2a. Flowers crowded in dense globose heads
2b. Flowers not in dense heads
3a. Fruits capsular
3b. Fruits berries

- 2
9
1. ***Adina***
3
4
8

- 4a. Trees 5
4b. Herbs 6
5a. Bracts foliaceous; corolla lobes glabrous; capsules loculicidal 7. ***Hymenodictyon***
5b. Bracts not foliaceous; corolla lobes pilose at margin; capsules septicidal
3. ***Cinchona***
5. ***Dentella***
7
13. ***Ophiorrhiza***
6. ***Hedyotis***
12. ***Mussaenda***
19. ***Xeromphis***
10
17. ***Rubia***
9. ***Knoxia***
11
12
14
4. ***Coffea***
13
8. ***Ixora***
15. ***Pavetta***
11. ***Morinda***
15
16
18. ***Spermacoe***
17
14. ***Paederia***
18
10. ***Lasianthus***
16. ***Psychotria***
2. ***Chassalia***
18a. Corolla tube straight, short
18b. Corolla tube curved, long

1. *Adina* Salisb.

Adina cordifolia (Roxb.) Hook.f. & Benth. in Brandis, Forest Fl. N.W. India 263. 1874. *Nauclea cordifolia* Roxb., Pl. Coromandel 1(3): 40, t. 53. 1796.

Trees; leaves suborbicular-cordate; flowers yellow in globose heads; densely downy; seeds 6 in each cell.

Fls.: June–July; *Frts.*: February–May.

Sukna, *T.K. Paul & A. Kumar* 43462.

2. *Chassalia* Comm.

Chassalia curviflora (Wall.) Thwaites, Enum. Pl. Zeyl. 150. 1864. *Psychotria curviflora* Wall. in Roxb., Fl. Ind. 1: 167. 1824.

Shrubs; leaves elliptic to ovate-lanceolate or oblanceolate; flowers purplish in terminal trichotomous cymes; fruits globose, smooth.

Fls. & Frts.: March–September.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42567.

3. *Cinchona* L.

Cinchona officinalis L., *Sp. Pl.* 1: 172. 1753.

Trees; leaves ovate to oblanceolate; inflorescence a large, terminal, few flowered cymes; capsule ellipsoid or oblong.

Fls. & Frts.: October–December.

Cultivated.

4. *Coffea* L.

Coffea benghalensis B. Heyne ex Schut., *Syst. Veg.*, ed. 15 bis 5: 200. 1819.

Shrubs; leaves elliptic to ovate; inflorescence 1–3-flowered, axillary and at the ends of small branchlets, appearing with or before the leaves; drupes black, subglobose, subdidymous; seeds grooved.

Fls.: December–January; *Frts.*: January–April.

Sukna, *T.K. Paul & A. Kumar* 41239.

5. *Dentella* G. Forst.

Dentella repens (L.) J.R. Forst. & G. Forst., *Char. Gen. Pl.*, ed. 2. 26, t. 13. 1776. *Oldenlandia repens* L., *Mant. Pl.* 40. 1767.

Prostrate herbs, rooting at nodes; leaves elliptic or obovate, spatulate; flowers white, axillary, solitary, minute; fruits globose, hispid.

Fls. & Frts.: May–August.

Sukna, *T.K. Paul & A. Kumar* 40462.

6. *Hedyotis* L.

1a. Perennial herbs from woody root-stock, c. 3 m high; leaves 1.5–15 × 0.2–4.5 cm; flowers in terminal and axillary panicle of umbellate cymes; corolla white or yellowish white

2. *H. scandens*

1b. Annual herbs, 5–30 cm long; leaves 1.3–3.5 × 0.2–0.7 cm; flowers axillary, in corymbs; corolla white, blue tinged, pink or purple

1. *H. corymbosa*

1. *Hedyotis corymbosa* (L.) Lam., *Tabl. Encycl.* 1: 272. 1792. *Oldenlandia corymbosa* L., *Sp. Pl.* 1: 149. 1753.

Herbs, profusely branched; leaves narrowly elliptic or elliptic-lanceolate; flowers white or pale purple in axillary cymes or fascicles, 1–4-flowered; capsules subglobose or ovoid, didymous.

Fls. & Frts.: April–November.

Sevoke, *T.K. Paul & A. Kumar* 41383.

2. *Hedyotis scandens* Roxb., *Fl. Ind.* 1: 364. 1820.

Perennial scandent herbs; leaves elliptic, oblong or lanceolate; cymes terminal, subumbellate; flowers white or pale yellow; capsule obovoid, 2-celled, septicidally dehiscent; seeds many planoconvex, reticulate.

Fls. & Frts.: Throughout the year.

Sevoke, *T.K. Paul & A. Kumar* 41372.

7. *Hymenodictyon* Wall.

Hymenodictyon excelsum (Roxb.) Wall. in Roxb., *Fl. Ind.* 2: 149. 1824. *Cinchona excelsa* Roxb., *Pl. Coromandel* 2: 3, t. 106. 1799.

Trees; leaves elliptic-ovate; flowers white, fragrant, densely crowded on terminal branched panicles; capsules ellipsoid, on recurved pedicels, reddish brown when ripe, 2-valved, many-seeded; seeds lenticular, winged around.

Fls. & Frts.: June–December.

North range, *T.K. Paul & A. Kumar* 43765.

8. *Ixora* L.

Ixora acuminata Roxb., *Fl. Ind.* 1: 383. 1820.

Shrubs or small trees; leaves elliptic or obovate-oblong; flowers white, fragrant, in subsessile or shortly peduncled corymbs; drupes ovoid or ellipsoid with persistent calyx teeth.

Fls.: April–June; *Frts.*: September–November.

Sukna, *T.K. Paul & A. Kumar* 43768.

9. *Knoxia* L.

Knoxia sumatrensis (Retz.) DC., *Prodr.* 4: 569. 1830. *Spermacoce sumatrensis* Retz., *Observ. Bot.* 4: 23. 1786.

Annual, undershrubs; leaves linear-lanceolate or lanceolate; flowers white, in terminal corymbiform cymes; fruits ellipsoid, quadrangular.

Fls. & Frts.: October–January.

Sukna, *T.K. Paul & A. Kumar* 43773.

10. *Lasianthus* Jack.

Lasianthus sikkimensis Hook.f., *Fl. Brit. India* 3(7): 180. 1880.

Undershrubs; leaves lanceolate or oblong-lanceolate; flowers white in axillary, sessile or subsessile cymes; fruits subglobose.

Fls. & Frts.: April–October.

Sevoke, *T.K. Paul & A. Kumar* 41322.

11. Morinda L.

Morinda pubescens Sm. in Rees, Cycl. (London ed.) 24, n. 3. 1813.

[Plate 10A]

Trees; leaves elliptic or oblong-lanceolate; flowers white in globose heads; drupes coalescent into a globose or ovoid fleshy fruit.

Fls.: April–June; *Frts.*: August–September.

Sukna west, *T.K. Paul & A. Kumar* 43611.

12. Mussaenda L.

Mussaenda glabra Vahl, Symb. Bot. 3: 38. 1790.

Scandent or climbing shrubs, 2–3 m high, glabrous. Leaves oblong or elliptic-lanceolate; stipules bifid; flowers in terminal cymes, yellow or orange; sepals petaloid, yellowish white; berries globose, red.

Fls. & Frts.: May–December.

Sukna, *T.K. Paul & A. Kumar* 40461.

13. Ophiorrhiza L.

1a. Leaves glabrous; bracteoles absent

1. O. mungos

1b. Leaves pubescent beneath; bracteoles present

2. O. nutans

1. Ophiorrhiza mungos L., Sp. Pl. 1: 150. 1753.

Herbs or suffrutescent shrubs; leaves elliptic or elliptic-lanceolate; flowers white in glabrescent cymes; capsules somewhat winged, brownish.

Fls. & Frts.: July–January.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42559.

2. Ophiorrhiza nutans C.B. Clarke in Hook.f., Fl. Brit. India 3(7): 84. 1880.

Herbs; leaves elliptic or oblanceolate; flowers white or yellowish white in cymose umbels; capsules hispid.

Fls. & Frts.: June–October.

Sevoke, *T.K. Paul & A. Kumar* 42543.

14. Paederia L.

Paederia foetida L., Mant. Pl. 52. 1767.

Climbers, foetid; leaves elliptic-ovate or lanceolate; flowers in axillary and terminal panicles with opposite cymose branches; fruits ellipsoid, reddish, compressed; seeds compressed.

Fls.: Octobe–January; *Frts.*: November–April.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42554.

15. Pavetta L.

Pavetta indica L., Sp. Pl. 1: 110. 1753.

Shrubs; leaves obovate to elliptic-oblanceolate; flowers white in axillary or terminal corymbs; drupes subglobose, ripe berries black.

Fls.: April–July; *Frts.*: June–September.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42562.

16. Psychotria L.

Psychotria calocarpa Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 41(4): 315. 1872.

Undershrubs; leaves elliptic-lanceolate, ovate or oblong; flowers yellow in axillary and terminal peduncled umbellate cymes; fruits red, pyrenes obscurely 4 ribbed dorsally.

Fls. & Frts.: June–December.

Kalijhora, *T.K. Paul & A. Kumar* 42492.

17. Rubia L.

Rubia sikkimensis Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 43(3): 188. 1874.

Climbing herbs; leaves 4 in whorls, elliptic-lanceolate; flowers creamy white with greenish tinge in axillary or terminal panicles; fruits globose, green.

Fls. & Frts.: September–February.

Latapanchar, *T.K. Paul & A. Kumar* 43757.

18. Spermaceo L.

1a. Leaves undulate margined; seeds c. 2.5 mm

1. S. hispida

1b. Leaves flat-margined; seeds 0.5–1.5 mm

2. S. latifolia

1. Spermaceo latifolia Aubl., Hist. Pl. Guiane 1: 55, t. 19. 1775.

Herbs; leaves elliptic, spatulate to lanceolate; flowers white in axillary, 4–5-flowered clustered; fruits ellipsoid.

Fls. & Frts.: August–July.

Sukna, *T.K. Paul & A. Kumar* 41286.

2. Spermaceo hispida L., Sp. Pl. 1: 102. 1753.

Herbs with perennating rootstocks, procumbent; leaves obovate, oblong or elliptic; flowers blue or white, 4–6 in a whorl; capsules hispid, septifragal; seeds brown.

Fls. & Frts.: Throughout the year.

Sevoke, *T.K. Paul & A. Kumar* 41374.

19. Xeromphis Rafin.

Xeromphis spinosa (Thunb.) Keay, Bull. Jard. Bot. État Bruxelles 28: 37. 1958.
Gardenia spinosa Thunb., Diss. Gard. no. 7: 1780.

Shrubs or small trees; leaves obovate or oblanceolate; flowers bright yellow, violet or greenish white; berries fleshy, globose, yellowish.

Fls. & Frts.: March–November.

Sevoke, T.K. Paul & A. Kumar 42455.

55. ASTERACEAE

- | | | |
|---|------------------------------|-----------|
| 1a. Florets all ligulate | 16. Launaea | |
| 1b. Florets all tubular or tubuliform | | 2 |
| 2a. Anther cells obtuse, entire or subauricled at base | | 3 |
| 2b. Anther cells cleft at base or subentire | | 6 |
| 3a. Involucre ecalyculate | 9. Emilia | |
| 3b. Involucre calyculate | | 4 |
| 4a. Succulent herbs or shrubs | 15. Gynura | |
| 4b. Herbs or shrubs, non succulent | | 5 |
| 5a. Capitula pink or brick red | 6. Crassocephalum | |
| 5b. Capitula yellow | 10. Erechites | |
| 6a. Leaves opposite | | 7 |
| 6b. Leaves alternate | | 9 |
| 7a. Involucral bracts more than 5 | | 8 |
| 7b. Involucral bracts 3–5 with usually equal number of florets | 17. Mikania | |
| 8a. Pappus of 10 or more capillary bristles | 11. Eupatorium | |
| 8b. Pappus of 3–5 scales | 1. Ageratum | |
| 9a. Florets all tubular; style branches subulate, hairy | | 10 |
| 9b. Florets all tubuliform; style branches linear | | 12 |
| 10a. Heads distinct; florets 1-many | 23. Vernonia | |
| 10b. Heads in glomerules; florets 1–5 | | 11 |
| 11a. Glomerules bracteate; involucral bracts in 2-series; pappus bristles straight | 8. Elephantopus | |
| 11b. Glomerules ebracteate; involucral bracts 4-seriate; 2 pappus bristles bent doubly | 19. Pseudelephantopus | |
| 12a. Anther cells tailed or auricled | | 13 |
| 12b. Anther cells not tailed or auricled | | 15 |
| 13a. Herbs woolly | 13. Gnaphalium | |
| 13b. Herbs not woolly | | 14 |
| 14a. Leaves mostly rosettes at base; involucral bracts ovate-lanceolate; anthers tailless | 5. Blumeopsis | |
| 14b. Leaves alternate; involucral bracts linear, oblong to ovate; anthers tailed | 4. Blumea | |
| 15a. Involucral bracts 2-many-seriate, dry or with scarious tips | 2. Artemisia | |
| 15b. Involucral bracts uniseriate, herbaceous or foliaceous | | 16 |
| 16a. Heads unisexual | 24. Xanthium | |
| 16b. Heads bisexual | | 17 |

- | | |
|--|-----------------------|
| 17a. Leaves divided to base or deeply pinnatifid | 18 |
| 17b. Leaves simple or pinnately compound | 19 |
| 18a. Achenes linear with retrorsely barbed pappus awns | 3. Bidens |
| 18b. Achenes somewhat rounded without retrorsely barbed pappus awns | 18. Parthenium |
| 19a. Disc achenes rounded or laterally compressed; pappus absent or of 2 short weak scales | 20 |
| 19b. Disc achenes dorsally compressed or angular; pappus present or absent | 22 |
| 20a. Receptacle convex or conical | 20. Spilanthes |
| 20b. Receptacle flat, never conical | 21 |
| 21a. Paleas bristle like | 7. Eclipta |
| 21b. Paleas linear or oblanceolate, concave or folded | 21. Tithonia |
| 22a. Pappus absent | 14. Guizotia |
| 22b. Pappus consisting of 5 or more bristles or scales | 23 |
| 23a. Erect, annual herbs; pappus of short fimbriate scales, c. 1 mm long | 12. Galinsoga |
| 23b. Prostrate or ascending perennial herbs; pappus of fine plumose bristles, c. 5 mm long | 22. Tridax |

1. Ageratum L.

- | | |
|--|---------------------------|
| 1a. Involucral bracts glabrous; corolla shorter than the awned pappus scales | 1. A. conyzoides |
| 1b. Involucral bracts pilose without; corolla as long as or longer than the awned pappus | 2. A. houstonianum |

1. Ageratum conyzoides L., Sp. Pl. 2: 839. 1753.

Herbs; leaves opposite, ovate; heads white or blue in dense terminal corymbs or panicles; achenes black, pappus of 5 bristle-tipped scales.

Fls. & Frts.: Throughout the year.

Sevoke–Teesta river belt, T.K. Paul & A. Kumar 43689.

2. Ageratum houstonianum Mill., Gard. Dict., ed. 8, no. 2. 1768.

Herbs; leaves opposite, deltoid-ovate; heads many flowered; achenes sparsely bristly on ribs, pappus of 5 free scales.

Fls. & Frts.: Throughout the year.

Sevoke, T.K. Paul & A. Kumar 41377.

2. Artemisia L.

Artemisia myriantha Wall. ex Besser, Tent. Arbot. 51. 1832.

Herbs; leaves pinnatisect or middle and upper leaves pinnati-partite; heads in pyramidal panicles or simple racemes; achenes elliptic-oblong, truncate at apex, faintly striate.

Fls. & Frts.: October–December.

Latapanchar, T.K. Paul & A. Kumar 43757.

3. Bidens L.

Bidens pilosa L., Sp. Pl. 2: 832. 1753.

Herbs; leaves 3-foliolate, rarely pinnate with up to 7 leaflets; petioles narrowly winged; heads discoid or radiate with or without white or yellow ray florets, outer involucre bracts spatulate; achenes linear.

Fls. & Frts.: April–November.

Sukna, T.K. Paul & A. Kumar 41299.

4. Blumea DC.

1a. Heads in lax panicles, yellow, receptacle minutely pilose

1. B. laciniata

1b. Heads in compact panicles, purple or lilac, receptacle glabrous

2. B. mollis

1. Blumea laciniata (Roxb.) DC., Prodr. 5: 436. 1836. *Conyza laciniata* Roxb., Fl. Ind. 3: 428. 1832.

Herbs; lower leaves lyrate, upper oblanceolate; heads yellow in large terminal panicles; achenes ribbed, sparsely pubescent, pappus white.

Fls. & Frts.: January–June.

Kalijhora road, T.K. Paul & A. Kumar 45711.

2. Blumea mollis (D. Don) Merr., Philipp. J. Sci, C 5: 395. 1910. *Erigeron mollis* D. Don, Prodr. Fl. Nepal. 172. 1825.

Herbs; leaves ovate-oblong to obovate; heads in compact panicles, purple or lilac; achenes subangular, pubescent, pappus white.

Fls. & Frts.: January–November.

Sukna, T.K. Paul & A. Kumar 42357.

5. Blumeopsis Gagnep.

Blumeopsis flava (DC.) Gagnep., Bull. Mus. Hist. Nat. Paris 26: 76. 1920. *Blumea flava* DC., Prodr. 5: 439. 1836.

Herbs; leaves rosette at base, obovate; heads golden yellow; achenes minute, glabrous, pappus white.

Fls. & Frts.: July–October.

Sevoke, T.K. Paul & A. Kumar 41356.

6. Crassocephalum Moench

Crassocephalum crepidioides (Benth.) S. Moore, J. Bot. 1: 211. 1912. *Gynura crepidioides* Benth. in Hook., Niger Fl. 438. 1849.

Herbs; leaves elliptic-oblanceolate; heads in loose terminal corymbs, cylindrical, red; achenes dark brown, ribbed with silky-white pappus.

Fls. & Frts.: April–December.

Sevoke, T.K. Paul & A. Kumar 41387.

7. Eclipta L.

Eclipta prostrata (L.) L., Mant. Pl. 2: 286. 1771. *Verbesina prostrata* L., Sp. Pl. 2: 902. 1753.

Diffuse or erect herbs; leaves opposite, elliptic-oblong; heads small, white, solitary or fascicled; achenes minute, dark brown, verrucose, pappus of 1–2 minute teeth.

Fls. & Frts.: April–December.

Sukna, T.K. Paul & A. Kumar 31462.

8. Elephantopus L.

Elephantopus scaber L., Sp. Pl. 2: 814. 1753.

Herbs; leaves in basal rosette, spatulate; heads 2–5-flowered in dense clusters, purple; each cluster supported by 3-cordate, rigid, ovate bracts; achenes truncate, brown, finely ribbed, hairy.

Fls. & Frts.: Throughout the year.

Sukna, T.K. Paul & A. Kumar 41201.

9. Emilia Cass.

Emilia sonchifolia (L.) DC. in Wight, Contrib. Bot. Ind. 24. 1834. *Cacalia sonchifolia* L., Sp. Pl. 2: 1835. 1753.

Herbs; radical leaves lyrate pinnatifid or lobed with triangular ovate, terminal lobes; flowering stems leafy; heads in lax corymbs, pinkish purple; achenes 5-ribbed, scabrid, brown.

Fls. & Frts.: Throughout the year.

Way to Kalijhora, T.K. Paul & A. Kumar 43251.

10. Erechites Rafin.

Erechites valerianifolius (Link ex Spreng.) DC., Prodr. 6: 295. 1838. *Senecio valerianifolius* Link ex Spreng., Syst. Veg., ed. 16, 3: 565. 1826.

Herbs; leaves ovate-elliptic; heads pinkish-purple, cylindrical; achenes brown, sparsely puberulous.

Fl. & Fr.: May–October.

Way to Kalijhora, T.K. Paul & A. Kumar 43258.

11. Eupatorium L.

Eupatorium odoratum L., Syst. Nat., ed. 10, 2: 1205. 1759.

Herbs or shrubs; leaves deltoid or rhomboid-ovate; heads 20–40-flowered, in trichotomous corymbs, pale blue or white; achenes 4–5-ribbed, pappus white.

Fls. & Frts.: November–May.

Sukna, T.K. Paul & A. Kumar 41312.

12. *Galinsoga* Ruiz & Pavon

Galinsoga parviflora Cav., Icon. 3: 41, t. 281. 1795.

Herbs, glabrous or sparsely glandular hairy; leaves ovate or ovate-oblong to lanceolate; heads axillary or terminal; involucre campanulate; ray florets white, 4–5; disc florets many, yellow; achenes black, fusiform, puberulous.

Fls. & Frts.: October–May.

Way to Kalijhora, T.K. Paul & A. Kumar 43269.

13. *Gnaphalium* L.

- 1a. Heads in leafless corymbose clusters
1b. Heads axillary and in terminal clusters

1. ***G. luteo-album***
2. ***G. pensylvanicum***

1. ***Gnaphalium luteo-album*** L., Sp. Pl. 2: 851. 1753.

Herbs; stems white woolly tomentose; lower leaves oblong-spathulate, upper leaves narrower, linear-lanceolate; heads in terminal dense corymbs, woolly pubescent; achenes linear, papillose, pappus white.

Fls. & Frts.: January–March.

Sukna, T.K. Paul & A. Kumar 45609.

2. ***Gnaphalium pensylvanicum*** Willd., Enum. Pl. 2: 867. 1809.

Herbs; stems and branches pearl grey cottony tomentose; leaves spathulate, lanceolate, upper surface laxly villous, white woolly beneath; heads in axillary or terminal clusters, densely woolly tomentose; inflorescence prominently leafy; involucre bracts 2–3 seriate, brownish; achenes brown, pappus free.

Fls. & Frts.: January–November.

Sukna west, T.K. Paul & A. Kumar 43605.

14. *Guizotia* Cass.

Guizotia abyssinica (L.f.) Cass., Science. Nat., ed. 2, 59: 248. 1829. *Polymnia abyssinica* L.f., Suppl. Pl. 383. 1782.

Herbs, divaricately branched; leaves oblong, lanceolate; heads solitary, axillary or subterminal; involucre bracts in 2 rows; corolla yellow; achenes oblong, widened above, brown.

Fls. & Frts.: February–November.

Sukna west, T.K. Paul & A. Kumar 43615.

15. *Gynura* Cass.

Gynura nepalensis DC., Prodr. 6: 300. 1838.

Shrubs; lower leaves obovate to elliptic-lanceolate, sessile; uppermost leaves

linear-lanceolate, sessile; heads in terminal corymbs, yellow, involucre bracts hoary villous; achenes cylindrical, dark brown, glabrous or sparsely pubescent, pappus white.

Fls. & Frts.: April–December.

Sevoke, T.K. Paul & A. Kumar 43701.

16. *Launaea* Cass.

Launaea aspleniifolia (Willd.) Hook.f., Fl. Brit. India 3: 415. 1881. *Prenanthes aspleniifolia* Willd., Sp. Pl. 3: 1540. 1803.

Herbs, with thick rootstock, profusely branched from the base, glabrous; leaves mostly radical, cauline few, oblanceolate, pinnatifid or sinuate lobed, shortly petioled or sessile; heads erect, glabrous; achenes columnar or somewhat angled, pale brown, pappus white.

Fls. & Frts.: March–October.

Latapanchar, T.K. Paul & A. Kumar 41405.

17. *Mikania* Willd.

Mikania micrantha Kunth in H.B.K., Nov. Gen. Sp. 4: 105. 1818.

Climbing shrubs; leaves opposite, ovate to oblong-lanceolate; heads in corymbose panicles, 4-flowered, homogamous; achenes 4–5-ribbed, glandular, pappus reddish.

Fls. & Frts.: December–March.

Sukna, T.K. Paul & A. Kumar 41265.

18. *Parthenium* L.

Parthenium hysterophorus L., Sp. Pl. 2: 988. 1753.

Herbs; leaves usually lanceolate to pinnately dissected; heads numerous in lax panicles, white; involucre bracts 5; achenes flattened; pappus with 2 strongly reflexed awns.

Fls. & Frts.: May–March.

Sukna, T.K. Paul & A. Kumar 41275.

19. *Pseudelephantopus* Rohr.

Pseudelephantopus spicatus (Juss. ex Aubl.) C.F. Baker, Trans. Acad. Sci. St. Louis 12: 55. 1902. *Elephantopus spicatus* Juss. ex Aubl., Hist. Pl. Guiane 2: 808. 1775.

Herbs; leaves alternate, linear-oblong; heads discoid, 4-flowered, clustered in glomerules; achenes 10-ribbed, pappus with 4 bristles.

Fls. & Frts.: June–October.

Sevoke, T.K. Paul & A. Kumar 43505.

20. Spilanthes Jacq.

- 1a. Achenes eciliate; pappus absent **1. S. calva**
 1b. Achenes ciliate, dimorphic; pappus present **2. S. paniculata**

1. Spilanthes calva DC. in Wight, Contrib. Bot. India 19. 1834.

Herbs; leaves ovate; heads solitary or few, in axillary or terminal panicles, yellow; achenes narrowly obovate, pappus absent.

Fls. & Frts.: March–August.

Sukna, *T.K. Paul & A. Kumar* 41228.

2. Spilanthes paniculata Wall. ex DC., Prodr. 5: 625. 1836.

Herbs; leaves ovate-elliptic to elliptic; heads subglobose to conical; achenes black, dimorphic, marginal ones trigonous, central ones flattened, strongly margined, margins densely ciliate with long hairs, pappus with 2–3 stiff awns.

Fls. & Frts.: December–June.

Sukna, *T.K. Paul & A. Kumar* 45642.

21. Tithonia Desf.

Tithonia diversifolia (Hemsl.) A. Gray, Proc. Amer. Acad. Arts 19: 5. 1883. *Mirasolia diversifolia* Hemsl., Biol. Cent.-Amer., Bot. 2: 168, t. 47. 1881.

Undershrubs; leaves alternate, deltoid, 3–5-lobed; heads solitary, heterogamous; involucre bracts 3–4-seriate; ray florets yellow, corolla linear; achenes black, quadrangular, pappus of fused squamellae with 2 subequal awns.

Fls. & Frts.: September–May.

Latapanchar, *T.K. Paul & A. Kumar* 43217.

22. Tridax L.

Tridax procumbens L., Sp. Pl. 2: 900. 1753.

Procumbent herbs, up to 50 cm tall; leaves opposite, elliptic-ovate; heads solitary, on long erect hairy peduncles, pale yellow to white; achenes turbinate or oblong, silky, pappus of 15–20 plumose bristles.

Fls. & Frts.: March–October.

Kalijhora road, *T.K. Paul & A. Kumar* 45721.

23. Vernonia Schreb.

- 1a. Leaf margins distantly minutely dentate; heads solitary or 2-together **1. V. attenuata**
 1b. Leaf margins repand serrate, undulate or entire; heads numerous in corymbose panicles **2. V. cinerea**

1. Vernonia attenuata DC., Prodr. 5: 33. 1836.

Herbs; leaves obovate to oblong-obovate; heads axillary, usually solitary; involucre bracts 4–5-seriate; achenes striate, villous, pappus white.

Fls. & Frts.: March–October.

Way to Latapanchar, *T.K. Paul & A. Kumar* 45335.

2. Vernonia cinerea (L.) Less., Linnaea 4(3): 291. 1829. *Conyza cinerea* L., Sp. Pl. 2: 862. 1753.

Herbs; leaves ovate or lanceolate; heads in terminal corymbose panicles; involucre bracts 4-seriate; achenes terete, appressed silky, pappus white.

Fls. & Frts.: August–November.

Way to Latapanchar, *T.K. Paul & A. Kumar* 45341.

24. Xanthium L.

Xanthium strumarium L., Sp. Pl. 2: 987. 1753.

Herbs; leaves alternate, broadly ovate, 3–5-lobed; male heads globose, corolla whitish green; female heads ovoid, corolla absent; fruiting involucre pale green, covered with hooked bristles; achenes narrowly ovoid or elliptic, grayish black.

Fls. & Frts.: March–December.

Kalijhora, *T.K. Paul & A. Kumar* 43271.

56. CAMPANULACEAE

- 1a. Corolla regular; anthers free **1. Campanula**
 1b. Corolla bi-lipped; anthers connate **2. Lobelia**

1. Campanula L.

Campanula pallida Wall., Asiat. Res. 13: 375. 1820.

Annual, flexuous herbs; leaves alternate, elliptic to lanceolate; flowers solitary or paniced; corolla purple to blue, campanulate; capsules subglobose; seeds brown, shining.

Fls. & Frts.: Throughout the year.

Way to Kalijhora, *T.K. Paul & A. Kumar* 45724.

2. Lobelia L.

- 1a. Plants erect; flowers in terminal or lateral panicles **1. L. rosea**
 1b. Plants prostrate, often rooting at nodes; flowers solitary, axillary **2. L. zeylanica**

1. Lobelia rosea Wall. in Roxb., Fl. Ind. 2: 115. 1824.

[Plate 9E]

Herbs; leaves lanceolate or oblong-lanceolate; inflorescence terminal or lateral panicles; corolla rosy; capsule oblong-ellipsoid; seeds ellipsoid.

Fls. & Frts.: September–May.

Kalijhora road, *T.K. Paul & A. Kumar* 45729.

2. *Lobelia zeylanica* L., Sp. Pl. 2: 932. 1753.

Prostrate herbs, often rooting at nodes; leaves broadly ovate or elliptic-ovate, puberulous; flowers solitary, axillary; corolla violet to purple; capsules obconical to obovoid, sparsely pilose.

Fls. & Frts.: Throughout the year.

Way to Kalijhora, *T.K. Paul & A. Kumar* 45750.

57. PRIMULACEAE

***Primula* L.**

***Primula malacoides* Franch.**, Bull. Soc. Bot. France 33: 64. 1886.

Perennial herbs, rhizomatous; leaves rosulate, oblong-elliptic; flowers many in umbels, dull-violet with yellowish eye.

Fls. & Frts.: June–August.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42589.

58. MYRSINACEAE

- 1a. Ovary semi-inferior on pedicels with 2 bracteoles; fruit a many seeded berry

2. *Maesa*

- 1b. Ovary superior, pedicels without bracteoles; fruit a 1-seeded drupe **1. *Embelia***

1. *Embelia* Burm.f.

- 1a. Leaves glabrous with red gland-dots along margins; flowers in panicles

1. *E. floribunda*

- 1b. Leaves glandular and reddish pubescent beneath, margins without gland-dots; flowers in racemes **2. *E. tsjeriam-cottam***

1. *Embelia floribunda* Wall. in Roxb., Fl. Ind. 2: 291. 1824.

Climbing shrubs; leaves elliptic-lanceolate; panicles axillary, sometimes also terminal; petals whitish; fruits subglobose.

Fls.: December.

Sukna, *T.K. Paul & A. Kumar* 41327.

2. *Embelia tsjeriam-cottam* (Roem. & Schult.) A. DC., Trans. Linn. Soc. London 17(1): 131. 1834. *Ardisia tsjeriam-cottam* Roem. & Schult. Syst. Veg., ed. 15 bis 4: 518. 1819.

Trees, up to 10 m tall; leaves elliptic-obovate, glandular and reddish pubescent beneath; flowers 5-merous; petals elliptic; fruits globose, c. 4 mm across.

Fls. & Frts.: June–August.

Sukna, *T.K. Paul & A. Kumar* 41345.

2. *Maesa* Forssk.

***Maesa indica* Wall.** in Roxb., Fl. Ind. 2: 230. 1824.

Shrubs or small trees, 3–8 m tall; leaves ovate to ovate-lanceolate, margin coarsely dentate, glabrous; flowers in axillary, simple or branched racemes, greenish white; fruits globose, brown.

Fls. & Frts.: February–November.

Sukna, *T.K. Paul & A. Kumar* 45608.

59. SAPOTACEAE

***Madhuca* J.F. Gmel.**

***Madhuca longifolia* (L.) J.F. Macbr. var. *latifolia* (Roxb.) A. Chev.**, Rev. Bot. Appl. Agric. Trop. 23: 149 1943. *Bassia latifolia* Roxb., Pl. Coromandel 1(1): 20, t. 19. 1795.

Trees; leaves scattered or clustered at the end of the branches, broadly elliptic-lanceolate; flowers white; fruit a berry, fleshy, brown tomentose.

Fls. & Frts.: July–August.

Latapanchar, *T.K. Paul & A. Kumar* 41461.

60. SYMPLOCACEAE

***Symplocos* Jacq.**

- 1a. Leaves elliptic-lanceolate, glabrous; flowers pale yellow; fruits ovoid-elliptic, brownish red **1. *S. lucida***

- 1b. Leaves ovate to ovate-lanceolate, sparsely pilose beneath; flowers white; fruits oblong, brown **2. *S. racemosa***

1. *Symplocos lucida* Wall. ex G. Don, Gen. Hist. 4(1): 3. 1837.

Trees, c. 15 m tall; leaves elliptic-lanceolate, apex acuminate, margin obscurely glandular dentate, glabrous; flowers subsessile, in axillary spikes, pale yellow; fruits ovoid-elliptic, brownish red, crowned with persistent calyx lobes.

Fls. & Frts.: April–October.

Kalijhora hill slope, *T.K. Paul & A. Kumar* 43714.

2. *Symplocos racemosa* Roxb. Fl. Ind. 2: 539. 1832.

Trees, c. 10 m tall; leaves ovate to oblong-lanceolate, margin obscurely crenate, sparsely pilose beneath; flowers in spikes in axillary compound racemes, white, silky hairy outside; fruits oblong, brown, crowned by persistent calyx lobes.

Fls. & Frts.: November–June.

Kalijhora hill top, *T.K. Paul & A. Kumar* 43759.

61. OLEACEAE**Jasminum L.**

Jasminum caudatum Wall. ex Lindl., Edwards's Bot. Reg. 28: t. 26. 1842.

Climbing shrubs, woody; leaves 3-foliolate; leaflets oblong-ovate, apex caudate-acuminate, undulate with tuft of hairs at nerve axils beneath; flowers white, in axillary cymes; fruits ellipsoid, purplish to blackish.

Fls. & Frts.: September–March.

Kalijhora road, T.K. Paul & A. Kumar 45728.

62. APOCYNACEAE

- | | |
|--|---------------------------|
| 1a. Fruits drupaceous | 3. Rauvolfia |
| 1b. Fruits follicular | 2 |
| 2a. Corolla with fimbriate corona | 6. Wrightia |
| 2b. Corolla without such corona | 3 |
| 3a. Seeds with red or orange aril | 4. Tabernaemontana |
| 3b. Seeds not arillate | 4 |
| 4a. Stamens inserted near base of corolla tube | 2. Holarrhena |
| 4b. Stamens inserted near top of corolla tube | 5 |
| 5a. Leaves usually whorled; anthers subacute at base | 1. Alstonia |
| 5b. Leaves opposite; anthers appendaged at base | 5. Vallaris |

1. Alstonia R. Br.

Alstonia scholaris (L.) R. Br., Asclepiadeae 65. 1810. *Echites scholaris* L., Mant. Pl. 53. 1767.

Evergreen trees, c. 20 m tall; leaves in whorls, oblong-lanceolate, coriaceous, whitish-beneath; petioles stout; flowers in paniced cymes, greenish white; follicles 2, cylindrical, pendulous; seeds oblong, flattened, tufted hairy at both ends.

Fls.: October–November; *Frts.*: January–June.

Sevoke to Kalijhora, T.K. Paul & A. Kumar 43731.

2. Holarrhena R. Br.

Holarrhena pubescens (Buch.-Ham.) Wall. ex G. Don, Gen. Hist. 4: 78. 1837. *Echites pubescens* Buch.-Ham., Trans. Linn. Soc. London 13: 524. 1822.

Small trees; leaves elliptic or elliptic-oblong; flowers in terminal corymbose cymes, white, fragrant; follicles 2, very long, divaricate, slightly curved; seeds narrowly linear-oblong, glabrous.

Fls.: April–July; *Frts.*: June–December.

South range roadside, T.K. Paul & A. Kumar 42448.

3. Rauvolfia L.

Rauvolfia serpentina (L.) Benth. ex Kurz, Forest Fl. Burma 2: 171. 1877. *Ophioxylon serpentinum* L., Sp. Pl. 2: 1043. 1753.

Undershrubs, up to 1 m tall; leaves in whorls, elliptic-lanceolate or oblong-lanceolate, membranous, glabrous; flowers axillary or terminal, in compact corymbose cymes, white or pinkish; corolla tube dilated above the middle, lobes 5; drupes didynamous or solitary, smooth, reddish, black when ripe.

Fls. & Frts.: January–June.

Near Sevoke railway line, T.K. Paul & A. Kumar 42469.

4. Tabernaemontana L.

Tabernaemontana divericata (L.) R. Br. ex Roem. & Schult., Syst. Veg., ed. 15 bis 4: 427. 1819. *Nerium divaricatum* L., Sp. Pl. 1: 209. 1753.

Shrubs, 1–4 m tall, dichotomously branched; leaves elliptic-obovate to lanceolate, glabrous; flowers white, fragrant, in axillary or terminal, lax, corymbose cymes; corolla tube slender, slightly dilated at middle; follicles 2, divaricate, 3-ribbed, orange; seeds enclosed in red aril.

Fls. & Frts.: August–June.

Way to Latapanchar, T.K. Paul & A. Kumar 42540.

5. Vallaris Burm.f.

Vallaris solanacea (Roth ex Roem. & Schult.) Kuntze, Rev. Gen. Pl. 2: 417. 1891. *Peltanthera solanacea* Roth ex Roem. & Schult., Syst. Veg., ed. 15 bis 4: 670. 1819. **[Plate 11G]**

Large twining shrub; leaves oblong-lanceolate or elliptic-oblong; flowers white, in axillary, dichotomous, paniculate cyme, fragrant; follicles 2, tapering from broad base; seeds biseriate, beaked with long, white coma.

Fls. & Frts.: March–June.

Sukna West, T.K. Paul & A. Kumar 43636.

6. Wrightia R. Br.

Wrightia arborea (Dennst.) Mabb., Taxon 26: 533. 1977. *Periploca arborea* Dennst., Schluess. Hort. Malab. 15. 1818.

Trees, c. 8 m high, deciduous; leaves elliptic to ovate; flowers greenish-white or yellow, in many flowered cymes, fragrant; follicles connate into a cylinder with rough tubercles; seeds linear, slender, compressed, coma white.

Fls. & Frts.: April–July. Seeds are medicinal.

South range, T.K. Paul & A. Kumar 42458.

63. ASCLEPIADACEAE

- 1a. Shrubs
- 1b. Twining shrubs
- 2a. Filaments free, pollen masses granular
- 2b. Filaments connate, pollen masses waxy
- 3a. Follicles echinate
- 3b. Fillicles smooth
- 4a. Corolla lobes absolutely valvate
- 4b. Corolla lobes overlapping to the right

- 1. Calotropis**
- 2**
- 3**
- 4**
- 5. Pergularia**
- 2. Cryptolepis**
- 3. Hoya**
- 4. Marsdenia**

1. Calotropis R. Br.

Calotropis procera (Aiton) W.T. Aiton, Hort. Kew., ed. 2, 2: 78. 1811. *Asclepias procera* Aiton, Hort. Kew. 1: 305. 1789.

Shrubs with milky latex; leaves broadly ovate, obovate or obovate-oblong; flowers pink with purple spot; follicles paired; seeds many, flat ovate, coma silky-white.

Fls. & Frts.: Through out the year.

Sevoke, *T.K. Paul & A. Kumar* 43743.

2. Cryptolepis R. Br.

Cryptolepis sinensis (Lour.) Merr., Philipp. J. Sci. 15: 254. 1919. *Pergularia sinensis* Lour., Fl. Cochinch. 1: 169. 1790.

Climbers, glabrous; leaves linear-oblong; inflorescence in lax few flowered cyme; flowers pale yellow; follicles slender, nearly straight; seeds comose.

Fls. & Frts.: July–February.

Sevoke, *T.K. Paul & A. Kumar* 43761.

3. Hoya R. Br.

Hoya parasitica (Wall. ex Hornem.) Wight, Contrib. Bot. Ind. 37. 1834. *Asclepias parasitica* Wall. ex Hornem., Hort. Bot. Hafn., Suppl. 126. 1819.

Climbing shrubs; leaves ovate, elliptic or lanceolate, acute or acuminate, coriaceous; flowers in axillary or terminal dense umbels, white with purplish center, corolla pinkish, lobes lanceolate; follicles long, stright, glabrous.

Fls. & Frts.: March–October.

Sukna, *T.K. Paul & A. Kumar* 41323.

4. Marsdenia R. Br.

Marsdenia tinctoria R. Br., Mem. Wern. Nat. Hist. Soc. 1: 30. 1809.

Climbers, nearly glabrous; leaves ovate or cordate; inflorescence thyrsoid panicle; flowers yellow; follicles narrowed at base, tomentose.

Fl. & Fr.: May–October.

Sukna, *T.K. Paul & A. Kumar* 41356.

5. Pergularia L.

Pergularia daemia (Forssk.) Chiov., Res. Sci. Somalia Ital. 1: 115. 1916. *Asclepias daemia* Forssk., Fl. Aegypt.-Arab. 51. 1775.

Twining undershrubs; leaves ovate; flowers corymbose or racemose, drooping, pale yellowish-green; corolla campanulate; corona double; follicles in pairs, lanceolate, distinctly echinate; seeds ovoid, coma c. 1 cm long.

Fls. & Frts.: March–December.

Sevoke, near railway line, *T.K. Paul & A. Kumar* 42335.

64. BUDDLEJACEAE**Buddleja** L.

Buddleja asiatica Lour., Fl. Cochinch. 72. 1790.

Shrubs; leaves lanceolate to oblong-lanceolate; flowers in thyrsoid, spiciform panicles, subsessile; capsules 4–5 mm long, ellipsoid-oblong.

Fls. & Frts.: September–October. Grows nearby river banks, forest margins.

Teesta river belt, *T.K. Paul & A. Kumar* 45715.

65. GENTIANACEAE**Exacum** L.

Exacum tetragonum Roxb., Fl. Ind. 1: 413. 1820.

Erect herbs; stems 4-angled, winged; leaves broadly lanceolate; flowers bluish violet in compound, terminal, paniculate cymes; capsules subglobose or ellipsoid.

Fls. & Frts.: May–February.

Sevoke, *T.K. Paul & A. Kumar* 41381.

66. BORAGINACEAE

- 1a. Trees; flowers in often 2–3-choromously branched corymbs or panicles **1. Ehretia**
- 1b. Herbs; flowers in scorpioid, many-flowered spikes **2. Heliotropium**

1. Ehretia P. Browne

Ehretia wallichiana Hook.f. & Thomson ex Gamble in Hook.f., Fl. Brit. India 4: 143. 1883.

Trees; leaves elliptic or oblong; flowers in terminal, corymbiform, compact cymes; drupes subglobose, longitudinally ribbed; pyrenes compressed.

Fls. & Frts.: March–August.

North range, *T.K. Paul & A. Kumar* 42539.

2. Heliotropium L.**Heliotropium indicum** L., Sp. Pl. 1: 130. 1753.

Herbs, leaves ovate; flowers white or bluish purple in scorpioid, spicate cymes; fruits ovoid, subacutely 4-pointed.

Fls. & Frts.: March–December.North range, *T.K. Paul & A. Kumar* 42510.**67. CONVULVACEAE**

- 1a. Parasitic plant, stem brightly coloured, leafless
 1b. Non parasitic plant, stem green or brown, leafy
 2a. Fruit indehiscent
 2b. Fruit dehiscent
 3a. Leaves rotundate; fruits 1-seeded
 3b. Leaves otherwise; fruits 2–4-seeded
 4a. Plants herbaceous; persistent sepals equal in size
 4b. Plants woody; persistent sepals unequal in size
 5a. Corolla campanulate, yellow or yellowish white
 5b. Corolla infundibular, variously coloured, often pink

- 2. Cuscuta**
2
3
5
4
1. Argyreia
3. Dinetus
6. Poranopsis
5. Merremia
4. Ipomoea

1. Argyreia Lour.**Argyreia roxburghii** Choisy, Mem. Soc. Phys. Geneve 6: 419. 1834.

Climbers; leaves broadly ovate-cordate; flowers purplish-pink with darker throat, in dense, axillary corymbs; fruits subglobose, yellow.

Fls. & Frts.: July–February.Sukna, *T.K. Paul & A. Kumar* 41218.**2. Cuscuta** L.**Cuscuta reflexa** Roxb., Pl. Coromandel 2: 3, t. 104. 1798.

Parasitic vine, leafless, rootless; stem yellowish green; flowers white with fleshy calyx.

Fls. & Frts.: Through out the year.Sukna, *T.K. Paul & A. Kumar* 45663.**3. Dinetus** Sweet**Dinetus racemosus** (Roxb.) Buch.- Ham. ex Sweet, Brit. Fl. Gard. 2: t. 127. 1825. *Porana racemosa* Roxb., Fl. Ind. 2: 41. 1824.

Herbs, stem twining; leaves ovate-cordate; flowers white with yellowish tube, in lax panicles; capsules ovoid, crowned by styles; fruiting calyx oblong, 3-nerved.

Fl. & Fr.: September–December.Sukna, *T.K. Paul & A. Kumar* 41390.**4. Ipomoea** L.

- 1a. Ovary 2-locular
 1b. Ovary 3-or 4-locular
- 1. I. aquatica**
2

- 2a. Ovary 3-locular
 2b. Ovary 4-locular
 3a. Herbs; leaves pinnatisect
 3b. Shrubs; leaves entire
- 3. I. nil**
3
4. I. quamoclit
2. I. hederifolia

1. Ipomoea aquatica Forssk., Fl. Aegypt.-Arab. 44. 1775.

Herbs, creeping prostrate or floating with perennial rootstocks; leaves linear or ovate, sagittate or hastate, truncate, cordate; flowers pink, pale lilac or white, in axillary few flowered cymes; capsules ovoid to globose.

Fls. & Frts.: July–October.Latapanchar, *T.K. Paul & A. Kumar* 41441.**2. Ipomoea hederifolia** L., Syst. Nat., ed. 10, 2: 925. 1759.

Twining; leaves ovate, orbicular; flowers scarlet, in axillary and terminal cymes; capsules globose.

Fls. & Frts.: October–December.Sukna, *T.K. Paul & A. Kumar* 41308.**3. Ipomoea nil** (L.) Roth, Catal. Bot. 1: 36. 1797. *Convolvulus nil* L., Sp. Pl., ed. 2, 1: 219. 1762.

Twining; leaves ovate-cordate, 3-lobed; flowers blue, purple or pink, in axillary, 1–5-flowered umbellate-cymes; capsules ovoid.

Fls.: August–November; *Frts.:* October–January.Sukna west, *T.K. Paul & A. Kumar* 43648.**4. Ipomoea quamoclit** L., Sp. Pl. 1: 159. 1753.

Climbers; leaves pinnatisect with linear patent segments; flowers red or white, in axillary cymes; capsules ovoid.

Fl. & Fr.: May–December.Way to Latapanchar, *T.K. Paul & A. Kumar* 42541.**5. Merremia** Dennst. ex Endl.

- 1a. Plant glabrous or softly pubescent; leaves not lobed
 1b. Plant much hairy; leaves palmately 5–7-lobed
- 1. M. umbellata**
2. M. vitifolia

1. Merremia umbellata (L.) Hallier f., Bot. Jahrb. Syst. 16(4-5): 552. 1893. *Convolvulus umbellatus* L., Sp. Pl. 1: 155. 1753.

Climbers or twiners; young parts produces white milky juice; leaves ovate or oblong-lanceolate; flowers white, in axillary cymes; capsules ovoid to conical.

Fls. & Frts.: February–November.Sevoke, *T.K. Paul & A. Kumar* 43713.**2. Merremia vitifolia** (Burm.f.) Hallier f., Bot. Jahrb. Syst. 16(4-5): 552. 1893. *Convolvulus vitifolius* Burm.f., Fl. Indica 45, t. 18, f. 1. 1768. **[Plate 9B]**

Twinnings; leaves ovate or suborbicular, palmately 5–7-lobed, lobes triangular to lanceolate; flowers pale yellow to pale orange, in axillary cymes; capsules globose.

Fls. & Frts.: February–April.

Sevoke, *T.K. Paul & A. Kumar* 43729.

6. *Poranopsis* Roberty

Poranopsis paniculata (Roxb.) Roberty, *Candollea* 14: 26. 1952. *Porana paniculata* Roxb., *Pl. Coromandel* 3: 31, pl. 235. 1819.

Climbers; leaves ovate; flowers white or cream, in lateral or terminal much branched panicles; capsules ovoid-globose, shortly apiculate.

Fls.: October–December; *Frts.*: February–March.

Sukna, *T.K. Paul & A. Kumar* 41345.

68. SOLANACEAE

- | | |
|---|---------------------------|
| 1a. Fruits enclosed in enlarged, sac like calyx | 3. <i>Physalis</i> |
| 1b. Fruits never enclosed in calyx | 2 |
| 2a. Flowers very large, funnel-shaped; fruits capsular, 4-valved or irregularly dehiscent | 2. <i>Datura</i> |
| 2b. Flowers small, rotate; fruits baccate, indehiscent | 3 |
| 3a. Anthers not connivent in cone, not larger than filaments, dehiscent longitudinally | 1. <i>Capsicum</i> |
| 3b. Anthers connivent in a cone around styles, longer than filaments, dehiscent by pores | 4. <i>Solanum</i> |

1. *Capsicum* L.

Capsicum frutescens L., *Sp. Pl.* 1: 189. 1753.

[Plate 6B]

Shrubs; leaves ovate-lanceolate; flowers axillary; pedicels 2 or more at node; fruits elongate, oblong, red when ripe.

Fls. & Frts.: November–February. Escape from cultivation.

Sukna, *T.K. Paul & A. Kumar* 41357.

2. *Datura* L.

Datura metel L., *Sp. Pl.* 1: 179. 1753.

Shrubs; leaves ovate; flowers axillary, solitary; capsules spinous, subglobose or ovoid, 4-valved, irregularly dehiscent at apex.

Fls. & Frts.: June–November.

North range, *T.K. Paul & A. Kumar* 42505.

3. *Physalis* L.

Physalis divaricata D. Don, *Prodr. Fl. Nepal.* 97. 1825.

Herbs; leaves ovate; flowers axillary, solitary, yellow or white; calyx subglobose in fruit, enlarged; berries globose, brown at maturity.

Fls. & Frts.: June–September.

Sevoke, *T.K. Paul & A. Kumar* 42611.

4. *Solanum* L.

- | | |
|---|-------------------------------------|
| 1a. Plants armed | 2 |
| 1b. Plants unarmed | 1. <i>S. nigrum</i> |
| 2a. Leaves pinnately or bipinnately lobed | 2. <i>S. sisymbriifolium</i> |
| 2b. Leaves sinuate to subpinnately lobed | 3. <i>S. torvum</i> |

1. *Solanum nigrum* L., *Sp. Pl.* 1: 186. 1753.

Herbs; leaves ovate-lanceolate or oblong-ovate; flowers white, in long peduncled, subumbellate cymes; berries globose, reddish yellow to black when ripe.

Fls. & Frts.: March–November.

South range, *T.K. Paul & A. Kumar* 42449.

2. *Solanum sisymbriifolium* Lam., *Tabl. Encycl.* 2: 25. 1792.

Herbs; stems with straight sharp pale yellow prickles, clothed with grey tomentum; leaves pinnatifid or lobed, oblong-lanceolate; flowers white, in short lateral racemes; berries globose, yellow, smooth; seeds large, pitted.

Fls. & Frts.: July–May.

Sevoke, near railway line, *T.K. Paul & A. Kumar* 42460.

3. *Solanum torvum* Sw., *Prodr.* 47. 1788.

Shrubs; leaves ovate, remotely or shallowly lobed; flowers white, in dense cymes; berries globose, shining yellow when ripe; seeds brown.

Fls. & Frts.: September–January.

Sevoke near river bank, *T.K. Paul & A. Kumar* 42420.

69. SCROPHULARIACEAE

- | | |
|---|-------------------------------|
| 1a. Leaves pinnatisect | 1. <i>Calceolaria</i> |
| 1b. Leaves entire | 2 |
| 2a. Stamens 2 | 9. <i>Veronica</i> |
| 2b. Stamens 4, all perfect or 2 reduced to staminodes | 3 |
| 3a. Corolla 2-lipped | 4 |
| 3b. Corolla lobes subequal | 8 |
| 4a. Calyx campanulate | 5 |
| 4b. Calyx not campanulate | 6 |
| 5a. Flowers yellow, usually solitary, axillary | 4. <i>Lindenbergia</i> |
| 5b. Flowers creamy white, in subsecund racemes | 6. <i>Mazus</i> |
| 6a. Calyx winged or keeled | 8. <i>Torenia</i> |
| 6b. Calyx not winged or keeled | 7 |
| 7a. Stamens 4, perfect, all included in the tube | 3. <i>Limnophila</i> |
| 7b. Stamens 4, 2 perfect in the tube, 2 in the throat, perfect or reduced to staminodes | 5. <i>Lindernia</i> |

- 8a. Corolla lobes 4
8b. Corolla lobes 5

7. Scoparia
2. Centranthera

1. Calceolaria L.

Calceolaria tripartita Ruiz & Pav., Fl. Peruv. 1: 14, t. 20. 1798.

Herbs; leaves broadly ovate in outline, pinnatisect; flowers deep yellow; upper lip of corolla globose, lower lip orbicular; capsules subglobose, glandular hirsute, tips of valves reflexed after dehiscence.

Fl. & Fr.: April–November.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42439.

2. Centranthera R. Br.

- 1a. Flowers in a terminal spike; corolla yellow
1b. Flowers solitary, axillary; corolla pink

1. C. grandiflora
2. C. nepalensis

1. Centranthera grandiflora Benth., Scroph. Ind. 50. 1835. [Plate 6C]

Herbs; leaves oblong-elliptic, linear-oblong; inflorescence a terminal bracteate spike; corolla yellow; capsules globose.

Fls. & Frts.: September–November.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42553.

2. Centranthera nepalensis D. Don, Prodr. Fl. Nepal. 88. 1825.

Herbs; leaves narrowly elliptic to linear; flowers axillary; calyx densely hispid all over; corolla deep pink to dull crimson, sparsely pubescent; capsules globose.

Fls. & Frts.: September–November.

Way to Latapanchar, *T.K. Paul & A. Kumar* 45323.

3. Limnophila R. Br.

Limnophila chinensis (Osbeck) Merr., Amer. J. Bot. 3: 581. 1916. *Columnea chinensis* Osbeck, Dagb. Ostind. Resa 230. 1757.

Herbs; leaves opposite or in whorls of 3–4, ovate or elliptic, sessile; flowers blue or purple, solitary, axillary or in terminal leafy panicle; capsules orbicular.

Fls. & Frts.: October–December.

Sukna, *T.K. Paul & A. Kumar* 41226.

4. Lindenbergia Lehm.

- 1a. Leaves elliptic-lanceolate; flowers yellow
1b. Leaves ovate; flowers yellow with rosy red patches within

1. L. hookeri
2. L. indica

1. Lindenbergia hookeri C.B. Clarke in Hook.f., Fl. Brit. India 4: 261. 1884.

Shrubs; leaves elliptic-lanceolate; flowers yellow in terminal, lax flowered spike; capsules subglobose.

Fls. & Frts.: April–August.

Sukna west, *T.K. Paul & A. Kumar* 43695.

2. Lindenbergia indica (L.) Vatke, Oesterr. Bot. Z. 25(1): 10. 1875. *Dodartia indica* L., Sp. Pl. 2: 883. 1753.

Herbs; leaves ovate or elliptic; flowers yellow, axillary, solitary or in spikes; capsules oblong, hairy.

Fls.: August–January; *Frts.*: September–February.

South range, *T.K. Paul & A. Kumar* 41130.

5. Lindernia All.

- | | |
|--|-------------------------|
| 1a. Leaves palmately 3–5-veined | 4. L. procumbens |
| 1b. Leaves pinnately veined from a mid vein | 2 |
| 2a. Stamens 4, all perfect | 2. L. crustacea |
| 2b. Stamens 2 perfect, 2 staminodes | 3 |
| 3a. Leaves oblong or elliptic; posterior 2 stamens fertile, 2 staminodes anterior, filiform with hooked apex; capsules cylindrical | 1. L. ciliata |
| 3b. Leaves ovate or lanceolate; posterior 2 stamens fertile, each with a basal geniculum almost as large as anther, anterior pair sterile with reduced anthers; capsules ellipsoid | 3. L. hookeri |

1. Lindernia ciliata (Colsm.) Pennell, Brittonia 2: 182. 1936. *Gratiola ciliata* Colsm., Prodr. Decsr. Gratiol. 14. 1793.

Herbs; stems 4-angled; leaves oblong or elliptic, semi-amplexicaul; flowers pink or white with purplish blue spots, in terminal racemes; capsules oblong.

Fls. & Frts.: August–October.

Sukna, Mahananda river bank, *T.K. Paul & A. Kumar* 42429.

2. Lindernia crustacea (L.) F. Muell., Syst. Census Austral. Pl. 1: 97. 1882. *Capraria crustacea* L., Mant. Pl. 87. 1767.

Herbs; leaves ovate or lanceolate; flowers purple, solitary, axillary; capsules oblong-obovate, apiculate.

Fls. & Frts.: July–December.

Sukna, Mahananda river bank, *T.K. Paul & A. Kumar* 42403.

3. Lindernia hookeri (Hook.f.) Wettst. in Engler & Prantl, Nat. Pflanzenfam. IV. 3b. 80. 1891. *Vandellia hookeri* Hook.f., Fl. Brit. India 4(11): 280. 1884.

Herbs; leaves ovate or lanceolate; flowers blue purple in terminal subumbel; capsules ellipsoid.

Fls.: August–October; *Frts.*: October–December.

North range-Sevoke, *T.K. Paul & A. Kumar* 42496.

4. Lindernia procumbens (Krock.) Philcox, Taxon 14(1): 30. 1965. *Anagalloides procumbens* Krock., Fl. Siles. 2(1): 398, t. 26. 1790.

Herbs; leaves elliptic-oblong or ovate; flowers bluish white, axillary; capsules ovoid-orbicular.

Fls. & Frts.: October–February.

Way to Latapanchar, *T.K. Paul & A. Kumar* 41493.

6. *Mazus* Lour.

- 1a. Stoloniferous; calyx tube longer than lobes **2. *M. surculosus***
 1b. Non-stoloniferous; calyx tube shorter than or subequalling lobes **1. *M. pumilus***

1. *Mazus pumilus* (Burm.f.) Steenis, Nova Guinea ser. 2, 9: 31. 1958. *Lobelia pumila* Burm.f., Fl. Indica 186, t. 60. f. 3. 1768.

Herbs; basal leaves obovate, upper leaves spathulate; flowers white or pale blue in terminal racemes; capsules globose.

Fls. & Frts.: March–May.

Way to Latapanchar, *T.K. Paul & A. Kumar* 45537.

2. *Mazus surculosus* D. Don, Prodr. Fl. Nepal. 87. 1825.

Herbs with arching arial stolons; leaves radical, obovate-spathulate; flowers bluish-white in racemes; capsules ovoid to subglobose.

Fls. & Frts.: April–August.

Way to Latapanchar, *T.K. Paul & A. Kumar* 45634.

7. *Scoparia* L.

Scoparia dulcis L., Sp. Pl. 1: 116. 1753.

Herbs; leaves elliptic or narrowly obovate; flowers white or pale greenish, many in leafy racemes; capsules oblong-ovoid; seeds prismatic, brown.

Fls. & Frts.: March–December.

Sukna, *T.K. Paul & A. Kumar* 41263.

8. *Torenia* L.

- 1a. Flowers in axillary groups of (2–)3–6; calyx 5–6 mm in flower; corolla 10–12 mm **2. *T. thouarsii***
 1b. Flowers solitary, axillary or in terminal subumbel; calyx 10–20 mm in flower; corolla at least 14 mm **2**
 2a. Calyx 2-lobed and 5-ribbed; corolla lobes deep violet without dark blotches **1. *T. diffusa***
 2b. Calyx 5-toothed and 5-winged; corolla lobes violet, lower 2 with deep purple tips **3. *T. violacea***

1. *Torenia diffusa* D. Don, Prodr. Fl. Nepal. 86. 1825.

Herbs; leaves ovate or oblong-ovate; flowers axillary, solitary; capsules ellipsoid.

Fls. & Frts.: July–December.

Latapanchar, *T.K. Paul & A. Kumar* 45678.

2. *Torenia thouarsii* (Cham. & Schltdl.) Kuntze, Revis. Gen. Pl. 2: 468. 1891. *Nortenia thouarsii* Cham. & Schltdl., Linnaea 3(1): 18. 1828.

Herbs; leaves ovate to ovate-lanceolate; flowers pink or reddish-violet, in axillary racemes; capsules oblong.

Fls. & Frts.: April–December.

Latapanchar, *T.K. Paul & A. Kumar* 45654.

3. *Torenia violacea* (Azaolo) Pannell, J. Arnold Arbor. 24: 255. 1943. *Mimulus violaceus* Azaolo in Blanco, Fl. Filip., ed. 2, 357. 1845. **[Plate 11E]**

Herbs; leaves ovate; flowers violet, purplish-blue or white, solitary, axillary; capsules narrowly lanceolate-ellipsoid.

Fls. & Frts.: April–November.

Kalijhora road, *T.K. Paul & A. Kumar* 42531.

9. *Veronica* L.

Veronica cana Wall. ex Benth., Scroph. Ind. 45. 1835.

Herbs, rhizomatous; leaves opposite, ovate; flowers pale blue, 1–2 in terminal bracteate racemes; capsules broadly deltoid.

Fls. & Frts.: May–August.

Sukna, *S. Chandra s.n.*

70. OROBANCHACEAE

Aeginetia L.

Aeginetia indica L., Sp. Pl. 2: 632. 1753.

Herbs; flowering shoots solitary or several, brown streaked, purple, scaly at base; capsules c. 2 cm long.

Fls. & Frts.: May–October.

Latapanchar, *T.K. Paul & A. Kumar s.n.*

71. GESNERIACEAE

- 1a. Fertile stamens 4 **1. *Aeschynanthus***
 1b. Fertile stamens 2 **2**
 2a. Flowers in cymose **2. *Lysionotus***
 2b. Flowers in long racemes **3. *Rhynchoglossum***

1. *Aeschynanthus* Jack.

Aeschynanthus parviflorus (D. Don) Spreng., Syst. Veg., ed. 16, 4(2): 238. 1827. *Trichosporum parviflorum* D. Don, Edinburgh Philos. J. 7: 85. 1822.

Epiphytic herbs; leaves elliptic; flowers in terminal clusters, bright scarlet or orange-scarlet, throat yellow; capsules linear.

Fls. & Frts.: July–December.

Latapanchar, *T.K. Paul & A. Kumar* 45168.

2. *Lysionotus* D. Don

Lysionotus serratus D. Don, *Edinburgh Philos. J.* 7: 85. 1822.

Herbs; leaves in whorls, elliptic or oblong-elliptic; flowers in lax cymes, purple or white with purple nerves; capsules linear, reddish brown.

Fls. & Frts.: July–November.

Latapanchar, *T.K. Paul & A. Kumar* 45341.

3. *Rhynchoglossum* Blume

Rhynchoglossum obliquum Blume, *Bijdr. Fl. Ned. Ind.* 14: 741. 1826.

Herbs; leaves broadly elliptic; flowers violet, blue in terminal or axillary racemes; capsules ovoid-ellipsoid, included in persistent calyx.

Fls. & Frts.: July–December.

North range, *T.K. Paul & A. Kumar* 42487.

72. BIGNONIACEAE

Stereospermum Cham.

Stereospermum colais (Buch.-Ham. ex Dillwyn) Mabb., *Taxon* 27(5–6): 553. 1979. *Bignonia colais* Buch.-Ham. ex Dillwyn, *Rev. Hortus Malab.* 28. 1839.

Trees; leaves pinnate; leaflets elliptic, caudate-acuminate; flowers yellowish pink in terminal, paniculate racemes; capsules smooth or specked.

Fls. & Frts.: April–November.

Sukna, *T.K. Paul & A. Kumar* 41378.

73. PEDALIACEAE

Sesamum L.

Sesamum indicum L., *Sp. Pl.* 2: 634. 1735.

Herbs; leaves variable, upper usually alternate, narrowly oblong, middle ovate, toothed, lower usually opposite, 3-lobed or pedatisect; flowers solitary or 2–3 in axils, pale or purplish with yellow spots; capsules oblong, scabrid pilose.

Fls.: October–December; *Frts.*: December–January. An escape from cultivation.

Sevoke near river bank, *T.K. Paul & A. Kumar* 42401.

74. ACANTHACEAE

- | | |
|---|---------------------------------|
| 1a. Climbers; capsule with a long beak | 13. <i>Thunbergia</i> |
| 1b. Herbs or shrubs, never climbing; capsule never beaked | 2 |
| 2a. Seeds not supported on hard retinacula | 7. <i>Nelsonia</i> |
| 2b. Seeds supported on hard, upwards curved retinacula | 3 |
| 3a. Calyx 4-lobed; plants often spiny | 2. <i>Barleria</i> |
| 3b. Calyx 5-lobed; plants rarely spiny | 4 |
| 4a. Fertile stamens 4 | 5 |
| 4b. Fertile stamens 2 | 8 |
| 5a. Corolla distinctly 2-lipped | 6. <i>Lepidagathis</i> |
| 5b. Corolla subsequally 5-lobed | 6 |
| 6a. Corolla less than 1 cm long; bracts orbicular | 8. <i>Phaulopsis</i> |
| 6b. Corolla more than 1.2 cm long; bracts never orbicular | 7 |
| 7a. Anther cells spurred at base; leaves entire | 1. <i>Asystasia</i> |
| 7b. Anther cells not spurred at base; leaves toothed or rarely entire | 12. <i>Strobilanthes</i> |
| 8a. Corolla subsequently 5-lobed; bracts conspicuously veined | 4. <i>Eranthemum</i> |
| 8b. Corolla distinctly 2-lipped; bracts inconspicuously veined | 9 |
| 9a. Anthers 1-celled | 5. <i>Hypoestes</i> |
| 9b. Anthers 2-celled | 10 |
| 10a. Capsule 10 or more seeded; stamens usually exerted | 9. <i>Phlogacanthus</i> |
| 10b. Capsule 4-seeded; stamens not exerted | 11 |
| 11a. Placentas separating elastically from valves from the base upwards | 12 |
| 11b. Placentas not separating elastically from the valves | 10. <i>Rostellularia</i> |
| 12a. Bracts in unilateral spikes | 11. <i>Rungia</i> |
| 12b. Bracts clustered in leaf axils or laxly cymose | 3. <i>Dicliptera</i> |

1. *Asystasia* Blume

Asystasia macrocarpa Nees in Wall., *Pl. Asiat. Rar.* 3: 89. 1832. [Plate 5E]

Decumbent undershrubs; leaves ovate, oblong or lanceolate; flowers pale purple in terminal racemes; capsules glandular pubescent.

Fls. & Frts.: February–April.

Sukna west, *T.K. Paul & A. Kumar* 43700.

2. *Barleria* L.

Barleria strigosa Willd., *Sp. Pl.*, ed. 4, 3: 379. 1801.

Herbs or undershrubs, strigose; leaves ovate to broadly elliptic; flowers blue in 1-sided, axillary cymes, subsessile; bracts patently reflexed on one side; capsules oblong, glabrous, 4-seeded.

Fls. & Frts.: September–December.

Sukna, *T.K. Paul & A. Kumar* 41205.

3. *Dicliptera* Juss.

- | | |
|--|-------------------------------|
| 1a. Stems 4–6-angled, hairy; capsules clavate | 1. <i>D. chinensis</i> |
| 1b. Stems terete, glabrous; capsules ellipsoid | 2. <i>D. raii</i> |

1. *Dicliptera chinensis* (L.) Juss., Ann. Mus. Natl. Hist. Nat. 9: 268. 1807. *Justicia chinensis* L., Sp. Pl. 1: 16. 1753.

Herbs; leaves ovate-elliptic; flowers pale purple; capsules ellipsoid.

Fls.: September–January; *Frts.*: November–February.

Sukna, T.K. Paul & A. Kumar 41202.

2. *Dicliptera raii* Karthik. & Moorthy, Fl. Pl. India 12. 2009.

Prostrate or subscandent herbs; leaves ovate-elliptic; flowers deep rose or pink in axillary and terminal umbel like cymes; capsules densely pubescent.

Fls. & Frts.: December–May.

Sukna, T.K. Paul & A. Kumar 41344.

4. *Eranthemum* L.

1a. Corolla brick-red, tube ventricose from about middle

1b. Corolla blue, tube narrowly cylindrical for almost its length

2. *E. splendens*

1. *E. pulchellum*

1. *Eranthemum pulchellum* Andrews, Bot. Repos. 2: t. 88. 1800. [Plate 7D]

Undershrubs; branches quadrangular; leaves ovate, ovate-elliptic; flowers bluish or pinkish in paniced spikes; bracts oblong to lanceolate; capsules cylindrical, glabrous.

Fls. & Frts.: February–April.

Sukna west, T.K. Paul & A. Kumar 43645.

2. *Eranthemum splendens* (T. Anderson) Bremek. & Nann.-Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2. 45(1): 35. 1948. *Daedalacanthus splendens* T. Anderson, J. Linn. Soc., Bot. 9: 486. 1867.

Undershrubs; leaves narrowly elliptic or ovate-elliptic; inflorescence paniced cymes; bracts obovate; corolla brick-red; capsules glandular pilose.

Fl. & Fr.: November–February.

Kalijhora road, T.K. Paul & A. Kumar 45712.

5. *Hypoestes* Soland ex R. Br.

Hypoestes phyllostachya Baker, J. Linn. Soc., Bot. 22: 511. 1887. [Plate 9A]

Perennial, decumbent herbs; leaves elliptic-ovate; flowers purple, in spikes or solitary, axillary, 1–2 within the bract; capsules elongate; seeds 4, glabrous.

Fls. & Frts.: November–March.

Sukna, T.K. Paul & A. Kumar 41206.

6. *Lepidagathis* Willd.

Lepidagathis incurva Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 119. 1825.

Perennial herbs; lower leaves ovate, rounded at base, upper leaves elliptic,

acuminate at both ends; flowers in axillary or terminal dense spikes, white with brown spots; bracts lanceolate-elliptic; capsules oblong, 4-seeded.

Fls. & Frts.: November–April.

Sevoke, T.K. Paul & A. Kumar 43717.

7. *Nelsonia* R. Br.

Nelsonia canescens (Lam.) Spreng., Syst. Veg., ed. 16, 1: 42. 1825. *Justicia canescens* Lam., Tab. Encycl. 1: 41. 1791.

Herbs; leaves elliptic-oblong; flowers purplish, in ovate or cylindrical spikes; capsules oblong, acute or conical; seeds broadly ellipsoid.

Fls. & Frts.: September–January.

Sukna, T.K. Paul & A. Kumar 45645.

8. *Phaulopsis* Willd.

Phaulopsis imbricata (Forssk.) Sweet, Hort. Brit. 327. 1826. *Ruellia imbricata* Forssk., Fl. Aegypt.-Arab. 113. 1775.

Prostrate herbs; leaves ovate, elliptic, unequal in each pair; flowers white, in densely or sparsely hairy spikes; bracts orbicular; bracteoles elliptic; capsules clavate, 4-seeded.

Fls. & Frts.: October–February.

Sukna, T.K. Paul & A. Kumar 41237.

9. *Phlogacanthus* Nees

Phlogacanthus thyrsoformis (Roxb. ex Hardw.) Mabb., Taxon 29(56): 606. 1980. *Justicia thyrsoformis* Roxb. ex Hardw., Asiat. Res. 6: 349. 1799. [Plate 10D]

Undershrubs or shrubs; leaves often crowded towards branch tips, elliptic; flowers orange, in a dense terminal thyrse; bracts linear, pubescent; capsules narrowly clavate, glabrous, 12–14-seeded.

Fls. & Frts.: February–March.

Sukna, T.K. Paul & A. Kumar 45629.

10. *Rostellularia* Rchb.

Rostellularia procumbens (L.) Nees in Wall., Pl. Asiat. Rar. 3: 101. 1832. *Justicia procumbens* L., Sp. Pl. 1: 15. 1753.

Herbs; leaves elliptic or ovate; flowers pale violet to pink, in terminal, cylindrical spikes; capsules oblong, shortly pointed.

Fls. & Frts.: October–March.

Sukna, T.K. Paul & A. Kumar 45743.

11. Rungia Nees

Rungia pectinata Nees in DC., Prodr. 11: 470. 1847.

Herbs; leaves oblong-elliptic; flowers blue, in 1-sided axillary and terminal spikes; bracts dimorphic; outer bracts sterile, elliptic; inner bracts flower-bearing broadly elliptic; capsule ellipsoid, glabrous.

Fls. & Frts.: November–May.

Sukna, T.K. Paul & A. Kumar 41277.

12. Strobilanthes Blume

- 1a. Flowers in dense axillary heads
1b. Flowers alternate and subopposite

1. S. capitata
2. S. urophyllus

1. Strobilanthes capitata T. Anderson. J. Linn. Soc., Bot. 9: 475. 1867.

Undershrubs or shrubs; leaves unequal, ovate or elliptic; flowers in many flower red heads, bright violet; capsules slightly clavate, glandular-pilose in upper half, 4-seeded.

Fls. & Frts.: October–December.

Sukna, T.K. Paul & A. Kumar 41314.

2. Strobilanthes urophyllus Nees in DC., Prodr. 11: 192. 1847.

Shrubs; leaves narrowly ovate-elliptic; flowers blue, scattered, alternate and subopposite on small leafy branches; bracts ovate-elliptic; bracteoles obovate-spathulate; capsules 4-seeded.

Fls. & Frts.: August–September.

Sevoke, T.K. Paul & A. Kumar 42335.

13. Thunbergia Retz., *nom. cons.*

- 1a. Large twining shrubs; leaves shallowly or deeply palmatilobed; flowers in terminal, lax, long racemes
1b. Small twining herbs; leaves deltoid ovate with a single patent lobe on each side; flowers solitary or 2-together

1. T. grandiflora
2. T. laevis

1. Thunbergia grandiflora Roxb., Edward's Bot. Reg. 6. 1820. [Plate 11D]

Climbers; leaves ovate-triangular, often angular or lobed; flowers in terminal, lax, long racemes, pale or deep blue with white tube; capsules shaped like a bird's head.

Fls. & Frts.: August–October.

Way to Kalijhora, T.K. Paul & A. Kumar 42527.

2. Thunbergia laevis Nees in Wall., Pl. Asiat. Rar. 3: 77. 1832.

Twining herbs, swollen at nodes; leaves deltoid ovate with a single patent lobe on each side at base; flowers white in axillary, solitary or 2-together; capsules clavate, beaked.

Fls. & Frts.: August–December.

Sukna, T.K. Paul & A. Kumar 41266.

75. VERBENACEAE

- | | |
|---|--------------------------|
| 1a. Inflorescence a long spike; fruit a schizocarp | 6. Stachytarpheta |
| 1b. Inflorescence a dense spike, corymb or panicle; fruit a capsule or drupe | 2 |
| 2a. Flowers actinomorphic; stamens isomerous | 1. Callicarpa |
| 2b. Flowers zygomorphic; stamens didynamous | 3 |
| 3a. Drupes with two 1- or 2-seeded pyrenes | 4. Lantana |
| 3b. Drupes with one 4-seeded or four 1-seeded pyrenes | 4 |
| 4a. Drupes with one 4-seeded pyrenes | 5. Premna |
| 4b. Drupes with four 1-seeded pyrenes | 5 |
| 5a. Calyx petaloid, saucer shaped; stamens not much exerted; fruiting calyx enlarged | 3. Holmskioldia |
| 5b. Calyx neither petaloid nor saucer shaped; stamens much exerted; fruiting calyx not enlarged | 2. Clerodendrum |

1. Callicarpa L.

- | | |
|---------------------------------------|----------------------|
| 1a. Leaves stellate tomentose beneath | 1. C. arborea |
| 1b. Leaves velvety-tomentose beneath | 2. C. vestita |

1. Callicarpa arborea Roxb., Fl. Ind. 1: 405. 1820.

Trees; leaves elliptic-oblong or ovate; flowers pink or purplish in panicles; drupes subglobose, succulent, deep violet at maturity.

Fls. & Frts.: April–November.

Way to Latapanchar, T.K. Paul & A. Kumar 42518.

2. Callicarpa vestita Wall. ex C.B. Clarke in Hook.f., Fl. Brit. India 4(12): 567. 1885.

Trees; leaves ovate or ovate-lanceolate; flowers violet in axillary dichasial cymes; drupes globose, purple, shiny.

Fls. & Frts.: April–October.

Way to Latapanchar, T.K. Paul & A. Kumar 42527.

2. Clerodendrum L.

- | | |
|---|------------------------|
| 1a. Leaves entire or slightly repand | 4. C. wallichii |
| 1b. Leaves serrate or dentate | 2 |
| 2a. Leaves hairy along margins; flowers scarlet | 2. C. kaempferi |
| 2b. Leaves without hairs at margins; flowers pinkish white | 3 |
| 3a. Leaves sessile or subsessile, base cuneate or decurrent | 3. C. serratum |
| 3b. Leaves distinctly petioled, base obtuse or subtruncate | 1. C. cordatum |

1. Clerodendrum cordatum D. Don, Prodr. Fl. Nepal. 103. 1825.

Shrubs; leaves round-ovate to broadly oblong; flowers white or pink in terminal panicles; drupes globose, black, succulent.

Fls. & Frts.: December–June.

Sukna west, *T.K. Paul & A. Kumar* 43615.

2. Clerodendrum kaempferi (Jacq.) Siebold in Verh. Batav. Genootsch. Kunst. 12: 31. 1830. *Volkameria kaempferi* Jacq., Icon. Pl. Rar. 3: 207, t. 500. 1794. [Plate 6E]

Shrubs; leaves broadly ovate; flowers scarlet, in terminal panicle; drupes globose, bluish-black.

Fls. & Frts.: March–December.

Sukna, *T.K. Paul & A. Kumar* 41273.

3. Clerodendrum serratum (L.) Moon, Cat. Pl. Ceylon 46. 1824. *Volkameria serrata* L., Mant. Pl. 90. 1767. [Plate 6F]

Undershrubs or shrubs; leaves elliptic-obovate to oblong-lanceolate; flowers blue or violet, in terminal panicles; drupes subglobose, purple black, succulent.

Fls. & Frts.: August–November.

Sukna, *T.K. Paul & A. Kumar* 41359.

4. Clerodendrum wallichii Merr., J. Arnold Arbor. 33: 220. 1952.

Undershrubs or shrubs; leaves elliptic-lanceolate or oblong-lanceolate; flowers white in terminal racemes; drupes globose, purple, succulent, subtended by enlarge persistent calyx.

Fls. & Frts.: September–March.

Latapanchar, *T.K. Paul & A. Kumar* 41444.

3. Holmskioldia Retz.

Holmskioldia sanguinea Retz., Observ. Bot. 6: 31. 1791.

Straggling shrubs or woody climbers; leaves ovate or elliptic-ovate; flowers orange-red or yellowish in terminal racemes; drupes obovoid or subglobose.

Fls. & Frts.: Throughout the year.

North range, *T.K. Paul & A. Kumar* 42337.

4. Lantana L.

- 1a. Stems with spines, sometimes without any spine, then leaves lanceolate; spikes capitate or umbellate, globose **1. L. camara**
 1b. Stems with no spines, leaves ovate; spikes elongate, cylindrical **2. L. indica**

1. Lantana camara L., Sp. Pl. 2: 627. 1753.

Straggling shrubs; leaves ovate, ovate-oblong to ovate-lanceolate; flowers orange, pinkish red, yellow, pinkish-white or pink in axillary spikes; drupes globose, greenish or purple.

Fls. & Frts.: Throughout the year.

Sukna, *T.K. Paul & A. Kumar* 41272.

2. Lantana indica Roxb., Fl. Ind. 3: 83. 1832.

Shrubs; leaves ovate; flowers pink, purple, rose, in axillary spikes; drupes ovoid, pink or reddish.

Fls. & Frts.: March–November.

Kalijhora road, *T.K. Paul & A. Kumar* 42514.

5. Premna L.

Premna bengalensis C.B. Clarke in Hook.f., Fl. Brit. India 4(12): 577. 1885.

Trees, leaves ovate-lanceolate to elliptic; flowers white in terminal panicles; drupes obovoid to subglobose, black when mature.

Fls. & Frts.: April–August.

Sukna, *T.K. Paul & A. Kumar* 41354.

6. Stachytarpheta Vahl

Stachytarpheta cayennensis (Rich.) Vahl, Enum. Pl. 1: 208. 1804. *Verbena cayennensis* Rich., Actes Soc. Hist. Nat. Paris 1: 105. 1792. [Plate 11A]

Herbs or undershrubs; leaves ovate to ovate-elliptic; flowers white, in terminal or axillary spikes; drupes oblong, shining.

Fls.: January–April; *Frts.*: October–March.

Sukna, *T.K. Paul & A. Kumar* 41328.

76. LAMIACEAE

- | | |
|--|-------------------------|
| 1a. Calyx teeth 6–10 | 7. Leucas |
| 1b. Calyx lobes 5 or less | 2 |
| 2a. Calyx 2-lipped | 3 |
| 2b. Calyx not 2-lipped | 5 |
| 3a. Calyx in fruit deflexed | 4 |
| 3b. Calyx in fruit not deflexed | 10. Salvia |
| 4a. Lower lip of corolla declinate, not concave | 8. Ocimum |
| 4b. Lower lip of corolla not declinate, concave | 2. Anisochilus |
| 5a. Corolla subsequently 4-lobed | 6 |
| 5b. Corolla 5-lobed | 6. Hyptis |
| 6a. Corolla 2-lipped | 7 |
| 6b. Corolla not 2-lipped | 4. Colebrookea |
| 7a. Upper lip of corolla 3-lobed, lower flat | 9. Pogostemon |
| 7b. Upper lip of corolla entire or emerginate, lower 3-lobed | 8 |
| 8a. Flowers in whorls or branched paniced cymes; calyx ovoid or tubular | 3. Anisomeles |
| 8b. Flowers in axillary or terminal spikes; calyx campanulate | 9 |
| 9a. Nutlets with a thick and slightly fleshy pericarp, glabrous or pubescent | 6. Gomphostemma |
| 9b. Nutlets dry, neither thick nor fleshy, crowned with dense scale like or chaffy hairs | 1. Achryospermum |

1. Achyrospermum Blume

Achyrospermum densiflorum Blume, Bijdr. Fl. Ned. Ind. 4: 841. 1826.

Herbs or undershrubs; leaves elliptic or elliptic-ovate; flowers white with pink margins, in terminal dense, cylindrical spikes; nutlets trigonous, rugose, hairy.

Fls. & Frts.: October–November.

Sukna, T.K. Paul & A. Kumar 41309.

2. Anisochilus Wall.

1a. Leaves ovate, oblong; upper lobe of calyx entire

1b. Leaves lanceolate; upper lobe of calyx 3-toothed

1. A. carnosus

2. A. pallidus

1. Anisochilus carnosus (L.f.) Wall. ex Benth. in Wall., Pl. Asiat. Rar. 2: 18: 1831. *Lavandula carnosus* L.f., Suppl. Pl. 273. 1781.

Herbs; leaves ovate or ovate-oblong; flowers pale purple in cylindrical, softly pubescent or glabrous spikes; nutlets suborbicular, compressed, smooth and shining.

Fls. & Frts.: August–December.

Latapanchar, T.K. Paul & A. Kumar 42334.

2. Anisochilus pallidus Wall. ex Benth. in Wall., Pl. Asiat. Rar. 2(5): 18. 1830.

Herbs; leaves lanceolate; spikes many in terminal panicles, panicles narrowed towards apex in flowering, cylindrical in fruiting; corolla bluish; nutlets obovoid, c. 1 mm long, glabrous, brownish.

Fls. & Frts.: October–November.

Latapanchar, T.K. Paul & A. Kumar 41309.

3. Anisomeles R. Br.

Anisomeles indica (L.) Kuntze, Revis. Gen. Pl. 2: 512. 1891. *Nepeta indica* L., Sp. Pl. 2: 571. 1753.

Herbs, aromatic; leaves ovate to broadly ovate; flowers pink or pale purple in terminal or axillary whorls; nutlets ovoid.

Fls. & Frts.: August–December.

Sukna, T.K. Paul & A. Kumar 41486.

4. Colebrookea Sm.

Colebrookea oppositifolia Sm., Exot. Bot. 2: 111, t. 115. 1804.

Shrubs; leaves elliptic to ovate-elliptic; flowers whitish in panicked spikes, becoming dull pink and plumose in fruit; bracts connate; nutlets obovoid-oblong, pubescent, tip hairy.

Fls. & Frts.: December–February.

Way to Kalijhora, T.K. Paul & A. Kumar 45722.

5. Gomphostemma Wall.

1a. Erect herbs or undershrubs; leaves elliptic or oblong-lanceolate; flowers in axillary cymes; corolla tube straight

2. G. parviflorum

1b. Suberect herbs; leaves ovate-elliptic; flowers in verticillasters; corolla tube incurved

1. G. ovatum

1. Gomphostemma ovatum Benth. in Wall., Pl. Asiat. Rar. 2: 12. 1831.

Herbs; leaves broadly ovate-elliptic; flowers in axillary verticillasters, yellow or orange, pubescent; nutlets brown, glabrous.

Fls. & Frts.: May–June.

Kalijhora, T.K. Paul & A. Kumar 45694.

2. Gomphostemma parviflorum Benth. in Wall., Pl. Asiat. Rar. 2: 12. 1831. [Plate 8D]

Shrubs; leaves elliptic or oblong-lanceolate; flowers yellow in axillary whorls, dense or lax; bracts lanceolate to ovate; nutlets ovoid, succulent, red.

Fls. & Frts.: August–December.

Sevoke, T.K. Paul & A. Kumar 41358.

6. Hyptis Jacq., *nom. cons.*

1a. Flowers in fascicled cymes

2. H. suaveolens

1b. Flowers in globose herbs

1. H. brevipes

1. Hyptis brevipes Poit., Ann. Mus. Natl. Hist. Nat. 7: 465. 1806.

Herbs; leaves lanceolate to oblanceolate; flowers white in axillary or terminal globose heads; nutlets 4, minute, dark brown or black.

Fls. & Frts.: October–November.

Sukna, T.K. Paul & A. Kumar 41223.

2. Hyptis suaveolens (L.) Poit., Ann. Mus. Natl. Hist. Nat. 7: 472, t. 29, f. 2. 1806. *Ballota suaveolens* L., Syst. Nat., ed. 10, 1100. 1759.

Undershrubs; leaves ovate to ovate-elliptic; flowers bluish-violet, in contracted 1–5-fascicled cymes; nutlets ovoid, rugose.

Fls. & Frts.: October–February.

Sukna, T.K. Paul & A. Kumar 45615.

7. Leucas R. Br.

1a. Leaves linear-lanceolate; calyx-mouth very oblique, 3–5 mm wide upper and lower lip

1. L. lavandulifolia

1b. Leaves oblong-lanceolate; calyx-mouth slightly oblique, mouth not so wide as above

2. L. zeylanica

1. *Leucas lavandulifolia* Sm. in A. Rees, Cycl., (London ed.) 20: *Leucas* sp. no. 2. 1812.

Herbs; leaves linear-lanceolate; flowers white, in whorls, many-flowered; bracts linear; nutlets oblong or ovoid.

Fls. & Frts.: Throughout the year.

Sukna, T.K. Paul & A. Kumar 41332.

2. *Leucas zeylanica* (L.) R. Br., Prodr. 504. 1810. *Phlomis zeylanica* L., Sp. Pl. 2: 586. 1753. **[Plate 9D]**

Herbs; leaves oblong-lanceolate; flowers white in whorls, many-flowered, terminal, rarely one or more in subterminal whorls; bracts linear; nutlets obovoid-oblong.

Fls. & Frts.: November–January.

Sukna, T.K. Paul & A. Kumar 41358.

8. *Ocimum* L.

- 1a. Corolla 5–6 mm long, white; fruiting calyx 4–6 mm long **1. *O. americanum***
 1b. Corolla 7–8 mm long, pink, pale purple or white; fruiting calyx 7–9 mm long **2. *O. basilicum***

1. *Ocimum americanum* L., Cent. Pl. 1: 15. 1755.

Herbs; leaves ovate or ovate-oblong; flowers in spiciform racemes; bracts ovate; nutlets ovoid, sub-trigonus.

Fls. & Frts.: September–December.

Sevoke, near Teesta bank, T.K. Paul & A. Kumar 43688.

2. *Ocimum basilicum* L., Sp. Pl. 2: 597. 1753.

Herbs or undershrubs; leaves ovate or ovate-lanceolate; flowers in whorls or in simple or branched racemes; nutlets ellipsoid, pitted, black.

Fls. & Frts.: October–December.

Latapanchar, T.K. Paul & A. Kumar 41437.

9. *Pogostemon* Desf.

- 1a. Procumbent herbs; leaves sessile or subsessile; inflorescence terminal spicate racemes **1. *P. auricularius***
 1b. Erect undershrubs or shrubs; leaves distinctly petioled; inflorescences spikes arranged in panicles **2. *P. benghalensis***

1. *Pogostemon auricularius* (L.) Hassk., Tijdschr. Natuurl. Gesch. Physiol. 10: 127. 1843. *Mentha auricularia* L., Mant. Pl. 81. 1767. **[Plate 10E]**

Herbs; leaves elliptic-oblong; flowers pale violet in terminal spicate racemes; bracts ovate to ovate-lanceolate; nutlets ellipsoid, smooth.

Fls. & Frts.: November–December.

Sukna, T.K. Paul & A. Kumar 42410.

2. *Pogostemon benghalensis* (Burm.f.) Kuntze, Revis. Gen. Pl. 2: 529. 1891. *Origanum benghalense* Burm.f., Fl. Indica 128, t. 38, f. 3. 1768.

Undershrubs or shrubs; leaves ovate or ovate-lanceolate; flowers white with purple tinge in subsecund spike, arranged in panicles; bracts ovate; nutlets obovoid, brownish.

Fls. & Frts.: November–March.

Sukna, T.K. Paul & A. Kumar 45646.

10. *Salvia* L.

Salvia campanulata Wall. ex Benth. var. ***hirtella*** E. Peter, Feddes Repert. 39: 179. 1936.

Herbs; leaves broadly ovate; verticillasters with 4–6 flowers; corolla purple or dark red; nutlets elliptic-obovate, yellowish-brown.

Fls. & Frts.: July–September.

Sevoke, T.K. Paul & A. Kumar 43794.

77. AMARANTHACEAE

- 1a. Leaves alternate **2**
 1b. Leaves opposite **3**
 2a. Flowers in long terminal panicles, unisexual **4. *Amaranthus***
 2b. Flowers in axillary or terminal short spikes, bisexual **2. *Aerva***
 3a. Fertile flowers subtended by several lateral sterile flowers modified into hooked spines **5. *Cyathula***
 3b. Fertile flowers not subtended by modified sterile flowers **4**
 4a. Inflorescence always terminal; bractcoles with vertical dorsal crest; filaments connate almost to the top **6. *Gomphrena***
 4b. Inflorescence mostly axillary (also terminal in *Aerva*); bracteoles not dorsally crestate; filaments connate only at base or free **5**
 5a. Pseudo-staminodes absent **7. *Psilotrichum***
 5b. Pseudo-staminodes present **6**
 6a. Flowers in dense, axillary, sessile heads; anthers unilocular **3. *Alternanthera***
 6b. Flowers in elongate spikes; anthers bilocular **1. *Achyranthes***

1. *Achyranthes* L.

- 1a. Spikes longer, up to 40 cm long; pseudostaminodes bearing a fimbriate scale, almost equalling the stamens **1. *A. aspera***
 1b. Spikes shorter, up to 10(–20) cm long; pseudostaminodes very short or almost absent **2. *A. bidentata***

1. *Achyranthes aspera* L., Sp. Pl. 1: 204. 1753.

Herbs; leaves elliptic, oblong or oval; flowers greenish in elongate spikes; bracts lanceolate or narrowly deltoid-lanceolate; utricles broadly oblong.

Fls. & Frts.: October–January.

Sukna, T.K. Paul & A. Kumar 41279.

2. Achryanthes bidentata Blume, Bijdr. Fl. Ned. Ind. 11: 545. 1826.

Herbs; leaves elliptic-oblong to broadly ovate; flowers in spikes; bracts narrowly lanceolate; utricles cylindrical.

Fls. & Frts.: June–December.

Sukna, T.K. Paul & A. Kumar 41323.

2. Aerva Forssk.

Aerva sanguinolenta (L.) Blume, Bijdr. Fl. Ned. Ind. 11: 547. 1826. *Achyranthes sanguinolenta* L., Sp. Pl. ed. 2, 1: 294. 1762.

Herbs or climbing undershrubs; leaves alternate and opposite, elliptic or ellipticoblong; flowers in spikes, bracts ovate; utricles broadly ovoid.

Fls. & Frts.: November–June.

Sukna, T.K. Paul & A. Kumar 41329.

3. Alternanthera Forssk.

1a. Bracts and bracteoles glabrous

2. A. sessilis

1b. Bracts and bracteoles barbellately hairy

1. A. paronychioides

1. Alternanthera paronychioides A.St.-Hil., Voy. Distr. Diam. 2: 439. 1833.

Herbs with numerous prostrate branches forming mat, rooting at nodes; leaves unequal in pairs, spatulate; floral heads axillary, subglobose or oblong, unite, bracts ovate-lanceolate; utricles orbicular.

Fls. & Frts.: January – May.

Latapanchar, T.K. Paul & A. Kumar 41497.

2. Alternanthera sessilis (L.) DC., Cat. Pl. Horti Monsp. 77. 1813. *Gomphrena sessilis* L., Sp. Pl. 1: 225. 1753.

Spreading herbs, rooting at nodes; leaves linear; flowers white; utricles with thickened margins; seeds orbicular.

Fls. & Frts.: Throughout the year.

South range, T.K. Paul & A. Kumar 42471.

4. Amaranthus L.

1a. Stems with axillary spines; petioles 0.3–0.5 cm long

1. A. spinosus

1b. Stems without any spines; petioles 1–10 cm long

2. A. viridis

1. Amaranthus spinosus L., Sp. Pl. 2: 991. 1753.

Herbs; leaves ovate, ovate-lanceolate; flowers in dense axillary clusters or in terminal spikes; bracts and bracteoles narrow, shortly awned; capsules ovoid-oblong; seeds ovate-rounded, disc-like, shining black.

Fls. & Frts.: Throughout the year.

Sukna, T.K. Paul & A. Kumar 41365.

2. Amaranthus viridis L., Sp. Pl. ed. 2, 1405. 1763.

Herbs; leaves deltoid-ovate to rhomboid-oblong; flowers in axillary or terminal paniculate spikes; male and female flowers intermixed; bracts and bracteoles deltoid-ovate to ovate-lanceolate; capsules globose; seeds suborbicular, dark brown to black.

Fls. & Frts.: July–February.

Sevoke, T.K. Paul & A. Kumar 43746.

5. Cyathula Blume

1a. Leaves rhombic-obovate or rhombic-oblong; flower clusters in racemes

1. C. prostrata

1b. Leaves ovate or obovate-oblong; flower clusters in spikes

2. C. capitata

1. Cyathula prostrata (L.) Blume, Bijdr. Fl. Ned. Ind. 549. 1825. *Achyranthes prostrata* L., Sp. Pl., ed. 2, 296. 1962.

Herbs; leaves mostly rhomboid to rhomboid-ovate, ovate or suborbicular; spikes terminal, bracts and bracteoles lanceolate to ovate; utricles ovoid.

Fls. & Frts.: October–March.

Sukna, T.K. Paul & A. Kumar 41207.

2. Cyathula capitata Moq. in DC., Prodr. 13(2): 329. 1849.

Herbs; leaves ovate or obovate-oblong; flowers clusters in dichasial inflorescences, globose or ellipsoid; utricles grayish yellow, ovate-oblong; seeds shiny, ellipsoid.

Fls. & Frts.: August–October.

North range, T.K. Paul & A. Kumar 42476.

6. Gomphrena L.

Gomphrena celosioides Mart., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 13: 301. 1826.

Prostrate to suberect herbs; leaves elliptic, obovate; flowers in subglobose or oblong heads, closely subtended by upper most leaves; bracts ovate; bracteoles oblong-ovate; utricles ovoid, compressed.

Fls. & Frts.: January–June.

Sukna, T.K. Paul & A. Kumar 45638.

7. Psilotrichum Blume

Psilotrichum ferrugineum (Roxb.) Moq. in DC., Prodr. 13(2): 279. 1849. *Achyranthes ferruginea* Roxb., Fl. Ind. 2: 502. 1824.

Herbs, prostrate; leaves obovate-oblong or linear; flowers dull red or pink in terminal spikes; bracts ovate-lanceolate; bracteoles ovate; utricles ovoid; seeds ovoid.

Fls. & Frts.: August–December.

South range, *T.K. Paul & A. Kumar* 42455.

78. CHENOPODIACEAE

Chenopodium L.

Chenopodium album L., Sp. Pl. 1: 219. 1753.

Herbs; leaves oblong, deltoid, rhomboid or lanceolate; flowers in axillary or terminal-paniculate-spikes, greenish; fruits enclosed by tepals, depressed-globose; seeds orbicular, compressed, smooth.

Fls. & Frts.: November–February.

Sukna, *T.K. Paul & A. Kumar* 45662.

79. BASELLACEAE

Basella L.

Basella alba L., Sp. Pl. 1: 272. 1753.

Twining herbs, succulent; leaves broadly ovate to orbicular; flowers white or pink in axillary spikes; perianth segments 5; fruits drupaceous when fresh, wrinkled when dry; seeds globular.

Fls. & Frts.: March–August. Escape from cultivation.

Sukna, *T.K. Paul & A. Kumar s.n.*

80. PHYTOLACCACEAE

Rivina L.

Rivina humilis L., Sp. Pl. 1: 121. 1753.

Herbs; leaves ovate-oblong or ovate-lanceolate; flowers in racemes; fruits globose, bright red, fleshy; seeds solitary, globose, hairy.

Fls. & Frts.: October–January.

Latapanchar, *T.K. Paul & A. Kumar* 41401.

81. POLYGONACEAE

Persicaria L.

- | | |
|---|---------------------------|
| 1a. Racemes capitate, ovoid or subglobose | 2 |
| 1b. Racemes spike like, cylindrical to filiform, sometimes branched | 5 |
| 2a. Scrambling subshrub with divaricate branches | 3. P. chinensis |
| 2b. Herbs, erect or prostrate | 3 |
| 3a. Leaves runcinnate pinnatifid | 8. P. runcinata |
| 3b. Leaves entire | 4 |
| 4a. Leaves ovate, acuminate at apex, margins not ciliate; petioles usually winged by decurrent lamina | 5. P. microcephala |
| 4b. Leaves ovate or ovate-elliptic, acute at apex, margins ciliate; petioles not winged | 2. P. capitata |
| 5a. Ochrea thick with a herbaceous limb at apex when young | 6. P. orientalis |
| 5b. Ochrea membranous, sometimes ciliate | 6 |

- | | |
|--|-------------------------|
| 6a. Leaves gland dotted, at least beneath | 4. P. hydropiper |
| 6b. Leaves eglandular | 7 |
| 7a. Stems stout, erect or ascending; ochrea long fimbriate | 1. P. barbata |
| 7b. Stems thinner, creeping; ochrea mouth ciliate | 7. P. posumbu |

1. *Persicaria barbata* (L.) H. Hara, Fl. E. Himalaya 70. 1966. *Polygonum barbatum* L., Sp. Pl. 1: 362. 1753.

Herbs; leaves lanceolate to linear-lanceolate; ochreae strigose, fimbriate; racemes slender, white or greenish white; achenes trigonous, purplish black, beaked.

Fls. & Frts.: August–February.

Sukna, *T.K. Paul & A. Kumar* 41241.

2. *Persicaria capitata* (Buch.-Ham. ex D. Don) H. Gross in Engl., Bot. Jahrb. 49: 277. 1913. *Polygonum capitatum* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 73. 1825.

Decumbent herbs; leaves ovate or ovate-elliptic; ochreae ovate or oblong, pubescent; flowers pink or purplish in terminal heads, solitary; achenes trigonous.

Fls. & Frts.: March–September.

Sukna, *T.K. Paul & A. Kumar* 41344.

3. *Persicaria chinensis* (L.) H. Gross in Engl., Bot. Jahrb. Syst. 49: 269. 1913. *Polygonum chinense* L., Sp. Pl. 1: 363. 1753.

Herbs or climbing shrubs; leaves ovate-oblong to oblong-lanceolate; ochrea lanceolate, glabrous to sparsely hairy; flowers in terminal, corymbose heads, white or pinkish; achenes trigonous.

Fls. & Frts.: August–March.

Latapanchar, *T.K. Paul & A. Kumar* 41481.

4. *Persicaria hydropiper* (L.) Spach, Hist. Nat. Veg. 10: 536. 1841. *Polygonum hydropiper* L., Sp. Pl. 1: 361. 1753.

Ascending herbs; leaves lanceolate; ochreae glabrous, shortly ciliate at mouth; flowers in slender lax racemes, perianth pink; achenes trigonous.

Fls. & Frts.: October–December.

Sevoke near river bank, *T.K. Paul & A. Kumar* 42412.

5. *Persicaria microcephala* (D. Don) H. Gross in Engl., Bot. Jahrb. Syst. 49(2): 277. 1913. *Polygonum microcephalum* D. Don, Prodr. Fl. Nepal. 72. 1825.

Herbs, prostrate or suberect; leaves ovate; ochreae truncate, ciliate at apex; flowers white in globose heads; achenes biconvex or trigonous.

Fls. & Frts.: April–December.

Latapanchar, *T.K. Paul & A. Kumar* 41453.

6. *Persicaria orientalis* (L.) Assenov, Fl. Reipubl. Popul. Bulgar. 3: 250. 1966. *Polygonum orientale* L., Sp. Pl. 1: 362. 1753.

Herbs or undershrubs; leaves ovate-oblong, oblong-lanceolate; ochreae truncate, hirsute; flowers white in lax panicles; achenes orbicular, biconvex.

Fls. & Frts.: April–December.

Latapanchar, T.K. Paul & A. Kumar 41409.

7. *Persicaria posumbu* (Buch.-Ham. ex D. Don) H. Gross in Engl., Bot. Jahrb. Syst. 49: 313. 1913. *Polygonum posumbu* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 71. 1825.

Creeping herbs; leaves elliptic-ovate to elliptic-ovate to elliptic-lanceolate; ochreae tubular, sparsely hairy, mouth long ciliate; flowers white or pink in terminal and axillary peduncled racemes; nuts trigonous.

Fls. & Frts.: July–February.

Sukna, T.K. Paul & A. Kumar 41224.

8. *Persicaria runcinata* (Buch.-Ham. ex D. Don) H. Gross in Engl., Bot. Jahrb. Syst. 49(2): 277. 1913. *Polygonum runcinatum* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 73. 1825.

Ascending herbs; leaves runcinate-pinnatifid, terminal lobe rhomboid-ovate, lateral lobes 1–3, sparsely pubescent, margins ciliate; flowers in globose heads; achenes ovoid, rounded, slightly trigonous at apex.

Fls. & Frts.: May–October.

Sukna, T.K. Paul & A. Kumar 42588.

88. PIPERACEAE

- | | |
|---|---------------------|
| 1a. Erect herbs; flowers bisexual; stigma 1, brush like | 1. Peperomia |
| 1b. Scandent shrubs; flowers usually unisexual; stigmas 3–5, filiform | 2. Piper |

1. *Peperomia* Ruiz & Pav.

Peperomia pellucida (L.) Kunth, Nov. Gen. Sp. 1: 64. 1816. *Piper pellucidum* L., Sp. Pl. 1: 30. 1753.

Small herbs; leaves ovate-deltoid; spikes axillary and terminal, greenish-white; berries ovoid, reticulate.

Fls. & Frts.: June–October.

Sukna, T.K. Paul & A. Kumar 41349.

2. *Piper* L.

- | | |
|--|-------------------------|
| 1a. Bracts of male and female spikes basifixed, with decurrent wings, never peltate or medifixed | 1. P. nigrum |
| 1b. Bracts of male and female spikes peltate, stalked or sometimes sessile and medifixed | 2. P. sylvaticum |

1. *Piper nigrum* L., Sp. Pl. 1: 28. 1753.

Climbing shrubs; leaves suborbicular; spikes slender; berries globose, black.

Fls. & Frts.: November–December.

Sukna, T.K. Paul & A. Kumar 41248.

2. *Piper sylvaticum* Roxb., Fl. Ind. 1: 158. 1820.

Climbing shrubs; leaves ovate-cordate to ovate-lanceolate; male spikes cylindrical, erect; female spikes cylindrical; drupes globose, c. 3 mm across, densely arranged.

Fls. & Frts.: March–May.

Sukna, T.K. Paul & A. Kumar 41234.

83. LAURACEAE

- | | |
|---|------------------------|
| 1a. Flowers unisexual | 2 |
| 1b. Flowers bisexual | 3 |
| 2a. Flowers clustered in densely imbricating bracts | 1. Actinodaphne |
| 2b. Flowers in umbellate heads supported by 4–6 whorled bracts | 4. Litsea |
| 3a. Leaves 3-nerved | 4 |
| 3b. Leaves penninerved | 5. Phoebe |
| 4a. Fruits completely enclosed in perianth tube; anthers 2-celled | 3. Cryptocarya |
| 4b. Fruits on perianth; anthers 4-celled | 2. Cinnamomum |

1. *Actinodaphne* Nees

Actinodaphne obovata (Nees) Blume, Mus. Bot. Lugd.-Bat. 1: 342. 1851. *Tetradenia obovata* Nees in Wall., Pl. Asiat. Rar. 2: 64. 1831.

Trees; leaves obovate or ovate-elliptic; flowers in axillary, paniculate racemes or fascicles; fruits globose, blue black at maturity.

Fls. & Frts.: March–October.

Latapanchar, T.K. Paul & A. Kumar 45332.

2. *Cinnamomum* Schaeff.

- | | |
|---|-------------------------|
| 1a. Perianth lobes deciduous in fruits; stamens and ovary villous | 2. C. tamala |
| 1b. Perianth lobes persistent in fruits; stamens and ovary sparsely hairy or glabrous | 2 |
| 2a. Leaves up to 25 cm long, secondary nerves very faint beneath | 1. C. bejolghota |
| 2b. Leaves up to 15 cm long, secondary nerves distinctly reticulate beneath | 3. C. verum |

1. *Cinnamomum bejolghota* (Buch.-Ham.) Sweet, Hort. Brit. ed. 1, 344. 1827. *Laurus bejolghota* Buch.-Ham., Trans. Linn. Soc. London 13: 559. 1822.

Trees; leaves elliptic or elliptic-oblong; flowers yellowish in large, long peduncled, subterminal, pubescent panicles; fruits ellipsoid.

Fls. & Frts.: January–August.

Sukna west, T.K. Paul & A. Kumar 43651.

2. Cinnamomum tamala (Buch.-Ham.) T. Nees & Eberm., Handb. Med. Pharm. Bot. 2: 426. 1831. *Laurus tamala* Buch.-Ham., Trans. Linn. Soc. London 13: 555. 1822.

Trees; leaves oblong-elliptic to oblong-lanceolate; flowers in grey pubescent panicles, brownish yellow; fruits ovoid, black when ripe.

Fls. & Frts.: February–November.

Sevoke, T.K. Paul & A. Kumar 43718.

3. Cinnamomum verum J. Presl, Prir. Rostlin 2: 37, t. 7. 1825.

Trees; leaves ovate-oblong or elliptic-ovate; flowers greenish to creamy, in lax, silky hairy panicles; fruits ovoid-oblong, purplish.

Fls. & Frts.: February–June.

Sevoke, T.K. Paul & A. Kumar 43729.

3. *Cryptocarya* R.Br.

Cryptocarya amygdalina Nees in Wall., Pl. Asiat. Rar. 2: 69. 1831.

Trees; leaves oblong, elliptic-lanceolate; flowers yellowish in axillary or terminal panicles, tomentose; fruits oblong, strongly ribbed.

Fls. & Frts.: March–October.

Sevoke, T.K. Paul & A. Kumar 43708.

4. *Litsea* Lam., *nom. cons.*

- 1a. Perianth segments deciduous in fruits; fruits long ellipsoid **1. *L. salicifolia***
1b. Perianth segments persistent in fruits; fruits globose or subglobose **2. *L. elongata***

1. *Litsea salicifolia* (Roxb. ex Nees) Hook.f., Fl. Brit. India 5: 167. 1886. *Tetranthera salicifolia* Roxb. ex Nees in Wall., Pl. Asiat. Rar. 2: 66. 1831.

Trees; leaves oblong-lanceolate; flowers axillary, fascicled; fruits ellipsoid, pale white.

Fls. & Frts.: December–October.

Kalijhora road, T.K. Paul & A. Kumar 45714.

2. *Litsea elongata* (Nees) Hook.f., Fl. Brit. India 5: 165. 1886. *Daphnidium elongatum* Nees in Wall., Pl. Asiat. Rar. 2: 63. 1831.

Evergreen small or medium-sized trees; leaves oblong, oblong-lanceolate; umbels solitary, rarely clustered, 4- or 5-flowered per umbel; fruit oblong, black purple.

Fls.: May–November; *Frts.*: February–June.

Sevoke roadside, T.K. Paul & A. Kumar 42428.

5. *Phoebe* Nees

- 1a. Leaves oblanceolate or obovate-lanceolate, brownish tomentose beneath; fruits ellipsoid **1. *P. attenuata***
1b. Leaves lanceolate to elliptic-lanceolate, glaucous beneath; fruits ovoid **2. *P. lanceolata***

1. *Phoebe attenuata* (Nees) Nees, Syst. Laur. 104. 1836. *Ocotea attenuata* Nees in Wall., Pl. Asiat. Rar. 2: 71. 1831.

Trees; leaves oblanceolate or obovate-lanceolate; flower yellowish white in spreading panicles; fruits ellipsoid.

Fls. & Frts.: March–October.

Sevoke, T.K. Paul & A. Kumar 42437.

2. *Phoebe lanceolata* (Nees) Nees, Syst. Laur. 109. 1836. *Octoea lanceolata* Nees in Wall., Pl. Asiat. Rar. 2: 71. 1831.

Trees; leaves lanceolate to elliptic-lanceolate; flowers greenish white or yellowish in axillary, long peduncled, corymbiform panicles; fruits ovoid, blackishpurple.

Fls. & Frts.: April–November.

Sevoke, T.K. Paul & A. Kumar 42467.

84. EUPHORBIACEAE

- 1a. Leaves opposite or whorled **2**
1b. Leaves alternate **5**
2a. Leaves pinnately nerved **3**
2b. Leaves palmately 3–9-nerved at base **4**
3a. Young stems and leaves stellate hairy **6. *Croton***
3b. Plants glabrous or with simple hairs **7. *Euphorbia***
4a. Indumentum of fascicled hairs without any glands **12. *Trewia***
4b. Indumentum of stellate hairs mixed with minute red or yellow gland dots **9. *Mallotus***
5a. Petals present **6**
5b. Petals absent **7**
6a. Plant dioecious, male flowers in lax panicles or female flowers in racemes; fruits 3-seeded **10. *Ostodes***
6b. Plant monoecious or dioecious, flowers in axillary clusters; fruits 1–2-seeded **5. *Bridelia***
7a. Male flowers present **8**
7b. Female flowers or fruit present **10**
8a. Sepals free to base; stamens 3–8 **9**
8b. Sepals united into a turbinate, minutely lobed tube; stamens 3 **4. *Breynia***
9a. Herbs, shrubs or trees; leaves 0.5–4 × 0.1–2 cm; anthers free or connate without enlarged connectives **11. *Phyllanthus***
9b. Shrubs or trees; leaves mostly 4.5–18 × 1.5–9.5 cm; anthers united, capped by prominent connectives **8. *Glochidion***

- 10a. Petioles mostly 1.3–2 cm long
 10b. Petioles mostly 2–14 cm long
 11a. Leaves simple
 11b. Leaves trifoliate

- 1. Aporosa**
11
2. Baccaurea
3. Bischofia

1. Aporosa Blume

Aporosa octandra (Buch.-Ham. ex D. Don) A.R. Vickery in H. Hara & *al.* Enum. Fl. Pl. Nepal 3: 193. 1982. *Myrica octandra* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 56. 1825.

Trees; leaves ovate to oblong-ovate, elliptic with glands at junction with petiole; male spikes 1–4 per axil, yellow; female spikes with pubescent ovary; fruits ellipsoid.

Fls.: November–December.

Sevoke, *T.K. Paul & A. Kumar* 43721.

2. Baccaurea Lour.

Baccaurea ramiflora Lour., Fl. Cochinch. 661. 1790.

Trees; leaves elliptic-oblong, elliptic-lanceolate or obovate; flowers yellow in axillary short spikes or fascicles; fruits ovoid, yellow with rosy pulp.

Fls. & Frts.: April–August.

Sevoke, *T.K. Paul & A. Kumar* 43750.

3. Bischofia Blume

Bischofia javanica Blume, Bijdr. Fl. Ned. Ind. 17: 1168. 1827.

Trees; leaves 3-foliolate; leaflets elliptic or ovate-oblong; flowers greenish in panicle racemes; fruit globose, brown at maturity.

Fls. & Frts.: March–October.

Sevoke, *T.K. Paul & A. Kumar* 43734.

4. Breynia J.R. Forst. & G. Forst.

Breynia vitis-idaea (Burm.f.) C.E.C. Fisch., Bull. Misc. Inform. Kew 1932: 65. 1932. *Rhamnus vitis-idaea* Burm.f., Fl. Indica 61. 1768 p.p.

Trees; leaves ovate-elliptic; male flowers pale-yellow in small fascicles; female flowers greenish-yellow; capsules globose, depressed, yellowish red.

Fls. & Frts.: April–November.

Sukna, *T.K. Paul & A. Kumar* 42376.

5. Bridelia Willd.

- 1a. Scandent stragglers or woody climbers; flowers 6–12 mm in diam. **1. B. stipularis**
 1b. Erect shrubs or trees; flowers up to 5.5 mm in diam. **2. B. tomentosa**

1. Bridelia stipularis (L.) Blume, Bijdr. Fl. Ned. Ind. 12: 597. 1826. *Clusia stipularis* L., Mant. Pl. 127. 1767.

Climbing shrubs; leaves obovate-oblong; flowers greenish-yellow in axillary clusters or terminal spikes; fruits oblong or ellipsoid, purplish.

Fls. & Frts.: September–March.

Sukna, *T.K. Paul & A. Kumar* 42346.

2. Bridelia tomentosa Blume, Bijdr. Fl. Ned. Ind. 12: 597. 1826.

Shrubs or small trees; leaves elliptic-lanceolate; flowers in axillary clusters, minute; fruits globose, 2-seeded.

Fls.: October–November.

Sukna, *T.K. Paul & A. Kumar* 42330.

6. Croton L.

Croton bonplandianus Baill., Adansonia 4: 339. 1864.

Erect herbs; leaves lanceolate; flowers greenish white in terminal racemes, male flowers towards apex; capsules oblong, depressed at apex.

Fls. & Frts.: Almost throughout the year.

Sevoke, *T.K. Paul & A. Kumar* 42880

7. Euphorbia L.

- 1a. Erect or prostrate herbs; leaves 1.5–4.5 cm long
 1b. Prostrate herbs; leaves less than 1.2 cm long

- 1. E. hirta**
2. E. thymifolia

1. Euphorbia hirta L., Sp. Pl. 1: 454. 1753.

Annual herbs; leaves ovate-lanceolate; flowers in axillary cymes; capsules globose-trigonous, minutely pubescent; seeds reddish brown, faintly transverse, rugose.

Fls. & Frts.: Throughout the year.

Latapanchar, *T.K. Paul & A. Kumar* 41469.

2. Euphorbia thymifolia L., Sp. Pl. 1: 454. 1753.

Prostrate herbs; leaves elliptic-oblong or oblong-lanceolate; flowers in axillary or terminal, involucre with one central female flower surrounded by many male ones; capsules trigonous-globose, pubescent.

Fls. & Frts.: July–November.

Sevoke near river bank, *T.K. Paul & A. Kumar* 42405.

8. Glochidion J.R. Forst. & G. Forst.

- 1a. Anthers 3 **2**
 1b. Anthers 4 or more **3**
 2a. Leaves elliptic to elliptic-lanceolate; capsules 4-lobed **2. G. ellipticum**
 2b. Leaves lanceolate to oblong-lanceolate; capsules 4–6-lobed **1. G. acuminatum**

- 3a. Leaves elliptic-oblong, apex abruptly acuminate to fine apex; capsules 6–8-lobed
3. G. lanceolarium
- 3b. Leaves narrowly oblong-elliptic or oblanceolate, apex subacute or bluntly apiculate; capsules 10–15-lobed
4. G. multiloculare

1. Glochidion acuminatum Muell.Arg., *Linnaea* 32: 68. 1863.

Shrubs or trees; leaves lanceolate, oblong-lanceolate; flowers in axillary fascicles, greenish yellow; capsules globose, 6–8 mm across, 4–6-lobed.

Fls. & Frts.: April–October.

South range, *T.K. Paul & A. Kumar* 42476.

2. Glochidion ellipticum Wight, *Icon. Pl. Ind. Orient.* 5(2): t. 1606. 1852.

[Plate 8C]

Trees; leaves elliptic to elliptic-lanceolate; flowers in axillary dense clusters; capsules 4-lobed.

Fls. & Frts.: March–September.

Kalijhora road, *T.K. Paul & A. Kumar* 45734.

3. Glochidion lanceolarium (Roxb.) Voigt, *Hort. Subrub. Calcutt.* 153. 1845. *Bridelia lanceolaria* Roxb., *Fl. Ind.* 3: 697. 1832.

Shrubs or small trees; leaves elliptic-oblong; male flowers yellowish; female flowers in clusters, greenish; capsules subglobose, 6–8-lobed.

Fls. & Frts.: September–June.

South range, *T.K. Paul & A. Kumar* 42439.

4. Glochidion multiloculare (Rottler ex Willd.) Voigt, *Hort. Suburb. Calcutt.* 152. 1845. *Agyneia multilocularis* Rottler ex Willd., *Neue Schriften Ges. Naturf. Freunde Berlin* 4: 206. 1803.

Large shrubs or small trees; leaves narrowly oblong-elliptic or oblanceolate; male flowers with 6 sepals, stamens 4–12; female flowers with 8–12 sepals; capsules depressed globose, 10–15-lobed.

Fls. & Frts.: July–February.

Kalijhora, *T.K. Paul & A. Kumar* 45667.

9. Mallotus Lour.

Mallotus philippensis (Lam.) Muell.Arg., *Linnaea* 34: 196. 1865. *Croton philippensis* Lam., *Encycl. Meth. Bot.* 2: 209. 1786. [Plate 9F]

Trees; leaves ovate, lanceolate to ovate-oblong; flowers in terminal, paniculate racemes, male flowers greenish yellow, female greenish purple; capsules 3-lobed, densely red glandular.

Fls. & Frts.: October–December.

South range, *T.K. Paul & A. Kumar* 42433.

10. Ostodes Blume

Ostodes paniculata Blume, *Bijdr. Fl. Ned. Ind.* 12: 620. 1826.

Shrubs or small trees; leaves ovate or ovate-elliptic; flowers in lax, axillary or terminal, fasciculate racemes, pink or pinkish white; capsules subglobose.

Fls. & Frts.: March–June.

South range, *T.K. Paul & A. Kumar* 42439.

11. Phyllanthus L.

- | | |
|--|--------------------------|
| 1a. Fruits more or less fleshy, drupaceous or baccate | 2 |
| 1b. Fruits dry, dehiscent, capsular | 3 |
| 2a. Fruits drupaceous, 1.5–3 cm in diam. | 2. P. emblica |
| 2b. Fruits baccate, 3.5–5.5 mm in diam. | 3. P. reticulatus |
| 3a. Herbs; leaves oblong, c. 1 × 0.5 cm, apex obtuse; pedicels straight | 1. P. amarus |
| 3b. Shrubs; leaves ovate-elliptic, 2–4 × 1–2.5 cm, apex acute; pedicels curved | 4. P. sikkimensis |

1. Phyllanthus amarus Schumach. & Thonn. in Schumach., *Beskr. Guin. Pl.* 421. 1827.

Herbs; leaves oblong, obtuse, slightly oblique at base and glaucous beneath; flowers axillary, minute, greenish-white; capsules depressed-globose, scarcely lobed.

Fls. & Frts.: July–August.

North range, *T.K. Paul & A. Kumar* 42479.

2. Phyllanthus emblica L., *Sp. Pl.* 2: 982. 1753.

Trees; leaves linear-oblong; flowers yellowish in axillary clusters, crowded at basal part of branches; drupes globose, obscurely 6-ribbed, yellowish on ripening.

Fls. & Frts.: October–July.

Sukna, *T.K. Paul & A. Kumar* 43457.

3. Phyllanthus reticulatus Poir. in Lam. et al., *Encycl.* 5: 298. 1804.

Shrubs, scandent, branchlets drooping; leaves ovate or broadly elliptic; flowers 1–5 in each axils, greenish yellow; male flowers with 5–6 stamens, female flowers with globose ovary; fruits 5–6 mm across, fleshy, black-purple when ripe.

Fls. & Frts.: February–April.

Sukna, *T.K. Paul & A. Kumar* 43471.

4. Phyllanthus sikkimensis Muell.Arg., *Linnaea* 32: 48. 1863 & in DC., *Prodr.* 15(2): 425. 1866.

Shrubs; leaves ovate-elliptic; male flowers in axillary fascicles on lower part of branchlets; female flowers towards branch ends; capsules papillose-puberulous on elongate curved pedicels thickened at apex.

Fls. & Frts.: May–June.

Sukna, T.K. Paul & A. Kumar 41261.

12. Trewia L.

Trewia nudiflora L., Sp. Pl. 2: 1193. 1753.

Trees; leaves ovate or ovate-lanceolate; flowers apetalous, in slender racemes; fruits subglobose, greyish green.

Fls. & Frts.: February–October.

Sevoke, T.K. Paul & A. Kumar 42339.

85. CANNABACEAE

Cannabis L.

Cannabis sativa L., Sp. Pl. 2: 1027. 1753.

Herbs; leaves with 3–9 leaflets; leaflets elliptic or lanceolate; male flowers in panicles, perianths 5, stamens 5; female flowers in spikes; perianth unlobed, closely enclosing ovary, beaked at apex; achenes ovoid, greenish brown, reticulate with pale lines.

Fls. & Frts.: May–July.

Sevoke, T.K. Paul & A. Kumar 43753.

86. MORACEAE

Ficus L.

- | | | |
|---|--------------------------|----------|
| 1a. Shrubs or small trees; leaves opposite | 1. F. hispida | 2 |
| 1b. Trees; leaves alternate | | |
| 2a. L. Leaves strongly asymmetric, unequal and oblique at base | 5. F. semicordata | 3 |
| 2b. Leaves symmetric, base equal | | |
| 3a. Fig bearing branches short, 5–15 cm long | 4. F. oligodon | 3 |
| 3b. Fig bearing branches longer, 2–3 m long | | |
| 4a. Leaves membranous, lanceolate, oblanceolate, 3–8 cm across | 3. F. neriifolia | |
| 4b. Leaves coriaceous, ovate or broadly elliptic, 7–15 cm broad | 2. F. hookeriana | |

1. Ficus hispida L.f., Suppl. Pl. 442. 1782.

Shrubs or small trees; leaves blade ovate, oblong, or obovate-oblong; figs solitary or paired, yellow or red when mature, top-shaped.

Fl & Fr.: June–September.

Latapanchar, T.K. Paul & A. Kumar 41434.

2. Ficus hookeriana Corner, Gard. Bull. Singapore 17: 378. 1960.

Trees; leaves ovate or broadly elliptic; flower heads axillary, subglobose, greenish yellow; basal bracts forming cartilaginous cup; achenes ovoid, dark brown.

Fls. & Frts.: May–December.

Sevoke, T.K. Paul & A. Kumar 43443.

3. Ficus neriifolia Sm. in Rees, Cycl. 14: n. 21. 1810.

Trees; branchlets reddish; leaves lanceolate or elliptic-lanceolate; figs globose with 3 small scales at base.

Fls. & Frts.: May–December.

Sevoke, S. Chanda & party 2321.

4. Ficus oligodon Miq., Ann. Mus. Bot. Lugd.-Bat. 3: 234. 1867.

Trees; leaves elliptic, subovate, irregularly serrate, glabrous; flower heads globose, reddish, warted; hypanthium pinkish red on maturity; achenes in bunches, papillose.

Fls. & Frts.: November–April.

Sukna, T.K. Paul & A. Kumar 41235.

5. Ficus semicordata Buch.-Ham. ex Sm. in Rees, Cypl. 14: n. 71. 1810.

Trees; leaves oblong-lanceolate, inequilateral, acuminate, margins entire or serrate, pubescent beneath; receptacles globose, pyriform, hispid; fruits ovoid, tuberculate, viscid on leafless branches.

Fls. & Frts.: February–December.

North Range, T.K. Paul & A. Kumar 43228.

87. URTICACEAE

- | | |
|---|-----------------------|
| 1a. Plants with distinct stinging hairs particularly on inflorescence | 2. Dendrocnide |
| 1b. Plants without stinging hairs | 2 |
| 2a. Leaves usually asymmetric and oblique at base, cystoliths linear | 3 |
| 2b. Leaves symmetric, not oblique at base, cystoliths punctate | 4 |
| 3a. Leaves alternate | 3. Elatostema |
| 3b. Leaves opposite | 4. Pilea |
| 4a. Herbs; stigma deciduous | 5. Pouzolzia |
| 4b. Shrubs; stigma persistent | 1. Boehmeria |

1. Boehmeria Jacq.

- | | |
|--|----------------------------|
| 1a. Flower clusters on leafy shoots | 2 |
| 1b. Flower clusters on spike like inflorescence | 3 |
| 2a. Branches softly pubescent; leaves 8–14 × 4.5–4.5 cm, glabrous above | 2. B. glomerulifera |
| 2b. Branches whitish pilose; leaves 4.5–7.5 × 2–4 cm, upper surface appressed pilose | 1. B. clidemioides |
| 3a. Leaves lanceolate | 4. B. penduliflora |
| 3b. Leaves broadly ovate to elliptic-ovate | 3. B. macrophylla |

1. Boehmeria clidemioides Miq., Pl. Jungh. 1: 34. 1851.

Shrubs, young portion whitish pubescent; leaves ovate to ovate-elliptic, apex acuminate, margins serrate, both surfaces sparsely appressed with whitish hairs, greenish even after drying; achenes oblong, hispid.

Fls. & Frts.: August–December.

Kalijhora, *T.K. Paul & A. Kumar* 45613.

2. *Boehmeria glomerulifera* Miq., Zoll. Syst. Verz. Ind. Archip. 101, 104. 1854.

Shrubs; leaves ovate, base rounded, apex acuminate; flowers in globose clusters 4–10 mm across, pubescent, greenish white or creamy, borne distantly on older shoots; male clusters towards base, females above.

Fls. & Frts.: September–March.

Sukna west, *T.K. Paul & A. Kumar* 43671.

3. *Boehmeria macrophylla* Hornem., Hort. Bot. Hafn. 2: 890. 1815.

Shrubs; leaves opposite, ovate to suborbicular; flowers in long spikes; achenes ellipsoid, brownish with hooked styles.

1a. Leaves broadly ovate, apex cuspidate

3.1. var. *macrophylla*

1b. Leaves elliptic-ovate, apex gradually acuminate

3.2. var. *scabrella*

3.1. var. *macrophylla*

Leaves broadly ovate, apex cuspidate, both surfaces pubescent.

Fls. & Frts.: June–November.

Sukna, *T.K. Paul & A. Kumar* 45643.

3.2. var. *scabrella* (Roxb.) D.G. Long, Notes Roy. Bot. Gard. Edinburgh 40(1): 129. 1982. *Urtica scabrella* Roxb., Fl. Ind. 3: 581. 1832.

Leaves elliptic-ovate, apex gradually acuminate, surface rugose, stiffly hispid above, pubescent beneath.

Fls. & Frts.: June–November.

Latapanchar, *T.K. Paul & A. Kumar* 41435.

4. *Boehmeria penduliflora* D.G. Long, Notes Roy. Bot. Edinburgh 40: 130. 1982.

Shrubs; leaves opposite, lanceolate; flowers in interrupted pendulous spikes; achenes obovate, cuneate, compressed.

Fls. & Frts.: August–December.

Kalijhora road, *T.K. Paul & A. Kumar* 45716.

2. *Dendrocnide* Miq.

Dendrocnide sinuata (Blume) Chew., Gard. Bull. Singapore 21: 206. 1965. *Urtica sinuata* Blume, Bijdr. Fl. Ned. Ind. 12: 605. 1826.

Shrubs to small trees; young stems and branchlets densely covered with stinging hairs; leaves elliptic, oblong or obovate-lanceolate; male and female inflorescences paniculate; achenes ovoid, verrucose.

Fls. & Frts.: September–June.

Sukna west, *T.K. Paul & A. Kumar* 43685.

3. *Elatostema* J.R. Forst. & G. Forst.

1a. Leaves 8–15 cm long, apex acuminate or caudate

2

1b. Leaves 1–3 cm long, apex acute or obtuse

2. *E. reptans*

2a. Leaf margins serrate from below middle to apex

3. *E. rupestre*

2b. Leaf margins with only 1–3 very shallow teeth towards the apex

1. *E. lineolatum* var. ***integrifolium***

1. *Elatostema lineolatum* Wight var. ***integrifolium*** Hook.f., Fl. Brit. India 5: 565. 1888.

Subshrubs; leaves elliptic-oblong, base obliquely cuneate, apex caudate acuminate, with 2–4 very shallow teeth near the apex, lower portion entire, glabrous, sessile; flower heads solitary, axillary; achenes ellipsoid.

Fls. & Frts.: March–May.

North range, *T.K. Paul & A. Kumar* 42518.

2. *Elatostema reptans* Hook.f., Fl. Brit. India 5: 567. 1888.

Trailing herbs with roots in each node; stems pubescent; leaves oblong-ovate; male flowers in globose heads, perianth hyaline.

Fls. & Frts.: July–September.

North range, *T.K. Paul & A. Kumar* 42500.

3. *Elatostema rupestre* (Buch.-Ham. ex D.Don) Wedd., Arch. Mus. Hist. Nat. 9: 304. 1856. *Procris rupestris* Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 60. 1825.

Herbs; leaves elliptic lanceolate; flowers in dense, solitary, globose heads, involucre orbicular, imbricate bracts, united at base.

Fls. & Frts.: April–May.

Kalijhora, *T.K. Paul & A. Kumar* 43219.

4. *Pilea* Lindl.

Pilea microphylla Liebm., Vidensk. Selsk. Skr. 5, 2: 302. 1851. 'Gun powder plant' (Eng.).

Herbs, prostrate; stems and branches reddish, glabrous, fleshy, much branched; leaves opposite, each pair unequal, elliptic-ovate, fleshy, glabrous; flowers minute in globose heads; fruit an achene.

Fls. & Frts.: October–December.

Sevoke, *T.K. Paul & A. Kumar* 41400.

5. *Pouzolzia* Gaud.

1a. Shrubs with serrate leaves

2. *P. sanguinea* var. ***fulgens***

1b. Herbs with entire leaves

1. *P. hirta*

1. *Pouzolzia hirta* (Blume) Hassk., Cat. Hort. Bot. Bogor. 80. 1844. *Urtica hirta* Blume, Bijdr. Fl. Ned. Ind. 10: 495. 1826.

Prostrate or suberect herbs; leaves opposite, lanceolate; flowers borne in nodes in globose clusters; male flowers subglobose, distinctly flattened on top, segments angled transversely bearing cilia along angle; female perianth ovoid, bearing 10 ribs or 2–4 broad wings in fruit.

Fls. & Frts.: June–August.

Way to Kalijhora, T.K. Paul & A. Kumar 42567.

2. *Pouzolzia sanguinea* (Blume) Merr. var. ***fulgens*** (Wedd.) H. Hara, Fl. E. Himalaya 3: 27. 1975. *Pouzolzia fulgens* Wedd. in DC., Prodr. 16(1): 229. 1869.

Shrubs; leaves ovate-lanceolate to elliptic-ovate; flower clusters globose, unisexual or with male and female flowers mixed; achenes ellipsoid, c. 1.5 mm, compressed.

Fls. & Frts.: May–September.

Way to Kalijhora, T.K. Paul & A. Kumar 42556.

88. JUGLANDACEAE

Engelhardtia Blume

Engelhardtia spicata Blume, Bijdr. Fl. Ned. Ind. 10: 528. 1826.

Trees; leaflets ovate-oblong; male catkins 4–8 cm long, male flowers with 6–10 sessile anthers; female catkins 4–8 cm long; fruiting catkins 15–30 cm long, nut ovoid.

Fls. & Frts.: April–May.

Latapanchar, S. Chandra & party 2123.

89. BETULACEAE

Alnus Mill.

Alnus nepalensis D. Don, Prodr. Fl. Nepal. 58: 1825.

Trees; leaves elliptic; male catkins 5–7 cm long; female spikes c. 1.5 cm long; achenes triangular, winged.

Fls. & Frts.: July–October.

Latapanchar, S. Chandra & party 2243.

90. ORCHIDACEAE

- | | |
|---|-------------------------------|
| 1a. Plant terrestrial | 2 |
| 1b. Plant epiphytic | 5 |
| 2a. Plant large up to 2 m tall, robust; leaves 15–25 cm long; pollinia 8 | 3. <i>Arundina</i> |
| 2b. Plant up to 50 cm tall, not robust; leaves less than 10 cm long; pollinia 2 | 3 |
| 3a. Sepals united to form a tube; epichile of labellum fringed | 4. <i>Cheirostylis</i> |
| 3b. Sepals free, not forming a tube; epichile of labellum lobed | 4 |

- | | |
|--|----------------------------|
| 4a. Epichile 1-lobed; pollinia without stipe | 7. <i>Goodyera</i> |
| 4b. Epichile 2-lobed; pollinia with stipe | 10. <i>Zeuxine</i> |
| 5a. Plant with pseudobulbs | 6 |
| 5b. Plant without pseudobulbs | 7 |
| 6a. Pseudobulbs with single leaf | 9. <i>Pholidota</i> |
| 6b. Pseudobulbs with 2 or more leaves | 5. <i>Coelogyne</i> |
| 7a. Leaves linear | 8. <i>Luisia</i> |
| 7b. Leaves flat | 8 |
| 8a. Lip with a small spur | 2. <i>Aerides</i> |
| 8b. Lip without spur | 9 |
| 9a. Leaves acuminate at apex; inflorescence in terminal racemes; petals yellowish without purple dots | 6. <i>Eria</i> |
| 9b. Leaves emarginate or faintly bifid at apex; inflorescence subcorymbiform racemes; petals yellow with purple dots | 1. <i>Acampe</i> |

1. *Acampe* Lindl.

Acampe rigida (Buch.-Ham. ex Sm.) P.F. Hunt, Kew Bull. 24: 98. 1970. *Aerides rigida* Buch.-Ham. ex Sm. in Rees, Cycl. 39: 12. 1818.

Epiphytes; stems stout, sheathed; leaves oblong, emarginate or faintly bifid at apex; inflorescence subcorymbiform racemes, 4–10-flowered, yellow with purple dots; capsules fusiform.

Fls. & Frts.: June–August.

Sukna, T.K. Paul & A. Kumar 41236.

2. *Aerides* Lour.

Aerides odorata Lour., Fl. Cochinch. 2: 525. 1790.

Epiphytes; leaves oblong, obtusely and obliquely bilobed at apex, keeled; flowers in many flowered racemes; flowers white with pinkish spots; lip white, 3-lobed; capsules fusiform.

Fls. & Frts.: June–August.

Sevoke, T.K. Paul & A. Kumar 41392.

3. *Arundina* Blume

Arundina graminifolia (D. Don) Hochr., Bull. New York Bot. Gard. 6: 270. 1910. *Bletia graminifolia* D. Don, Prodr. Fl. Nepal. 29. 1825. **[Plate 5D]**

Terrestrial herbs; stems woody, stout; leaves oblong-lanceolate; inflorescence terminal, few flowered racemes; flowers pink, showy; lip 3-lobed, convolute, mid lobe oblong and bifid at apex; capsules ellipsoid, ribbed.

Fls. & Frts.: March–November.

North range, T.K. Paul & A. Kumar 42511.

4. Cheirostylis Blume

Cheirostylis yunnanensis Rolfe, Bull. Misc. Inform. Kew 1896: 201. 1896.
[Plate 6D]

Terrestrial herbs, rhizomatous; leaves 2–5 at the base of stem; inflorescence terminal, racemose, 1–10-flowered; flowers milky white, resupinate; lip white with 2 green spots near the base of epichile, hypochile with 2–4 or 7–10-toothed.

Fls. & Frts.: March–May. Rare in the area.

South range, *T.K. Paul & A. Kumar* 42459.

5. Coelogyne Lindl.

Coelogyne fuscescens Lindl., Gen. Pl. Orchid. Pl. 41. 1830.

Epiphytes; rhizome stout, pseudobulbs cylindrical or fusiform, erect; leaves oblanceolate to oblong, elliptic; inflorescence peoteranthous, rarely synanthous, erect to suberect, 2–10-flowered, yellowish; fruits ellipsoid, ridged.

Fls.: October–December.

Latapanchar, *T.K. Paul & A. Kumar* 41484.

6. Eria Lindl.

Eria lasiopetala (Willd.) Ormerod, Opera Bot. 124: 22. 1995. *Aerides lasiopetala* Willd., Sp. Pl. 4(1): 130. 1805. [Plate 7E]

Epiphytes; rhizomes stout with tubular sheaths; pseudobulbs oblong; leaves acuminate; inflorescence racemes, arising from the base of pseudobulbs, 10–20-flowered; flowers yellow.

Fls. & Frts.: March–July.

South range, *T.K. Paul & A. Kumar* 42461.

7. Goodyera R. Br.

Goodyera procera (Wall. ex Ker-Gawl.) Hook., Exot. Fl. 1, 3: t. 39. 1823. *Neottia procera* Wall. ex Ker-Gawl. in Edgew., Bot. Reg. 8: t. 639. 1822. [Plate 8E]

Terrestrial herbs with thick, tufted fibrous roots; stems stout; leaves elliptic-ovate; inflorescence racemes; bracts lanceolate, pubescent; flowers greenish-white; petals obovate, spatulate, clawed; lip slightly longer than sepals.

Fls. & Frts.: May–July.

Kalijhora, *T.K. Paul & A. Kumar* 45695.

8. Luisia Gaud.

Luisia zeylanica Lindl., Fol. Orchid. Luisia 3. 1813.

Epiphytes; leaves terete; inflorescence few flowered in short spikes; flowers greenish-yellow with purple base; lateral sepals oblong, keeled; petals linear-oblong.

Fls. & Frts.: July–November.

Sevoke, *T.K. Paul & A. Kumar* 41388.

9. Pholidota Lindl. ex Hook.

Pholidota imbricata (Roxb.) Lindl. in Hook., Fl. Exot. 2: t. 138. 1825. *Cymbidium imbricatum* Roxb., Fl. Ind. 3: 460. 1832.

Epiphytes or lithophytes; pseudobulbs ovoid; stems rhizomatous; leaves solitary, elliptic-lanceolate, apex acute; flowers pale white, numerous in drooping racemes; petals linear-oblong; lip 3-lobed.

Fls. & Frts.: August–September.

Kalijhora, *T.K. Paul & A. Kumar* 43369.

10. Zeuxine Lindl.

Zeuxine nervosa (Wall. ex Lindl.) Benth. ex C.B. Clarke, J. Linn. Soc. Bot. 25: 73. 1889. *Monochilus nervosus* Wall. ex Lindl., Gen. Sp. Orchid. Pl. 487. 1840.

Terrestrial herbs; leaves 4–7, towards the top of the stem, ovate-lanceolate; inflorescence 3–8-flowered; peduncle sparsely pubescent, bearing 2 lanceolate sheaths; sepals green; petals white; lip lobed, lobes of lip yellow.

Fls. & Frts.: September–January.

Sevoke, *T.K. Paul & A. Kumar* 43737.

Additional species:

Tropidia angulosa (Lindl.) Blume, Coll. Orchid. 122. 1859. *Cnemidia angulosa* Lindl., Edwards's Bot. Reg. 19: t. 1618. 1833.

Herbs with short rigid rhizome; leaves 2, apical, subopposite, elliptic or ovate-elliptic; flowers greenish white; lip suboblong; capsule oblong-ellipsoid.

Fls. & Frts.: September–January.

South range, *T.K. Paul & A. Kumar* 42444.

Otochilus albus Lindl., Gen. Sp. Orchid. Pl. 35. 1830.

Pseudobulbs enclosed in tubular sheaths when young, brownish yellow when dried, subcylindric; leaves narrowly oblong or narrowly elliptic; flowers uniformly white; petals narrowly oblong-lanceolate.

Fls.: June–July.

South range, *T.K. Paul & A. Kumar* 42445.

91. ZINGIBERACEAE

- 1a. Inflorescence compact, with barren bracts; floral bracts connate each other forming pouch **3. Curcuma**
- 1b. Inflorescence lax or compact, without barren bracts; floral bracts not connate **2**

- 2a. Ovary 1-locular; ovules on parietal placenta
 2b. Ovary 3-locular; ovules on axile placenta
 3a. Flowers in lax spikes, racemes or panicles
 3b. Flowers in dense, cone-like spikes

- 4. Globba**
3
1. Alpinia
2. Amomum

1. *Alpinia* Roxb.

Alpinia nigra (Gaertn.) Burt, Notes Roy. Bot. Gard. Edinburgh 35: 213. 1977. *Zingiber nigrum* Gaertn., Fruct. Sem. Pl. 1: 35, t. 12. 1788.

Perennial herbs; roots tuberous, aromatic; leaves linear-oblong or oblong-lanceolate; inflorescence paniced; flowers pink; capsules globose; seeds many, small, black.

Fls.: July; *Frts.*: October–November.

Sevoke, T.K. Paul & A. Kumar 41391.

2. *Amomum* Roxb., *nom. cons.*

Amomum subulatum Roxb., Pl. Coromandel 3: 75, t. 277. 1819. [Plate 5C]

Herbs with leafy stem; leaves oblong-lanceolate; inflorescence subglobose to ovoid; bracts reddish-brown, ovate-obtuse; bracteoles tubular; calyx pinkish-white; corolla tube white; lip yellow; capsules ellipsoid, flattened, longitudinally striate with crenulate wings, red brown.

Fls. & Frts.: April–May.

Sevoke, T.K. Paul & A. Kumar 41432.

3. *Curcuma* Roxb., *nom. cons.*

Curcuma aromatica Salisb., Parad. Lond. 20: t. 96. 1808.

Perennial herbs; rhizomes tuberous, yellow within, aromatic; leaves broadly lanceolate; petiole sometimes equaling lamina; barren bracts pink; fertile bracts recurved at tips; flowers whitish.

Fls. & Frts.: May–June.

Sukna, T.K. Paul & A. Kumar 41316.

4. *Globba* L.

- 1a. Lower most cincinnus stalks up to 2 cm; upper part of bud globose; flowers sessile
2. G. racemosa
 1b. Lower most cincinnus stalks 3–6(–7) cm long; upper part of bud elliptic; flowers pedicellate
1. G. macroclada

1. *Globba macroclada* Gagnep., Bull. Soc. Bot. France 50: 257. 1903.

Perennial herbs; leaves lanceolate, caudate, sessile; flowers orange yellow, shortly pedicellate; capsules globose, appearing verrucose when dry.

Fls.: June–July.

Sukna, T.K. Paul & A. Kumar 41211.

2. *Globba racemosa* Sm., Exot. Bot. 2: 115, t. 117. 1804. [Plate 8B]

Perennial herbs; leaves oblong-lanceolate, subcaudate; rachis glabrous; flowers yellow or orange with dark yellow turgid tips; capsules globose.

Fls. & Frts.: May–October.

Sukna, T.K. Paul & A. Kumar 41353.

92. COSTACEAE

Hellenia Retz.

Hellenia speciosa (J. Koenig) S.R. Dutta, Pleione 7: 228. 2013. *Banksea speciosa* J. Koenig in Retz., Observ. Bot. 3: 75. 1783. [Plate 7A]

Undershrubs or shrubs, root stock tuberous; leaves oblong or oblong-lanceolate, subsessile; inflorescence a dense spike; flowers white; capsules globosely 3-gonous; seeds black.

Fls. & Frts.: August–December.

Latapanchar, T.K. Paul & A. Kumar 41447.

93. MARANTACEAE

Phrynium Willd., *nom. cons.*

Phrynium pubinerve Blume, Enum. Pl. Jav. 1: 38. 1827.

Herbs with creeping rootstocks; rootstocks tuberous, fleshy; leaves oblong-lanceolate; flowers purple in compound spikes; fruits somewhat 3-lobed with persistent sepals; seeds oblong.

Fls.: June.

Latapanchar, S.Chandra & party 2334.

94. MUSACEAE

Musa L.

Musa balbisiana Colla, Mem. Reale Accad. Sci. Torino 25: 384. 1820.

Pseudostems 3–6 m tall, robust, green; leaves spreading, oblong; fruit bunch pendent.

Fls. & Frts.: December – May.

Sevoke, T.K. Paul & A. Kumar 43019.

95. IRIDACEAE

Eleutherine Herbert

Eleutherine bulbosa (Mill.) Urban, Repert. Spec. Nov. Regni Veg. 15: 305. 1918. *Sisyrinchium bulbosum* Mill., Gard. Dict. ed. 8, no. 3. 1768.

Bulbous herbs; bulb with red-brown tunics; leaves basal, plicate, narrowly lanceolate; inflorescence a compound cyme, subtended by spathe like bract; perianth lobes obovate.

Fls.: April. Escape from cultivation.

Latapanchar, *T.K. Paul & A. Kumar* 45671.

96. DIOSCOREACEAE

Dioscorea L.

- | | |
|---|--------------------------|
| 1a. Leaves simple or compound; capsules reflexed upwards; subs winged at base | 2 |
| 1b. Leaves simple; capsules facing forward; seeds winged all round | 3 |
| 2a. Leaves simple | 2. <i>D. bulbifera</i> |
| 2b. leaves compound, upper sometimes simple | 4. <i>D. pentaphylla</i> |
| 3a. Stems angled | 3. <i>D. hamiltonii</i> |
| 3b. Stems not angled | 1. <i>D. belophylla</i> |

1. *Dioscorea belophylla* (Prain) Voigt ex Haines, Forest Fl. Chota Nagpur 530. 1910. *Dioscorea nummularia* var. *belophylla* Prain, Bengal Pl. 2: 1065. 1903.

Climbers; upper leaves usually opposite, lower alternate, sagittate-ovate or upper ovate; male spikes 3–4 cm long; female flowers in solitary spikes; capsules obovate, wings evenly rounded; seeds with reddish-brown wing all around.

Fls. & Frts.: September–December.

Sevoke near river bank, *T.K. Paul & A. Kumar* 42417.

2. *Dioscorea bulbifera* L., Sp. Pl. 2: 1033. 1753.

Climbers; leaves alternate, broadly ovate-cordate; inflorescence of axillary, pendulous spikes; capsules reflexed, wings rounded at both ends; seeds winged at base, brown.

Fls. & Frts.: July–March.

Sukna, *T.K. Paul & A. Kumar* 41234.

3. *Dioscorea hamiltonii* Hook.f., Fl. Brit. India 6: 295. 1892.

Climbers; leaves mostly opposite, ovate-lanceolate or lanceolate; male spikes paniced; female spikes axillary; capsules winged.

Fls. & Frts.: September–January.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42525.

4. *Dioscorca pentaphylla* L., Sp. Pl. 2: 1032. 1753.

Climbers; leaves alternate; leaflets elliptic-lanceolate, ovate or obovate; flowers brownish-white, male flowers in racemes, female flowers in pendulous spikes; capsules retuse at both ends; seeds winged towards base.

Fls. & Frts.: July–November.

Sukna, *T.K. Paul & A. Kumar* 43556.

97. ASPARAGACEAE

Asparagus L.

Asparagus racemosus Willd., Sp. Pl. 2: 152. 1799.

Climbing shrubs; stems and branches prickly; rootstock tuberous; leaves linear-subulate with stout conical spinous spurs, straight, cladodes spinous pointed, needle-like; flowers white; berries glabrous, rugose, 1-seeded, with a wrinkled pericarp, red.

Fls. & Frts.: June–October.

Sukna, *T.K. Paul & A. Kumar* 41246.

98. HAEMADORACEAE

Ophiopogon Ker Gawl.

Ophiopogon intermedius D. Don var. ***pauciflora*** Hook.f., Fl. Brit. India 6: 269. 1892.

Herbs; rootstock short, thick; leaves radical, linear, stiff, base with expanded papery sheathing margins; flowers whitish, distant in lax racemes; bracts linear-lanceolate; tepals 3; stamens 6; ovary inferior.

Fls. & Frts.: July–September.

Way to Kalijhora, *T.K. Paul & A. Kumar* 45678.

99. HYPOXIDACEAE

Curculigo Gaertn.

Curculigo orchioides Gaertn., Fruct. Sem. Pl. 1: 63, t. 16. 1788.

Herbs; leaves sessile, linear-lanceolate, membranous, plicate, base sheathing; inflorescence of small racemes, upper with staminate flowers, lower ones hermaphrodite; flowers bright yellow; capsules 1–4-seeded.

Fls. & Frts.: October–December.

Sukna, *T.K. Paul & A. Kumar* 43570.

100. SMILACACEAE

Smilax L.

- | | |
|--|-------------------------|
| 1a. Wings of petiole conspicuously expanded, bases clasping stem | 1. <i>S. perfoliata</i> |
| 1b. Wings of petiole not clasping at base | 2. <i>S. wallichii</i> |

1. *Smilax perfoliata* Lour., Fl. Cochinch. 622. 1790.

Stout climbers; branchlets 4-angular; prickles recurved; leaves elliptic-lanceolate; umbels in axillary and terminal panicles; flowers white; fruit a globose berry, black.

Fls.: February–April; *Frts.*: October–December.

Kalijhora to Latapanchar, *T.K. Paul & A. Kumar* 41433.

2. Smilax wallichii Kunth, Enum. Pl. Hort. Bot. Berol. 5: 246. 1850.

Stout climbers; leaves narrow ovate; petiole wings non-clasping; inflorescence borne singly; peduncles stout; flowers white; fruit a globose berry.

Fls.: February–April.

Sukna, *T.K. Paul & A. Kumar* 41213.

101. COMMELINACEAE

- | | |
|--|---------------------|
| 1a. Fertile stamens 2–3, staminodes 1–4 | 2 |
| 1b. Fertile stamens 6, staminodes absent | 3 |
| 2a. Cymes solitary, included in a spathe | 1. Commelina |
| 2b. Cymes paniced, naked, rarely in spathe | 4. Murdania |
| 3a. Petals free or nearly so | 3. Floscopa |
| 3b. Petals united into a tube below | 2. Cyanotis |

1. Commelina L.

- | | |
|--|---------------------------|
| 1a. Leaves oblong-elliptic, apex rounded to subacute, distinctly petioled; cleistogamous flowers sometimes present | 1. C. benghalensis |
| 1b. Leaves lanceolate, apex acute to acuminate, petiole-like base short or absent; cleistogamous flowers absent | 2 |
| 2a. Spathes funnel-shaped, margins fused | 2. C. maculata |
| 2b. Spathes conduplicate | 3. C. sikkimensis |

1. Commelina benghalensis L., Sp. Pl. 1: 41. 1753.

Herbs; leaves ovate or ovate-oblong; spathes auricled on one side, pubescent; flowers blue; capsules pyriform; seeds oblong, pitted.

Fls. & Frts.: June–August.

Sukna, *T.K. Paul & A. Kumar* 41567.

2. Commelina maculata Edgew., Trans. Linn. Soc. London 20: 89. 1846.

Herbs; leaves ovate, ovate-lanceolate; sheath mouth with few long brown cilia; flowers blue in bifid racemes; spathes funnel-shaped; capsules subglobose, shortly beaked; seeds ovoid.

Fls. & Frts.: June–November.

Sukna, *T.K. Paul & A. Kumar* 41361.

3. Commelina sikkimensis C.B. Clarke, Commelyn. Cyrtandr. Bengal t. 6. 1874.

Herbs; leaves lanceolate; sheaths cylindrical, glabrous, red spotted, mouth with white cilia; spathes stalked, borne singly from sheath of an upper leaf as each branch borne singly from sheath of an upper leaf on each branch; flowers blue; capsules oblong-ellipsoid; seeds oblong-ovoid, reticulate with deep pits.

Fls. & Frts.: June–November.

Sevoke, *T.K. Paul & A. Kumar* 41393.

2. Cyanotis D. Don

Cyanotis cristata (L.) D. Don, Prodr. Fl. Nepal. 46. 1825. *Tradescantia cristata* L., Sp. Pl. 1: 42. 1753.

Herbs; leaves oblong, oblong-lanceolate; spathes oblong-lanceolate, margins densely ciliate; cymes elongating, recurved; bracteoles glabrous; flowers purple; capsules subglobose, trigonous.

Fls. & Frts.: June–October.

South range, *T.K. Paul & A. Kumar* 42429.

3. Floscopa Lour.

Floscopa scandens Lour., Fl. Cochinch. 193. 1790.

Herbs; leaves elliptic-lanceolate; sheaths mouth long ciliate; flowers purple, in clustered panicles; capsules suborbicular; seeds ellipsoid, purplish white, rugose.

Fls. & Frts.: August–December.

Sukna, *T.K. Paul & A. Kumar* 41281.

4. Murdannia Royle

- | | |
|--|------------------------|
| 1a. Flowering stem erect, stout; roots tuberous | 1. M. japonica |
| 1b. Flowering stem decumbent at base; roots not tuberous | 2 |
| 2a. Stem leaves 3–4 cm long and narrow (0.4–0.6 cm wide); terminal inflorescence a simple cyme; stamens 2 | 2. M. nudiflora |
| 2b. Stem leaves 1–2.5 cm long and broader (0.6–0.9 cm wide); terminal inflorescence with several filiform cymose branches; stamens 3 | 3. M. spirata |

1. Murdannia japonica (Thunb.) Faden, Taxon 26: 142. 1977. *Commelina japonica* Thunb., Trans. Linn. Soc. London 2: 332. 1794.

Herbs; leaves oblong-lanceolate; inflorescence a lax terminal thyrse; flowers pale blue to white; capsules trigonous; seeds angled.

Fls. & Frts.: August–October.

South range, *T.K. Paul & A. Kumar* 42450.

2. Murdannia nudiflora (L.) Brenan, Kew Bull. 1952: 189. 1952. *Commelina nudiflora* L., Mant. Pl. 177. 1767.

Herbs; leaves linear-oblong or lanceolate; inflorescence a simple, slender, peduncled, terminal panicles; flowers bluish-purple; capsules trigonously subglobose, mucronate; seeds with conspicuous grey papillae.

Fls. & Frts.: July–November.

Sevoke near river bank, *T.K. Paul & A. Kumar* 42413.

3. *Murdania spirata* (L.) Brueck., Engl. & Prantl, Pflanzenfam. ed. 2, 15a, 173. 1930. *Commelina spirata* L., Mant. Pl. 176. 1767.

Herbs; upper leaves oblong, lower broadly linear-lanceolate; panicles dichotomously branched, 3–7-flowered; flowers bluish-purple; capsules ovoid-oblong, mucronate; seeds subconical-cylindric.

Fls. & Frts.: August–November.

Sukna, T.K. Paul & A. Kumar 42586.

102. ARECACEAE

Calamus L.

Calamus latifolius Roxb., Fl. Ind. 3: 775. 1832.

Climbers; sheaths reddish-brown, armed with large and small spines; leaves up to 2 m long, serrate with spines and hooks; pinnae few, elliptic; male inflorescence branched; prophyll tubular.

Fls.: April.

Sevoke, T.K. Paul & A. Kumar 43559.

103. PANDANACEAE

Pandanus Parkinson

Pandanus furcatus Roxb., Fl. Ind. 3: 744. 1832.

[Plate 10C]

Trees; leaves linear-lanceolate; male flowers in compound cylindrical spikes, densely floriferous; female flowers in solitary spadix; drupes obconic with a convex crown.

Fls. & Frts.: October–December.

Way to Kalijhora, T.K. Paul & A. Kumar 42530.

104. ARACEAE

- | | |
|---|-------------------------|
| 1a. Climbers | 2 |
| 1b. Herbs | 3 |
| 2a. Petiole with phyllodic wings | 3. <i>Pothos</i> |
| 2b. Petiole not winged | 5. <i>Rhaphidophora</i> |
| 3a. Spadix without an appendix | 4. <i>Remusatia</i> |
| 3b. Spadix with a terminal sterile appendix | 4 |
| 4a. Leaves simple; flowering with leaves | 1. <i>Alocasia</i> |
| 4b. Leaves dissected; flowering before leaves | 2. <i>Arisaema</i> |

1. *Alocasia* (Schott) G. Don

Alocasia fallax Schott, Bonplandia 7: 28. 1859.

Herbs; leaves ovate, cuspidate; spathe blade ovate, apiculate; female part with c. 2 rows of sterile ovaries at apex; male section cylindrical; fruits one seeded, globose.

Fls.: May.

Sukna, T.K. Paul & A. Kumar 45221.

2. *Arisaema* Mart.

Arisaema tortuosum (Wall.) Schott, Melet. Bot. 1: 17. 1832. *Arum tortuosum* Wall., Pl. Asiat. Rar. 2: 10, t. 114. 1831.

Rootstock a corm; cataphylls, pseudostem and petioles variously blotched; leaves 2–3, pedate; peduncles usually exceeding leaves; spathe tubular; blade spreading horizontally, oblong-lanceolate; synandria widely spaced, cream to orange, fruiting peduncle erect.

Fls.: May–June.

Sukna, T.K. Paul & A. Kumar 43970.

3. *Pothos* L.

Pothos chinensis (Raf.) Merr., J. Arnold Arbor. 29: 210. 1948. *Tapanava chinensis* Raf., Fl. Tellur. 4: 14. 1838.

Herbs; leaf blades narrow-elliptic; spathe suborbicular, strongly concave; spadix subglobose to ellipsoid, persistent; berry 1–3-seeded, red.

Fls.: December–March; *Frts.*: May–June.

Sevoke, T.K. Paul & A. Kumar 45769.

4. *Remusatia* Schott

Remusatia vivipara (Roxb.) Schott, Melet. Bot. 1: 18. 1832. *Arum viviparum* Roxb., Fl. Ind. 3: 496. 1832.

Corm c. 5 cm across; leaves oblong-ovate to lanceolate; spathe obovate, acute, apiculate; female part with 3–4 whorls if sterile ovaries at top; male part club-shaped; synandrial usually 4-loculed.

Fls.: March–May.

Kalijhora, T.K. Paul & A. Kumar 46780.

5. *Rhaphidophora* Hassk.

Rhaphidophora glauca (Wall.) Schott, Bonplandia 5: 45. 1857. *Pothos glauca* Wall., Pl. Asiat. Rar. 2: 45, t. 156. 1831.

Lianas; leaves ovate in outline; spathe oblong-ovate, widely open; spadix sessile; flowers bisexual, without any perianth; seeds many, oblong.

Fls. & Frts.: April–November.

Way to Kalijhora, T.K. Paul & A. Kumar 46980.

105. ALISMATACEAE**Sagittaria L.**

Sagittaria trifolia L., Sp. Pl. 2: 993. 1753.

Scapigerous herbs; leaves hastate or sagittate; flowers white with a purple claw; achenes obliquely ovate, apiculate, wing broad, entire or sub crenate.

Fls. & Frts.: February–May.

Sukna, *T.K. Paul & A. Kumar* 41293.

106. CYPERACEAE

- | | |
|---|------------------------|
| 1a. Flowers unisexual; nuts enclosed within a utricle | 1. Carex |
| 1b. Flowers bisexual or unisexual; nuts not enclosed within utricle | 2 |
| 2a. Glumes spiral, distichous or sub-distichous; styles articulated with ovary, usually dilated at base and usually fimbriate | 3. Fimbristylis |
| 2b. Glumes distichous, rarely spiral; styles continuous with the ovary, neither dilated at the base nor fimbriate | 3 |
| 3a. Stigmas 3; nut trigonous | 2. Cyperus |
| 3b. Stigmas 2; nut biconvex | 4. Pycneus |

1. Carex L.

- | | |
|--|-------------------------|
| 1a. Inflorescence paniculate-fasciculate with 2-numerous spikelets in axils of all bract | 2 |
| 1b. Inflorescence racemose or spicate with a solitary spikelet in the axil of each bract | 2. C. fedia |
| 2a. Utricles villous throughout | 3. C. vesiculosa |
| 2b. Utricles glabrous or hispidulous | 1. C. cruciata |

1. Carex cruciata Wahlenb., Kongl. Vetensk. Acad. Nya- Handlingar 24: 149. 1803.

Subcaespitose herbs; rhizomes stout, horizontal; leaves caudate-acuminate; inflorescences pyramidal, compound panicles; utricles ellipsoid, strongly ribbed, brown; nuts 3-quetrous, ellipsoid.

Fls. & Frts.: August–January.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42539.

2. Carex fedia Nees ex Wight in Wight, Contr. Bot. India 129. 1834.

Perennials, rhizomes stoloniferous; leaves clustered at base; inflorescence racemose; utricles ovoid-oblong, beak short, deeply bifid.

Fls. & Frts.: July – November.

Latapanchar, *T.K. Paul & A. Kumar* 41403.

3. Carex vesiculosa Boott, Illustr. 3: 107, t. 323. 1862.

Perennials, rhizomes stout; leaf blades narrow; inflorescence paniced; utricles ellipsoid, beak bidentate; nuts stipitate, ellipsoid, irregularly ribbed.

Fls. & Frts.: June–December.

Kalijhora road, *T.K. Paul & A. Kumar* 45730.

2. Cyperus L.

- | | |
|--|-------------------------|
| 1a. Rachilla of spikelets caducous, the spikelets thus falling off as a whole along with the persistent glumes | 1. C. cyperoides |
| 1b. Rachilla of spikelets persistent, the glumes acropetally caducous | 2 |
| 2a. Inflorescence capitate | 2. C. difformis |
| 2b. Inflorescence anthelate with distinct rays | 3. C. nutans |

1. Cyperus cyperoides (L.) Kuntze, Revis. Gen. Pl. 3: 333. 1898. *Scirpus cyperoides* L., Mant. Pl. Altera 2: 181. 1771.

Perennials; leaves shorter than or equal to the stem, anthela simple; bracts spreading; spikes cylindrical; spikelets linear-lanceolate; glumes ovate-oblong, membranaceous; nuts linear-oblong, apiculate, deep-brown.

Fls. & Frts.: March–December.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42537.

2. Cyperus difformis L., Cent. Pl. 2: 6. 1756.

Annuals; leaves shorter than the stem, anthela simple, evolute or almost capitately contracted; bracts foliaceous; spikelets numerous together forming broad subglobose heads; glumes broadly obovate-orbicular with rotundate tips; nuts obovoid, apiculate, yellowish brown.

Fls. & Frts.: July–October.

Sevoke near river bank, *T.K. Paul & A. Kumar* 42411.

3. Cyperus nutans Vahl, Enum. Pl. 2: 363. 1806.

Perennials; leaves several, shorter than or subequalling the stem, anthela compound; bracts 4–6, foliaceous; spikes dense with 15–25 spikelets; glumes elliptic, mucronulate; nuts narrowly obovoid-oblong, triquetrous, apiculate, brown.

Fls.: August–October.

Sukna, *T.K. Paul & A. Kumar* 41250.

3. Fimbristylis Vahl

- | | |
|--------------------------------|--------------------------|
| 1a. Stigmas 2; nuts lenticular | 2 |
| 1b. Stigmas 3; nuts trigonal | 2. F. littoralis |
| 2a. Nuts trabeculate | 1. F. dichotoma |
| 2b. Nuts not trabeculate | 3. F. schoenoides |

1. Fimbristylis dichotoma (L.) Vahl, Enum. Pl. 2: 287. 1806. *Scirpus dichotomus* L., Sp. Pl. 1: 50. 1753.

Herbs; leaves shorter than stem, anthela simple to decomposed; bracts 2–4, foliaceous; spikelets ovoid-globose; glumes spiral, ovate-oblong; nuts obovoid, apiculate.

Fls. & Frts.: March–December.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42572.

2. Fimbristylis littoralis Gaudich., *Voy. Uranie, Bot.* 413. 1829.

Herbs; leaves several, equitant, usually more or less distichous, anthela compound with many lax spikelets; spikelets ovoid-oblong; glumes spiral, ovate-oblong; nuts obovoid or suborbicular, densely verruculose, pale brown.

Fls. & Frts.: May–November.

Latapanchar, *T.K. Paul & A. Kumar* 41495.

3. Fimbristylis schoenoides (Retz.) Vahl, *Enum. Pl.* 2: 286. 1806. *Scirpus schoenoides* Retz., *Observ. Bot.* 5: 14. 1788.

Perennials; leaves canaliculate, shorter than stem, anthela reduced to a solitary terminal spikelet or 2–3 spikelets; bracts 1–2; spikelets broadly ovoid or ovoid-oblong; glumes spiral, broadly ovate or suborbicular; nuts obovoid, biconvex, stipitate.

Fls. & Frts.: July–October.

Sevoke near river bank, *T.K. Paul & A. Kumar* 42408.

4. Pycreus P. Beauv.

- | | |
|---|-------------------------|
| 1a. Spikelets digitate; glumes mucronate-aristate, 1–1.5 mm long; nuts c. 0.5 mm long | |
| | 2. P. pumilus |
| 1b. Spikelets spicate; glumes muticous-mucronulate; glumes and nuts frequently larger | 2 |
| 2a. Nuts wrinkled with broken wavy lines | 3. P. stramineus |
| 2b. Nuts not wrinkled | 1. P. flavidus |

1. Pycreus flavidus (Retz.) T. Koyama, *J. Jap. Bot.* 51: 316. 1976. *Cyperus flavidus* Retz., *Observ. Bot.* 5: 13. 1789.

Annual or perennial tufted herbs; leaves 1–4, shorter than stem, anthela simple, dense; bracts 2–4, foliaceous, spreading; spikelets numerous, congested, linear, compressed; glumes closely imbricating, ovate-oblong, glossy, pale brown; nuts obovoid, apiculate.

Fls. & Frts.: June–September.

Latapanchar, *T.K. Paul & A. Kumar* 41423.

2. Pycreus pumilus (L.) Nees ex C.B. Clarke in Hook.f., *Fl. Brit. India* 6: 591. 1893. *Cyperus pumilus* L., *Cent. Pl.* 2: 6. 1756.

Annual herbs; leaves few, anthela simple or subcompound; spikelets congested in subglobose heads, linear-oblong; glumes imbricating, ovate, mucronate; nuts obovoid, lenticular, apiculate, shortly stipitate.

Fls. & Frts.: June–November.

Latapanchar, *T.K. Paul & A. Kumar* 41492.

3. Pycreus stramineus C.B. Clarke in Hook.f., *Fl. Brit. India* 6: 589. 1893.

Annual herbs; leaves 3–5, shorter or equal to stem, anthela simple; bracts 2–3, foliaceous; spikelets 2–6 together, linear, compressed; glumes closely imbricate, ovate, mucronulate; nuts obovoid, lenticular, apiculate.

Fls. & Frts.: August–October.

Sevoke near river bank, *T.K. Paul & A. Kumar* 42406.

107. POACEAE

- | | |
|--|---------------------------|
| 1a. Leaves petiolate; stamens 6 | 3. Centotheca |
| 1b. Leaves petiolate or not; stamens 1–6 or many | 2 |
| 2a. Plants with woody culms | 3 |
| 2b. Plants without woody culms | 4 |
| 3a. Plants up to 17 m tall; spikelets 1-flowered; stamens 6 or more; pericarp mostly fleshy | 16. Pseudostachyum |
| 3b. Plants up to 20 m tall; spikelets 1–many-flowered; stamens 6; pericarp crustaceous | 5. Dendrocalamus |
| 4a. Spikelets 1–many-flowered | 5 |
| 4b. Spikelets 2-flowered | 9 |
| 5a. Spikelets with 1 fertile floret, with or without additional male or barren florets | 6 |
| 5b. Spikelets with 2 or more fertile florets | 8 |
| 6a. Spikelets disarticulating above glumes | 7 |
| 6b. Spikelets falling entirely | 1. Arundinella |
| 7a. Inflorescence a panicle | 8. Eragrostis |
| 7b. Inflorescence of 1 or more racemes | 7. Eleusine |
| 8a. Lemma margins clasping palea keels | 11. Isachne |
| 8b. Lemma margins not clasping palea keels | 4. Cynodon |
| 9a. Upper (rarely lower) lemma or palea cartilaginous to bony, thicker than lower glume | 21. Thysanolaena |
| 9b. Both lemmas hyaline to membranous than lower glume | 10 |
| 10a. Spikelets never paired, nor in fragile racemes, neither geniculately awned | 11 |
| 10b. Spikelets paired, one sessile, the other pedicelled, usually dissimilar, the pedicelled sometimes much reduced, rarely single and then in fragile racemes or the upper lemma geniculately awned; lower glume as long as spikelet or almost so | 15 |
| 11a. Spikelet at least those terminating a branch, subtended by one or more bristles, or the raceme, rachis prolonged into an often obscure point | 19. Setaria |
| 11b. Spikelets not subtended by bristles, nor raceme, rachis prolonged into a subulate point | 12 |
| 12a. Inflorescence a panicle | 13 |
| 12b. Inflorescence of more or less unilateral racemes | 14 |
| 13a. Upper lemma with decurrent wings or scar at the base | 13. Panicum |
| 13b. Upper lemma without basal wings or scars | 18. Sacciolepis |
| 14a. Lemmas awned | 12. Oplismenus |
| 14b. Lemmas awnless or at most mucronate | 14. Paspalum |
| 15a. Inflorescence composed of solitary to digitate racemes | 16 |
| 15b. Inflorescence composed of solitary, digitate or paniculate racemes | 19 |
| 16a. Racemes arranged in a panicle | 17 |
| 16b. Racemes solitary or digitate | 18 |
| 17a. Panicle very silky | 10. Imperata |
| 17b. Panicle comparatively less silky | 17. Saccharum |

- 18a. Perennial, densely tufted; inflorescence a solitary spike
 18b. Annual or perennial; inflorescence a solitary raceme
 19a. Lower glume usually coriaceous
 19b. Lower glume mostly cartilaginous
 20a. Racemes paniculate, spikelets in many pairs
 20b. Racemes solitary, digitate or paniculate
 21a. Pedicels with a median translucent furrow
 21b. Pedicels without a median translucent furrow

1. *Arundinella* Raddi

- 1a. Annual; panicles cylindrical
 1b. Perennial; panicles very effuse

1. *Arundinella bengalensis* (Sprengl.) Druce, Rep. Bot. Exchng. Club. Brit. Isles 605. 1916. *Panicum bengalense* Sprengl., Syst. Veg. 1: 311. 1825.

Herbs; leaves lanceolate; sheaths hairy; ligule with a minute rim; inflorescence paniculate; spikelets on lower side of branches; glumes persistent; lower floret male or sterile; lemma c. 3 mm; palea c. 2.5 mm. Upper floret: lemma 2 mm, truncate; palea c. 2 mm.

Fls. & Frts.: August–November.

Sukna west, *T.K. Paul & A. Kumar* 43657.

2. *Arundinella nepalensis* Trin., Gram. Panic. 62. 1826.

Perennial; culms slender; leaves oblong; sheaths glabrous, margins ciliate; ligule short, truncate, minutely fimbriate; inflorescence paniculate, purplish; spikelets erect; glumes persistent.

Fls. & Frts.: September–October.

Sukna west, *T.K. Paul & A. Kumar* 43669.

2. *Capillipedium* Stapf.

Capillipedium assimile (Steud.) A. Camus in Lecomte et al., Fl. Indo-Chine 7: 314. 1922. *Andropogon assimilis* Steud., Syn. Pl. Glumac. 1: 397. 1854.

Scrambling herbs; leaves flat; sheath glabrous; inflorescence racemes with several pairs of spikelets; lower glume oblong-elliptic, acute; upper glume oblong-lanceolate; pedicelled spikelets c. 3 mm.

Fls. & Frts.: March–October.

Way to Kalijhora, *T.K. Paul & A. Kumar* 45367.

3. *Centotheca* Desv.

Centotheca lappacea (L.) Desv., Nouv. Bull. Sci. Soc. Philom. Paris 2: 189. 1810. *Cenchrus lappaceus* L., Sp. Pl. ed. 2, 2: 1488. 1763.

Tufted perennials; leaves lanceolate to ovate-lanceolate; inflorescence greenish; glumes oblong-lanceolate.

- 9. *Eulalia***
15. *Pogonatherum*
20. *Themeda*
20
22. *Vetiveria*
21
2. *Capillipedium*
6. *Dichanthium*

- 1. *A. bengalensis***
2. *A. nepalensis*

Fls. & Frts.: May–August.

Latapanchar, *T.K. Paul & A. Kumar* 41403.

4. *Cynodon* Rich.

Cynodon dactylon (L.) Pers., Syn. Pl. 1: 85. 1805. *Panicum dactylon* L., Sp. Pl. 1: 58. 1753.

Perennial, creeping, stoloniferous; leaves linear; inflorescence digitate; spikelet 1-flowered; glumes short, acute; lemma glabrous, unawned.

Fls. & Frts.: Throughout the year.

Latapanchar, *T.K. Paul & A. Kumar* 414355.

5. *Dendrocalamus* Nees

Dendrocalamus hamiltonii Nees & Arn. ex Munro, Trans. Linn. Soc. London 26: 151. 1868.

Culms 10–20 m tall; culm-sheaths covered with purplish-brown hairs on back; leaves oblong-lanceolate; leaf sheaths with white hairs; shoulders rising.

Fls. & Frts.: Not seen.

Latapanchar, *T.K. Paul & A. Kumar* 41427.

6. *Dichanthium* P.Willemet

Dichanthium annulatum (Forssk.) Stapf. in Oliver et al., Fl. Trop. Afr. 9: 178. 1917. *Andropogon annulatus* Forssk., Fl. Aegypt.-Arab. 173. 1775.

Culms with erect inflorescence bearing branches; leaves flat; sheaths glabrous; ligule truncate, ciliate; racemes 3–5, 3–4 cm long.

Fls. & Frts.: June–October.

Sukna, *T.K. Paul & A. Kumar* 41219.

7. *Eleusine* Gaertn.

Eleusine indica (L.) Gaertn., Fruct. Sem. Pl. 1: 8. 1788. *Cynosurus indicus* L., Sp. Pl. 1: 72. 1753.

Culms c. 30 cm long, erect; leaves linear; inflorescence digitate; grains oblong.

Fls. & Frts.: August–November.

Way to Kalijhora, *T.K. Paul & A. Kumar* 42533.

8. *Eragrostis* Wolf

- 1a. Spikelet axis fragile, disarticulating, florets falling from apex downwards **2**
 1b. Spikelet axis tough, persistent, florets falling from basewards **2. *E. gangetica***
 2a. Panicles very lax, branches distinct, slender **3. *E. tenella***
 2b. Panicles densely cylindrical, branches very short **1. *E. coarctata***

1. Eragrostis coarctata Stapf in Hook.f., Fl. Brit. India 7: 313. 1896.

Culms rooting from nodes; leaves narrowly oblong; inflorescence cylidric, spike-like; grains oblong-ellipsoid.

Fls. & Frts.: November–February.

Sukna, T.K. Paul & A. Kumar 45623.

2. Eragrostis gangetica (Roxb.) Steud., Syn. Pl. Glum. 1: 266. 1854. *Poa gangetica* Roxb., Fl. Ind. 1: 341. 1820.

Culms with erect branches; leaves linear; inflorescence branches single or paired; grains oblong-elliptic.

Fls. & Frts.: September–November.

Sukna, T.K. Paul & A. Kumar 45602.

3. Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult., Syst. Veg. 2: 576. 1817. *Poa tenella* L., Sp. Pl. 1: 69. 1753.

Culms simple branched; leaves narrowly lanceolate; inflorescence branched; grains oblong-ellipsoid.

Fls. & Frts.: June–December.

Sevoke, T.K. Paul & A. Kumar 40337.

9. Eulalia Kunth**Eulalia trispicata** (Schult.) Henrard, Blumea 3: 453. 1940. *Andropogon trispicatus* Schult., Mant. 2, 452. 1824.

Culms glabrous; leaves flat; inflorescence a single fascicle bearing sessile and pedicelled spikelet pairs.

Fls. & Frts.: January–July.

Sukna, T.K. Paul & A. Kumar 41220.

10. Imperata Cirillo**Imperata cylindrica** (L.) Raeusch., Nomencl. Bot. 10, no. 89. 1797. *Lagurus cylindricus* L., Syst. Nat., ed. 10, 2: 878. 1759.

Perennial, erect with creeping rhizomes; leaf blades erect; inflorescence with short pedicelled spikelet; grains oblong.

Fls. & Frts.: November–June.

North range, T.K. Paul & A. Kumar 42504.

11. Isachne R. Br.**Isachne globosa** (Thunb.) Kuntze, Revis. Gen. Pl. 2: 778. 1891. *Milium globosum* Thunb. in Murray, Syst. Veg., ed. 14, 109. 1784.

Perennial; leaves lanceolate, subacute; inflorescence branches with glandular bands.

Fls. & Frts.: Throughout the year.

Latapanchar, T.K. Paul & A. Kumar 41498.

12. Oplismenus P. Beauv.

1a. Perennial; awns stiff, brown in colours

2. O. compositus var. **rariflorus**

1b. Annual; awns not stiff, yellow

1. O. burmanni

1. Oplismenus burmanni (Retz.) P. Beauv., Ess. Agrostogr. 54: 168. 1812. *Panicum burmanii* Retz., Observ. Bot. 3: 10. 1783.

Perennial; leaves narrowly ovate; inflorescence axis flexuous, triquetrous, angles ciliate; spikelets c. 2 mm; lower glume lanceolate; upper glume elliptic; lower floret: lemma lanceolate, awned; palea absent or linear-oblongate; upper floret: lemma narrowly lanceolate; palea c. 2 mm.

Fls. & Frts.: October–January.

Sevoke, T.K. Paul & A. Kumar 41369.

2. Oplismenus compositus (L.) P. Beauv. var. **rariflorus** (J. Presl) U. Scholz, Phanerog. Monogr. 13: 96. 1981. *Oplismenus rariflorus* J. Presl, Reliq. Haenk. 1: 320. 1830.

Perennials; leaves lanceolate; inflorescence terminal paniculate; spikelets c. 3 mm long; lower glume lanceolate; upper glume elliptic; lower floret: lemma broadly lanceolate; palea absent; upper floret: lemma lanceolate; palea c. 2.5 mm.

Fls. & Frts.: September–December.

Sukna, T.K. Paul & A. Kumar 41267.

13. Panicum L.

1a. Leaves ovate; spikelets gibbous

1. P. brevifolium

1b. Leaves lanceolate; spikelets oblong

2. P. khasianum

1. Panicum brevifolium L., Sp. Pl. 1: 59. 1753. *Panicum ovalifolium* Poir. in Lam., Encycl. Meth. Bot. Suppl. 4: 279. 1816.

Culms decumbent at base, rooting from nodes; leaves narrowly ovate; panicle lax; spikelets oblong; lower glume ovate; upper glume oblong-lanceolate.

Fls. & Frts.: August–February.

Kalijhora road, T.K. Paul & A. Kumar 42523.

2. Panicum khasianum Munro ex Hook.f., Fl. Brit. India 7: 54. 1897.

Culms decumbent; leaves lanceolate; panicle lax; lower glume ovate; upper glume oblong-lanceolate; lower floret: lemma similar to upper glume; palea absent; upper floret: lemma oblong-elliptic.

Fls. & Frts.: August–September.

Sukna, T.K. Paul & A. Kumar 41291.

14. Paspalum L.**Paspalum scrobiculatum** L., Mant. Pl. 1: 29. 1767.

Perennials; leaves oblong; inflorescence linear racemes; upper glume broadly elliptic, subacute; lower lemma broadly elliptic, blunt, glabrous; upper floret: lemma elliptic, blunt, clasping palea; palea crustaceous, margins inflexed.

Fls. & Frts.: April–January.

Way to Kalijhora, T.K. Paul & A. Kumar 42562.

15. Pogonatherum P. Beauv.

Pogonatherum paniceum (Lam.) Hack., Allg. Bot. Z. Syst. 12: 178. 1906. *Saccharum paniceum* Lam. in Lam. et al., Encycl. 1(2): 595, t. 40, f. 1. 1785.

Erect perennials; leaves finely acuminate, surface glabrous or hispid; inflorescence with sessile spikelets, upper glume with awn.

Fls. & Frts.: March–October.

Sevoke, T.K. Paul & A. Kumar 41397.

16. Pseudostachyum Munro

Pseudostachyum polymorphum Munro, Trans. Linn. Soc. London 26: 142, t. 1. 1868.

Culms c. 15 m tall; culm sheaths broad, brown pubescent below; leaf-sheaths pruinose; ligule short.

Fls. & Frts.: Not seen.

Sevoke, T.K. Paul & A. Kumar 41339.

17. Saccharum L.

1a. Peduncle white-silvery hairy below the panicle

1b. Peduncle not hairy

2. S. spontaneum**1. S. arundinaceum**

1. Saccharum arundinaceum Retz., Observ. Bot. 4: 14. 1786.

Perennials; leaves with channelled midrib; panicle silver grey; glumes thin textured, greenish-silver, the lower hairy, spikelets unawned.

Fls. & Frts.: January–March.

Sukna, T.K. Paul & A. Kumar 42359.

2. Saccharum spontaneum L., Mant. Pl. Altera 183. 1771. **[Plate 10F]**

Perennials, rhizomatous; leaves linear; panicle white, broadly cylindrical, white, silky hairs below inflorescence.

Fls. & Frts.: July–October.

Sukna, T.K. Paul & A. Kumar 42347.

18. Sacciolepis Nash

Sacciolepis interrupta (Willd.) Stapf in Oliver et al., Fl. Trop. Afr. 9: 757. 1920. *Panicum interruptum* Willd., Sp. Pl., ed. 4, 1: 341. 1797.

Perennials; leaves oblong; inflorescence c. 15 cm long; spikelets lanceolate.

Fls. & Frts.: November–January.

Way to Kalijhora, T.K. Paul & A. Kumar 42535.

19. Setaria P. Beauv.

Setaria pumila (Poir.) Roem. & Schult., Syst. Veg. 2: 891. 1817. *Panicum pumilum* Poir. in Lam. et al., Encycl. Suppl. 4, 273. 1816.

Tufted annuals; leaves oblong; panicle cylindrical; spikelets borne singly, deciduous; glumes broadly ovate, hyaline; lower floret male or sessile; upper floret bisexual.

Fls. & Frts.: September–December.

South range, T.K. Paul & A. Kumar 42451.

20. Themeda Forssk.

Themeda villosa (Poir.) A. Camus in Lecomte et al., Fl. Indo-Chine 7: 364. 1922. *Anthistiria villosa* Poir. in Lam. et al., Encycl. Suppl. 1, 396. 1810.

Perennials; leaves flat; inflorescence much branched panicle, branches subtended by spathe-like bracts, spatheoles glabrous.

Fls. & Frts.: August–November. A good fodder of elephants.

Sukna, T.K. Paul & A. Kumar 413330.

21. Thysanolaena Nees

Thysanolaena latifolia (Roxb. ex Hornem.) Honda, J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 3: 312. 1930. *Melica latifolia* Roxb. ex Hornem., Hort. Bot. Hafn. Suppl. 117. 1819.

Perennials; leaves broadly oblong-lanceolate; inflorescence purplish-brown, broadly cylindrical; spikelets 2–(3)-flowered; glumes ovate-lanceolate.

Fls. & Frts.: April–December. Inflorescence used as brooms.

Sukna, T.K. Paul & A. Kumar 45671.

22. Vetiveria Bory

Vetiveria zizanioides (L.) Nash in Small, Fl. S.E. U.S. 67, 1326. 1903. *Phalaris zizanioides* L., Mant. Pl. Altera 183. 1771.

Densely tufted often with spongy aromatic roots; leaves flat; panicles with sessile spikelets; lower glume oblong; upper glume oblong.

Fls. & Frts.: January–September.

Sukna, T.K. Paul & A. Kumar 45342.

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- 1. Adiantum capillus-veneris** L., Sp. Pl. 2: 1096. 1753.
Sukna, T.K. Paul & A. Kumar 41547.
- 2. Adiantum philippense** L., Sp. Pl. 2: 1094. 1753.
Sevoke, T.K. Paul & A. Kumar 42355.

2. BLECHNACEAE

Blechnum orientale L., Sp. Pl. 2: 1077. 1753.
North range, T.K. Paul & A. Kumar 42937.

3. CRYPTOGRAMMACEAE

- 1. Onychium japonicum** (Thunb.) Kunze, Bot. Zeitung (Berlin) 6(28): 507. 1848. *Trichomanes japonicum* Thunb. in Murray, Syst. Veg., ed. 14, 941. 1784.
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- 2. Onychium siliculosum** (Desv.) C. Chr., Ind. Fil. 468. 1906. *Pteris siliculosa* Desv., Berlin Mag. 5: 324. 1811.
Sukna, T.K. Paul & A. Kumar 41358.

4. DAVALLIACEAE

Davallia trichomanoides Blume, Enum. Pl. Jav. 238. 1828.
Sukna, T.K. Paul & A. Kumar 41326.

5. DENNSTAEDTIACEAE

- 1. Microlepia rhomboidea** C. Presl., Tent. Pterid. 125. 1836.
Latapanchar, T.K. Paul & A. Kumar 45434.
- 2. Microlepia speluncea** (L.) Moore, Ind. Fil. 92. 1857. *Polypodium speluncae* L., Sp. Pl. 2: 1093. 1753.
Latapanchar, T.K. Paul & A. Kumar 45409.

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- 1. Polystichum lentum** (D. Don) T. Moore, Ind. Fil. 86. 1858. *Aspidium lentum* D. Don, Prodr. Fl. Nepal. 4. 1825.
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- 1. Equisetum diffusum** D. Don, Prod. Fl. Nepal. 19. 1825.
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- 2. Equisetum ramosissimum** Desf., Fl. Atalant. 2: 398. 1799.
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8. HEMIONITIDACEAE

Pityrogramma calomelanos (L.) Link, Handb. Gewachse 3: 20. 1833.
Achrostichum calomelanos L., Sp. Pl. 2: 1072. 1753.
Sevoke, T.K. Paul & A. Kumar 42379.

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Lycopodium phlegmarium L., Sp. Pl. 2: 1101. 1753.
Kalijhora, T.K. Paul & A. Kumar 42351.

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Lycopodium squarrosus G. Forst., Prodr. 86. 1786.
Sukna, T.K. Paul & A. Kumar 41219.

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Sukna, T.K. Paul & A. Kumar 41240.

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1. *Drynaria quercifolia* (L.) J. Sm. in Hook., J. Bot. 3: 398. 1841. *Polypodium quercifolium* L., Sp. Pl. 2: 1087. 1753.

South range, T.K. Paul & A. Kumar 44032.

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Sukna, T.K. Paul & A. Kumar 42317.

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South range, T.K. Paul & A. Kumar 42437.

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Kalijhora, T.K. Paul & A. Kumar 44309.

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South range, T.K. Paul & A. Kumar 41356.

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South range, T.K. Paul & A. Kumar 41347.

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South range, T.K. Paul & A. Kumar 42446.

15. SELAGINELLACEAE

1. *Selaginella chrysoorrhizos* Spring, Monogr. Lyc. 11: 251. 1850 p.p.

Near Tista bridge, T.K. Paul & A. Kumar 43253.

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1. *Vittaria elongata* Sw., Syn. Fil. 109, 302. 1806.

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Sukna, T.K. Paul & A. Kumar 41405.

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Campanula pallida Wall.	87	<i>Chenopodium</i> L.	116
CAMPANULACEAE	87	Chisocheton Blume	44
CANNABACEAE	126	Chisocheton paniculatus (Roxb.) Hiern.	44
Cannabis L.	126	<i>Cinchona excelsa</i> Roxb.	77
Cannabis sativa L.	126	<i>Cinchona</i> L.	76
Capillipedium assimile (Steud.) A. Camus	146	<i>Cinchona officinalis</i> L.	76
Capillipedium Stapf.	146	Cinnamomum Schaeff.	119
CAPPARACEAE	31	Cinnamomum tamala (Buch.-Ham.) T. Nees & Eberm.	120
Capparis acutifolia Sweet subsp. viminea		<i>Cinnamomum verum</i> J. Presl	120
Jacobs	31	<i>Cinnamomum bejolghota</i> (Buch.-Ham.) Sweet	119
Capparis multiflora Hook.f. & Thomson	31	<i>Cissampelos hirsuta</i> L.	29
Capparis olacifolia Hook.f. & Thomson	31	<i>Cissampelos pareira</i> L. var. <i>hirsuta</i> (Buch.-Ham. ex DC.) Forman	29
<i>Capraria crustacea</i> L.	99	<i>Cissampelos</i> L.	29
Capsicum frutescens L.	96	Cissus L.	46
Capsicum L.	96	<i>Cissus leucostaphyla</i> Dennst.	47
Cardamine hirsuta L.	30	<i>Cissus repanda</i> Vahl	46
Cardamine L.	30	<i>Cissus repens</i> Lam.	47
Carex cruciata Wahlenb.	142	<i>Cissus serrulata</i> Roxb.	47
Carex fedia Nees ex Wight	142	<i>Clampanus hamiltonii</i> Kuntze	39
Carex L.	142	Clausena Burm.f.	42
Carex vesiculosa Boolt	142	Clausena excavata Burm.f.	42
Careya arborea Roxb.	67	Clematis connata DC.	27
Careya Roxb.	67	Clematis L.	27
Carica L.	71	Clematis zeylanica Poir.	27
Carica papaya L.	71	Cleome L.	32
CARICACEAE	71		
CARYOPHYLLACEAE	33		
Casearia Jacq.	33		

Cleome ruidosperma DC.	32	Croton bonplandianus Baill.	123	Dendrocide sinuata (Blume) Chew.	128	Dysoxylum Blume	44
Cleome viscosa L.	32	Croton L.	123	DENNSTAEDTIACEAE	152	<i>Echites pubescens</i> Buch.-Ham.	90
Clerodendrum cordatum D. Don	107	<i>Croton philippensis</i> Lam.	124	Dentella G. Forst.	76	<i>Echites scholaris</i> L.	90
Clerodendrum kaempferi (Jacq.) Siebold	108	Cryptocarya amygdalina Nees	120	Dentella repens (L.) J.R. Forst. & G. Forst.	76	Eclipta L.	83
Clerodendrum L.	107	Cryptocarya R.Br.	120	Derris cuneifolia Benth. var. longipedicellata		Eclipta prostrata (L.) L.	83
Clerodendrum serratum (L.) Moon	108	CRYPTOGRAMMACEAE	152	Thoth.	53	Ehretia P. Browne	93
Clerodendrum wallichii Merr.	108	Cryptolepis R. Br.	92	Derris Lour.	53	<i>Ehretia umbellulata</i> Wall.	45
Clitoria L.	51	Cryptolepis sinensis (Lour.) Merr.	92	Desmodium Desv.	53	Ehretia wallichiana Hook.f. & Thomson ex	
Clitoria ternata L.	51	Cryptomeria japonica D. Don	152	Desmodium gangeticum (L.) DC.	54	Gamble	93
CLUSIACEAE	34	<i>Cucumis maderaspatana</i> L.	72	Desmodium gyroides (Roxb. ex Link) DC.	54	Elatostema J.R. Forst. & G. Forst.	129
<i>Clusia stipularis</i> L.	122	CUCURBITACEAE	71	Desmodium heterocarpon (L.) DC.	54	Elatostema lineolatum Wight var.	
<i>Clypea discolor</i> Blume	30	Cuphea carthagenensis (Jacq.) J.F. Macbr.	69	Desmodium laxiflorum DC.	54	integrifolium Hook.f.	129
Cnemidaria angulosa Lindl.	133	Cuphea P. Browne	69	Desmodium pulchellum (L.) Benth.	54	Elatostema reptans Hook.f.	129
Coccinia grandis (L.) Voigt	71	Cuphea procumbens Cav.	69	<i>Desmodium rufescens</i> DC.	58	Elatostema rupestre (Buch.-Ham. ex D. Don)	
Coccinia Wight & Arn.	71	Curculigo Gaertn.	137	Desmodium triangulare (Retz.) Merr.	55	Wedd.	129
Coelogyne fuscescens Lindl.	132	Curculigo orchioides Gaertn.	137	Desmodium triflorum (L.) DC.	55	Elephantopus L.	83
Coelogyne Lindl.	132	Curcuma aromatica Salisb.	134	Desmodium triquetrum (L.) DC.	55	Elephantopus scaber L.	83
Coffea benghalensis B. Heyne ex Schut.	76	Curcuma Roxb.	134	Dichanthium annulatum (Forssk.) Stapf.	147	<i>Elephantopus spicatus</i> Juss. ex Aubl.	85
Coffea L.	76	Cuscuta L.	94	Dichanthium P. Willemet	147	Eleusine Gaertn.	147
Colebrookea oppositifolia Sm.	110	Cuscuta reflexa Roxb.	94	Dicliptera chinensis (L.) Juss.	104	Eleusine indica (L.) Gaertn.	147
Colebrookea Sm.	110	Cyanotis cristata (L.) D. Don	139	Dicliptera Juss.	103	Eleutherine bulbosa (Mill.) Urban	135
<i>Columnea chinensis</i> Osbeck	98	Cyanotis D. Don	139	Dicliptera raui Karthik. & Moorthy	104	Eleutherine Herbert	135
COMBRETACEAE	65	Cyathula Blume	115	Dillenia indica L.	28	Embelia Burm.f.	88
Combretum decandrum Roxb.	65	Cyathula capitata Moq.	115	Dillenia L.	28	Embelia floribunda Wall.	88
Combretum Loeffl.	65	Cyathula prostrata (L.) Blume	115	Dillenia pentagyna Roxb.	28	Embelia tsjeriam-cottam (Roem. & Schult.)	
Commelina benghalensis L.	138	<i>Cymbidium imbricatum</i> Roxb.	133	DILLENACEAE	28	A. DC.	88
<i>Commelina japonica</i> Thunb.	139	Cynodon dactylon (L.) Pers.	147	Dinetus Sweet	94	Emilia Cass.	83
Commelina L.	138	Cynodon Rich.	147	Dinetus racemosus (Roxb.) Buch.-Ham.		Emilia sonchifolia (L.) DC.	83
Commelina maculata Edgew.	138	<i>Cynosurus indicus</i> L.	147	ex Sweet	94	Engelhardtia Blume	130
<i>Commelina nudiflora</i> L.	139	CYPERACEAE	142	Dioscorca pentaphylla L.	136	Engelhardtia spicata Blume	130
Commelina sikkimensis C.B. Clarke	138	Cyperus cyperoides (L.) Kuntze	143	Dioscorea belophylla (Prain) Voigt ex		EQUISETACEAE	153
<i>Commelina spirata</i> L.	140	Cyperus difformis L.	143	Haines	136	Equisetum diffusum D. Don	153
COMMELINACEAE	138	<i>Cyperus flavidus</i> Retz.	144	Dioscorea bulbifera L.	136	Equisetum ramosissimum Desf.	153
CONVOLVULACEAE	94	Cyperus L.	143	Dioscorea hamiltonii Hook.f.	136	Eragrostis coarctata Stapf	148
<i>Convolvulus nil</i> L.	95	Cyperus nutans Vahl	143	Dioscorea L.	136	Eragrostis gangetica (Roxb.) Steud.	148
<i>Convolvulus umbellatus</i> L.	95	<i>Cyperus pumilus</i> L.	144	<i>Dioscorea nummularia</i> var. <i>belophylla</i> Prain	136	Eragrostis tenella (L.) P. Beauv. ex Roem. &	
<i>Convolvulus vitifolius</i> Burm.f.	95	<i>Daedalacanthus splendens</i> T. Anderson	104	DIOSCOREACEAE	136	Schult.	148
<i>Conyza cinerea</i> L.	87	Dalbergia L.f.	53	Diplazium esculentum (Retz.) Sw.	156	Eragrostis Wolf	147
<i>Conyza laciniata</i> Roxb.	82	Dalbergia latifolia Roxb.	53	Diplocyclos (Endl.) T. Post & Kuntze	72	Eranthemum L.	104
COSTACEAE	135	Dalbergia sissoo Roxb. ex DC.	53	Diplocyclos palmatus (L.) C. Jeffery	72	Eranthemum pulchellum Andrews	104
Crassocephalum crepidioides (Benth.) S.		Dalbergia stipulacea Roxb.	53	DIPTEROCARPACEAE	34	Eranthemum splendens (T. Anderson)	
Moore	82	<i>Daphnidium elongatum</i> Nees	120	<i>Dodartia indica</i> L.	99	Bremek. & Nann.-Bremek.	104
Crassocephalum Moench	82	Datura L.	96	<i>Dolichos phaseoloides</i> Roxb.	57	Erechtites Rafin.	83
Crateva L.	32	Datura metel L.	96	<i>Dolichos pilosus</i> J.G. Klein ex Willd.	58	Erechtites valerianifolius (Link ex Spreng.)	
Crateva religiosa G. Forst.	32	Davallia trichomanoides Blume	152	<i>Dolichos pruriens</i> L.	57	DC.	83
Crotalaria acicularis Buch.-Ham. ex Benth.	52	DAVALLIACEAE	152	Drymaria diandra Blume	33	Eria lasiopetala (Willd.) Ormerod	132
Crotalaria alata Buch.-Ham. ex D. Don	52	Delonix Raf.	60	Drymaria Willd. ex Schult.	33	Eria Lindl.	132
Crotalaria albida B. Heyne ex Roth	52	Delonix regia (Bojer ex Hook.) Raf.	60	Drynaria quercifolia (L.) J. Sm.	154	<i>Erigeron mollis</i> D. Don	82
Crotalaria cytisoides Roxb. ex DC.	52	Dendrocalamus hamiltonii Nees & Arn. ex		DRYOPTERIDACEAE	153	Erythrina arborescens Roxb.	55
Crotalaria ferruginea Graham ex Benth.	52	Munro	147	Duabanga Buch.-Ham.	69	Erythrina L.	55
Crotalaria juncea L.	52	Dendrocalamus Nees	147	Duabanga grandiflora (Roxb. ex DC.) Walp.	69	<i>Erythrina monosperma</i> Lam.	51
Crotalaria L.	51	Dendrocide Miq.	128	Dysoxylum binectariferum Hook.f. ex Bedd.	44	<i>Eugenia kurzii</i> Duthie	67

<i>Eugenia tetragona</i> Wight	67	<i>Gnaphalium luteo-album</i> L.	84	Holmskioldia Retz.	108	<i>Lantana indica</i> Roxb.	109
<i>Eulalia</i> Kunth	148	<i>Gnaphalium pensylvanicum</i> Willd.	84	Holmskioldia sanguinea Retz.	108	<i>Lantana</i> L.	108
<i>Eulalia trispicata</i> (Schult.) Henrard	148	<i>Gomphostemma ovatum</i> Benth.	111	<i>Hoya parasitica</i> (Wall. ex Hornem.) Wight	92	<i>Lasianthus</i> Jack.	77
<i>Eupatorium</i> L.	83	<i>Gomphostemma parviflorum</i> Benth.	111	<i>Hoya</i> R. Br.	92	<i>Lasianthus sikkimensis</i> Hook.f.	77
<i>Eupatorium odoratum</i> L.	83	<i>Gomphostemma</i> Wall.	111	<i>Huperzia squarrosa</i> (G. Forst.) Trevis	153	<i>Launaea aspleniifolia</i> (Willd.) Hook.f.	85
<i>Euphorbia hirta</i> L.	123	<i>Gomphrena celosioides</i> Mart.	115	HUPERZIACEAE	153	<i>Launaea</i> Cass.	85
<i>Euphorbia</i> L.	123	<i>Gomphrena</i> L.	115	<i>Hydrocotyle asiatica</i> L.	74	LAURACEAE	119
<i>Euphorbia thymifolia</i> L.	123	<i>Gomphrena sessilis</i> L.	114	<i>Hymenodictyon excelsum</i> (Roxb.) Wall.	77	<i>Laurus bejolghota</i> Buch.-Ham.	119
EUPHORBIACEAE	121	<i>Goodyera procera</i> (Wall. ex Ker-Gawl.)		<i>Hymenodictyon</i> Wall.	77	<i>Laurus tamala</i> Buch.-Ham.	120
<i>Exacum</i> L.	93	Hook.	132	<i>Hypoestes phyllostachya</i> Baker	104	<i>Lavandula carnosa</i> L.f.	110
<i>Exacum tetragonum</i> Roxb.	93	<i>Goodyera</i> R. Br.	132	<i>Hypoestes</i> Soland ex R. Br.	104	LECYTHIDACEAE	67
FABACEAE	49	<i>Gordonia wallichii</i> DC.	34	HYPOXIDACEAE	137	<i>Leea crispa</i> L.	47
<i>Ficus hispida</i> L.f.	126	<i>Gouania</i> Jacq.	45	<i>Hyptis brevipes</i> Poit.	111	<i>Leea</i> D. Royen	47
<i>Ficus hookeriana</i> Corner	126	<i>Gouania tiliifolia</i> Lam.	45	<i>Hyptis</i> Jacq.	111	LEEACEAE	47
<i>Ficus</i> L.	126	<i>Gratiola ciliata</i> Colsm.	99	<i>Hyptis suaveolens</i> (L.) Poit.	111	<i>Lepidagathis incurva</i> Buch.-Ham. ex	
<i>Ficus neriifolia</i> Sm.	127	<i>Grewia</i> L.	39	ICACINACEAE	45	D. Don	104
<i>Ficus oligodon</i> Miq.	127	<i>Grewia serrulata</i> DC.	39	<i>Ilex</i> L.	45	<i>Lepidagathis</i> Willd.	104
<i>Ficus semicordata</i> Buch.-Ham. ex Sm.	127	<i>Guarea paniculata</i> Roxb.	44	<i>Ilex umbellulata</i> (Wall.) Loes.	45	<i>Lepisanthes</i> Blume	48
<i>Fimbristylis dichotoma</i> (L.) Vahl	143	<i>Guizotia abyssinica</i> (L.f.) Cass.	84	<i>Impatiens balsamina</i> L.	40	<i>Lepisanthes senegalensis</i> (Juss. ex Poir.)	
<i>Fimbristylis littoralis</i> Gaudich.	144	<i>Guizotia</i> Cass.	84	<i>Impatiens</i> L.	40	Leenh.	48
<i>Fimbristylis schoenoides</i> (Retz.) Vahl	144	GYMNOSPERMS	152	<i>Impatiens trilobata</i> Colebr.	40	<i>Lepisorus contortus</i> (Christ) Ching	154
<i>Fimbristylis</i> Vahl	143	<i>Gynura</i> Cass.	84	<i>Imperata</i> Cirillo	148	<i>Leptochillus axillaries</i> (Cav.) Kaulf.	154
<i>Fioria vitifolius</i> L.	35	<i>Gynura crepidioides</i> Benth.	82	<i>Imperata cylindrica</i> (L.) Raeusch.	148	<i>Leucas lavandulifolia</i> Sm.	112
FLACOURTIACEAE	33	<i>Gynura nepalensis</i> DC.	84	<i>Inga lucidior</i> Steud.	63	<i>Leucas</i> R. Br.	111
<i>Flemingia</i> Roxb. ex W.T. Aiton	55	HAEMADORACEAE	137	<i>Inga pterocarpa</i> DC.	61	<i>Leucas zeylanica</i> (L.) R. Br.	112
<i>Flemingia strobilifera</i> (L.) W.T. Aiton	55	<i>Hedyotis corymbosa</i> (L.) Lam.	76	<i>Ipomoea aquatica</i> Forssk.	95	<i>Limnophila chinensis</i> (Osbeck) Merr.	98
<i>Floscopa</i> Lour.	139	<i>Hedyotis</i> L.	76	<i>Ipomoea hederifolia</i> L.	95	<i>Limnophila</i> R. Br.	98
<i>Floscopa scandens</i> Lour.	139	<i>Hedyotis scandens</i> Roxb.	77	<i>Ipomoea</i> L.	94	<i>Lindenbergia hookeri</i> C.B. Clarke	98
<i>Fragaria</i> L.	65	<i>Hedysarum diphyllum</i> L.	59	<i>Ipomoea nil</i> (L.) Roth	95	<i>Lindenbergia indica</i> (L.) Vatke	99
<i>Fragaria vesca</i> L.	65	<i>Hedysarum gangeticum</i> L.	54	<i>Ipomoea quamoclit</i> L.	95	<i>Lindenbergia</i> Lehm.	98
<i>Galinsoga parviflora</i> Cav.	84	<i>Hedysarum gyroides</i> Roxb. ex Link	54	IRIDACEAE	135	<i>Lindernia</i> All.	99
<i>Galinsoga</i> Ruiz & Pavon	84	<i>Hedysarum heterocarpon</i> L.	54	<i>Isachne globosa</i> (Thunb.) Kuntze	148	<i>Lindernia ciliata</i> (Colsm.) Pennell	99
<i>Garcinia cowa</i> Roxb.	34	<i>Hedysarum pulchellum</i> L.	54	<i>Isachne</i> R. Br.	148	<i>Lindernia crustacea</i> (L.) F. Muell.	99
<i>Garcinia</i> L.	34	<i>Hedysarum strobiliferum</i> L.	55	<i>Ixora acuminata</i> Roxb.	77	<i>Lindernia hookeri</i> (Hook.f.) Wettst.	99
<i>Gardenia spinosa</i> Thunb.	80	<i>Hedysarum triangulare</i> Retz.	55	<i>Ixora</i> L.	77	<i>Lindernia procumbens</i> (Krock.) Philcox	99
<i>Garuga pinnata</i> Roxb.	43	<i>Hedysarum triflorum</i> L.	55	<i>Jambolifera pedunculata</i> L.	42	<i>Litsea elongata</i> (Nees) Hook.f.	120
<i>Garuga</i> Roxb.	43	<i>Hedysarum triquetrum</i> L.	55	<i>Jasminum caudatum</i> Wall. ex Lindl.	90	<i>Litsea</i> Lam.	120
<i>Gastonia palmata</i> Roxb.	74	<i>Hedysarum vaginale</i> L.	51	<i>Jasminum</i> L.	90	<i>Litsea salicifolia</i> (Roxb. ex Nees) Hook.f.	120
<i>Geissaspis cristata</i> Wight & Arn.	56	<i>Helicteres</i> L.	38	JUGLANDACEAE	130	<i>Lobelia</i> L.	87
<i>Geissaspis</i> Wight & Arn.	56	<i>Helicteres plebeia</i> Kurz	38	<i>Jussiaea hyssopifolia</i> G. Don	70	<i>Lobelia pumila</i> Burm.f.	100
GENTIANACEAE	93	<i>Heliotropium indicum</i> L.	94	<i>Jussiaea erecta</i> L.	70	<i>Lobelia rosea</i> Wall.	87
GESNERIACEAE	101	<i>Heliotropium</i> L.	94	<i>Justicia canescens</i> Lam.	105	<i>Lobelia zeylanica</i> L.	88
<i>Globba</i> L.	134	<i>Hellenia</i> Retz.	135	<i>Justicia chinensis</i> L.	104	<i>Ludwigia erecta</i> (L.) Hara	70
<i>Globba macroclada</i> Gagnep.	134	<i>Hellenia speciosa</i> (J. Koenig) S.R. Dutta	135	<i>Justicia procumbens</i> L.	105	<i>Ludwigia hyssopifolia</i> (G. Don) Exell	70
<i>Globba racemosa</i> Sm.	135	HEMIONITIDACEAE	153	<i>Justicia thyriformis</i> Roxb. ex Hardw.	105	<i>Ludwigia</i> L.	70
<i>Glochidion acuminatum</i> Muell.Arg.	124	<i>Hemionitis esculenta</i> Retz.	156	<i>Knoxia</i> L.	77	<i>Ludwigia perennis</i> L.	70
<i>Glochidion ellipticum</i> Wight	124	<i>Hibiscus</i> L.	35	<i>Knoxia sumatrensis</i> (Retz.) DC.	77	<i>Luisia</i> Gaud.	132
<i>Glochidion J.R. Forst. & G. Forst.</i>	123	<i>Hibiscus pungens</i> Roxb.	35	<i>Lagerstroemia grandiflora</i> Roxb. ex DC.	69	<i>Luisia zeylanica</i> Lindl.	132
<i>Glochidion lanceolarium</i> (Roxb.) Voigt	124	<i>Hibiscus vitifolius</i> L.	35	<i>Lagerstroemia</i> L.	69	LYCOPODIACEAE	153
<i>Glochidion multiloculare</i> (Rottler ex Willd.)		<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex		<i>Lagurus cylindricus</i> L.	148	<i>Lycopodium phlegmarium</i> L.	153
Voigt	124	G. Don	90	LAMIACEAE	109	<i>Lycopodium squarrosom</i> G. Forst.	153
<i>Gnaphalium</i> L.	84	<i>Holarrhena</i> R. Br.	90	<i>Lantana camara</i> L.	108	<i>Lygodium flexuosum</i> (L.) Sw.	155

Lysionotus D. Don	102	Micromelum integerrimum (Roxb. ex DC.)		MYRSINACEAE	88	Osbeckia stellata Buch.-Ham. ex D. Don	68
Lysionotus serratus D. Don	102	Wight & Arn. ex Voigt	42	MYRTACEAE Juss.	66	Ostodes Blume	125
LYTHRACEAE	68	Microsorium punctatum (L.) Copel.	154	<i>Myrtus cumini</i> L.	67	Ostodes paniculata Blume	125
<i>Lythrum carthagenense</i> Jacq.	69	Mikania micrantha Kunth	85	Natsiatum Buch.-Ham. ex Wall.	45	Otochilus albus Lindl.	133
<i>Lythrum fruticosum</i> L.	69	Mikania Willd.	85	Natsiatum herpeticum Buch.-Ham. ex Arn.	45	<i>Otosema extensa</i> Benth.	56
Madhuca J.F. Gmel.	89	<i>Milium globosum</i> Thunb.	148	<i>Nauclea cordifolia</i> Roxb.	75	OXALIDACEAE	41
Madhuca longifolia (L.) J.F. Macbr. var. latifolia (Roxb.) A. Chev.	89	Milletia extensa (Benth.) Benth. ex Baker	56	Nelsonia canescens (Lam.) Spreng.	105	<i>Oxalis corymbosa</i> DC.	41
Maesa Forssk.	89	Milletia Wight & Arn.	56	Nelsonia R. Br.	105	Oxalis corniculata L.	41
Maesa indica Wall.	89	<i>Millingtonia simplicifolia</i> Roxb.	48	<i>Neottia procera</i> Wall. ex Ker-Gawl.	132	Oxalis debilis Kunth var. corymbosa (DC.)	
Magnolia hodgsonii (Hook.f. & Thomson)		<i>Mimosa caesia</i> L.	62	<i>Nepeta indica</i> L.	110	Lourteig	41
Keng	28	<i>Mimosa dulcis</i> Roxb.	64	<i>Nephrodium procerum</i> D. Don	156	Oxalis L.	41
Magnolia L.	28	<i>Mimosa heterophylla</i> Roxb.	64	Nephrolepis cordifolia (L.) C. Presl	153	<i>Oxalis reinwardtii</i> Zucc.	41
Magnolia pterocarpa Roxb.	28	Mimosa himalayana Gamble	63	<i>Nerium divaricatum</i> L.	91	Paederia foetida L.	78
MAGNOLIACEAE	28	Mimosa L.	63	<i>Neustanthus subspicata</i> Benth.	57	Paederia L.	78
Mallotus Lour.	124	<i>Mimosa lebeck</i> L.	63	<i>Niphobolus costatus</i> C. Presl.	154	PANDANACEAE	140
Mallotus philippensis (Lam.) Muell. Arg.	124	<i>Mimosa pennata</i> L.	62	<i>Niphobolus mannii</i> Gies.	154	Pandanus furcatus Roxb.	140
Malva L.	36	Mimosa pudica L.	63	<i>Niphobolus porosus</i> C. Presl	154	Pandanus Parkinson	140
Malva neglecta Wallr.	36	<i>Mimosa saman</i> Jacq.	64	<i>Nortenia thouarsii</i> Cham. & Schtdl.	101	<i>Panicum bengalense</i> Sprengl.	146
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Mangifera L.	49	Momordica charantia L.	72	Ocimum americanum L.	112	<i>Panicum interruptum</i> Willd.	150
MARANTACEAE	135	Momordica L.	72	Ocimum basilicum L.	112	Panicum khasianum Munro ex Hook.f.	149
Marsdenia R. Br.	92	<i>Monochilus nervosus</i> Wall. ex Lindl.	133	Ocimum L.	112	Panicum L.	149
Marsdenia tinctoria R. Br.	92	Monoon Miq.	29	<i>Ocotea attenuata</i> Nees	121	<i>Panicum ovalifolium</i> Poir.	149
Mazus Lour.	100	Monoon longifolium (Sonn.) B. Xue & R.M.K. Saunders	29	<i>Octoea lanceolata</i> Nees	121	<i>Panicum pumilum</i> Poir.	151
Mazus pumilus (Burm.f.) Steenis	100	MORACEAE	126	<i>Oldenlandia corymbosa</i> L.	76	PAPAVERACEAE	30
Mazus surculosus D. Don	100	Morinda L.	78	<i>Oldenlandia repens</i> L.	76	Paramignya monophylla Wight	43
Meizotropis buteiformis Voigt	56	Morinda pubescens Sm.	78	OLEACEAE	90	Paramignya Wight	43
Meizotropis Voigt	56	Moringa Adans.	49	OLEANDRACEAE	153	<i>Paratropia venulosa</i> Wight & Arn.	74
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Melastoma malabathricum L.	68	MORINGACEAE	49	Onychium japonicum (Thunb.) Kunze	152	Parthenium L.	85
MELASTOMACEAE	67	Mucuna Adans.	56	Onychium siliculosum (Desv.) C. Chr.	152	Paspalum L.	150
MELIACEAE	43	Mucuna imbricata DC. ex Baker	56	<i>Ophioglossum flexuosum</i> L.	155	Paspalum scrobiculatum L.	150
<i>Melica latifolia</i> Roxb. ex Hornem.	151	Mucuna macrocarpa Wall.	57	Ophiopogon intermedius D. Don var. pauciflora Hook.f.	137	Passiflora foetida L.	70
Meliosma Blume	48	Mucuna pruriens (L.) DC.	57	Ophiopogon Ker Gawl.	137	Passiflora L.	70
Meliosma simplicifolia (Roxb.) Walp.	48	Mukia L.	72	Ophiopogon L.	78	Passiflora napalensis Wall.	71
Melochia corchorifolia L.	38	Mukia maderaspatana (L.) M. Roem.	72	Ophiopogon mungos L.	78	PASSIFORACEAE	70
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Melochia L.	38	Murdania spirata (L.) Brueck.	140	<i>Ophioxylon serpentinum</i> L.	91	Pavetta L.	79
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Merremia umbellata (L.) Hallier f.	95	Murraya koenigii (L.) Spreng.	42	ORCHIDACEAE	130	<i>Peltanthera solanacea</i> Roth ex Roem. & Schult.	91
Merremia vitifolia (Burm.f.) Hallier f.	95	Musa balbisiana Colla	135	<i>Origanum benghalense</i> Burm.f.	113	Peltophorum (Vogel) Benth.	61
<i>Mezeiera nepalensis</i> A. DC.	73	Musa L.	135	OROBANCHACEAE	101	Peltophorum pterocarpum (DC.) Backer ex K. Heyne	61
Michelia champaca L.	29	MUSACEAE	135	Osbeckia chinensis L.	68	<i>Pentaptera arjuna</i> Roxb. ex DC.	66
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<i>Persicaria chinensis</i> (L.) H. Gross	117	Pogonatherum paniceum (Lam.) Hack.	150
<i>Persicaria hydropiper</i> (L.) Spach	117	Pogostemon auricularius (L.) Hassk.	112
<i>Persicaria</i> L.	116	Pogostemon benghalensis (Burm.f.)	
<i>Persicaria microcephala</i> (D. Don) H. Gross.	117	Kuntze	113
<i>Persicaria orientalis</i> (L.) Assenov	118	Pogostemon Desf.	112
<i>Persicaria posumbu</i> (Buch.-Ham. ex D. Don)		<i>Poinciana regia</i> Bojer ex Hook.	60
H. Gross	118	Polyalthia Blume	29
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<i>Phlogacanthus thyriformis</i> (Roxb. ex		<i>Polygonum orientale</i> L.	118
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<i>Phlomis zeylanica</i> L.	112	D. Don	118
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<i>Phoebe lanceolata</i> (Nees) Nees	121	Don	118
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<i>Phyllanthus amarus</i> Schumach. & Thonn.	125	<i>Polypodium flocculosum</i> D. Don	154
<i>Phyllanthus emblica</i> L.	125	<i>Polypodium lineare</i> var. <i>contortum</i> Christ	154
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<i>Phyllanthus sikkimensis</i> Muell.Arg.	125	<i>Polypodium semisagittatum</i> Roxb.	156
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<i>Pilea microphylla</i> Liebm.	129	<i>Poranopsis paniculata</i> (Roxb.) Roberty	96
<i>Piper</i> L.	118	<i>Pothos chinensis</i> (Raf.) Merr.	141
<i>Piper nigrum</i> L.	119	<i>Pothos glauca</i> Wall.	141
<i>Piper pellucidum</i> L.	118	<i>Pothos</i> L.	141
<i>Piper sylvaticum</i> Roxb.	119	<i>Pouzolzia fulgens</i> Wedd.	130
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<i>Pithecellobium heterophyllum</i> (Roxb.)		<i>Pouzolzia sanguinea</i> (Blume) Merr. var.	
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<i>Pseudelephantopus spicatus</i> (Juss. ex Aubl.)		<i>Rhaphidophora</i> Hassk.	141
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<i>Pseudostachyum polymorphum</i> Munro	150	<i>Rivina humilis</i> L.	116
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<i>Pteris siliculosa</i> Desv.	152	<i>Saccharum</i> L.	150
<i>Pteris venusta</i> Kuntze	155	<i>Saccharum paniceum</i> Lam.	150
<i>Pterospermum acerifolium</i> Willd.	39	<i>Saccharum spontaneum</i> L.	150
<i>Pterospermum</i> Schreb.	39	<i>Sacciolepis interrupta</i> (Willd.) Stapf	150
<i>Pueraria</i> DC.	57	<i>Sacciolepis</i> Nash	150
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<i>Pueraria phaseoloides</i> (Roxb.) Benth. var.		<i>hirtella</i> E. Peter	113
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<i>Pycreus</i> P. Beauv.	144	<i>Samanea saman</i> (Jacq.) Merr.	64
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<i>Pyrrosia flocculosa</i> (D. Don) Ching	154	<i>Saurauia</i> Willd.	34
<i>Pyrrosia lanceolata</i> (L.) Farwell	154	<i>Schefflera</i> J.R. Forst. & G. Forst.	74
<i>Pyrrosia mannii</i> (Gies.) Ching	154	<i>Schefflera venulosa</i> (Wight & Arn.) Harms	74
<i>Pyrrosia porosa</i> (C. Presl) Hovenkamp	154	<i>Schima</i> Aucl. ex Steud.	34
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<i>Pyrus</i> L.	65	SCHIZACEAE	155

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<i>Scirpus cyperoides</i> L.	143	<i>Spilanthes</i> Jacq.	86	THEACEAE	34	<i>Urtica sinuata</i> Blume	128
<i>Scirpus dichotomus</i> L.	143	<i>Spilanthes paniculata</i> Wall. ex DC.	86	THELYPTERIDACEAE	155	URTICACEAE	127
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<i>Scoparia dulcis</i> L.	100	<i>Stachytarpheta</i> Vahl	109	<i>Thelypteris nudata</i> (Roxb.) C.V. Morton	156	<i>Vallisneria spiralis</i> L.	91
<i>Scoparia</i> L.	100	<i>Stephania japonica</i> (Thunb.) Miers var.		<i>Thelypteris procera</i> (D. Don) Fras.-Jenk.	156	<i>Vallisneria spiralis</i> (Roth ex Roem. & Schult.)	
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<i>Selaginella monospora</i> Spring	155	<i>Sterculia hamiltonii</i> (Kuntze) Adelb.	39	Themeda Forssk.	151	<i>Verbena cayennensis</i> Rich.	109
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<i>Senna alata</i> (L.) Roxb.	61	STERCULIACEAE	38	<i>Thunbergia grandiflora</i> Roxb.	106	<i>Vernonia attenuata</i> DC.	87
<i>Senna</i> Mill.	61	<i>Stereospermum</i> Cham.	102	<i>Thunbergia laevis</i> Nees	106	<i>Vernonia cinerea</i> (L.) Less.	87
<i>Senna occidentalis</i> (L.) Link	61	<i>Stereospermum colais</i> (Buch.-Ham. ex		<i>Thunbergia</i> Retz.	106	<i>Vernonia</i> Schreb.	86
<i>Senna tora</i> (L.) Roxb.	62	<i>Dillwyn</i> Mabb.	102	<i>Thysanolaena latifolia</i> (Roxb. ex Hornem.)		<i>Veronica cana</i> Wall. ex Benth.	101
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<i>Sesamum</i> L.	102	<i>Stixis suaveolens</i> (Roxb.) Pierre	32	<i>Thysanolaena</i> Nees	151	<i>Vetiveria</i> Bory	151
<i>Setaria</i> P. Beauv.	151	<i>Strobilanthes</i> Blume	106	TILIACEAE	39	<i>Vetiveria zizanioides</i> (L.) Nash	151
<i>Setaria pumila</i> (Poir.) Roem. & Schult.	151	<i>Strobilanthes capitata</i> T. Anderson	106	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook.f.		<i>Vigna pilosa</i> (J.G.Klein ex Willd.) Baker	58
<i>Shorea robusta</i> C.F.Gaertn.	34	<i>Strobilanthes urophyllus</i> Nees	106	& Thomson	30	<i>Vigna</i> Savi	58
<i>Shorea</i> Roxb. ex C.F. Gaertn.	34	SYMPLOCACEAE	89	<i>Tinospora</i> Miers.	30	<i>Viola canescens</i> Wall.	32
<i>Shutteria hirsuta</i> Baker	58	<i>Symplocos</i> Jacq.	89	<i>Tithonia</i> Desf.	86	<i>Viola</i> L.	32
<i>Shutteria</i> Wight & Arn.	58	<i>Symplocos lucida</i> Wall. ex G. Don	89	<i>Tithonia diversifolia</i> (Hemsl.) A. Gray	86	VIOLACEAE	32
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<i>Sida cordata</i> (Burm.f.) Borss.	36	<i>Syzygium cumini</i> (L.) Skeels	67	<i>Toona ciliata</i> M. Roem.	44	<i>Vitis bracteolata</i> Wall.	47
<i>Sida cordifolia</i> L.	36	<i>Syzygium Gaertn.</i>	67	<i>Torenia diffusa</i> D. Don	100	<i>Vitis japonica</i> Thunb.	46
<i>Sida indica</i> L.	35	<i>Syzygium kurzii</i> (Duthie) N.P. Balakr.	67	<i>Torenia</i> L.	100	<i>Vitis trifolia</i> L.	46
<i>Sida</i> L.	36	<i>Syzygium tetragonum</i> (Wight) Wall. ex		<i>Torenia thouarsii</i> (Cham. & Schltld.) Kuntze	101	<i>Vittaria elongata</i> Sw.	156
<i>Sida retusa</i> L.	37	Walp.	67	<i>Torenia violacea</i> (Azaolo) Pannell	101	<i>Vittaria flexuosa</i> Fee	156
<i>Sida rhombifolia</i> L.	37	<i>Tabernaemontana divericata</i> (L.) R. Br. ex		<i>Tradescantia cristata</i> L.	139	VITTARIACEAE	156
<i>Sida rhombifolia</i> L. subsp. <i>retusa</i> (L.) Borss.	37	Roem. & Schult.	91	<i>Trevesia palmata</i> (Roxb.) Vis.	74	<i>Volkameria kaempferi</i> Jacq.	108
<i>Sida rhombifolia</i> L. subsp. <i>rhombifolia</i>	37	<i>Tabernaemontana</i> L.	91	<i>Trevesia</i> Vis.	74	<i>Volkameria serrata</i> L.	108
<i>Sisymbrium dubium</i> Pers.	31	<i>Talauma hodgsonii</i> Hook.f. & Thomson	28	<i>Trewia</i> L.	126	<i>Woodfordia fruticosa</i> (L.) Kurz	69
<i>Sisyrinchium bulbosum</i> Mill.	135	<i>Tapanava chinensis</i> Raf.	141	<i>Trewia nudiflora</i> L.	126	<i>Woodfordia</i> Salisb.	69
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<i>Smilax</i> L.	137	<i>Tectaria polymorpha</i> (Wall. ex Hook.)		<i>Trichosanthes</i> L.	72	<i>Wrightia arborea</i> (Dennst.) Mabb.	91
<i>Smilax perfoliata</i> Lour.	137	<i>Copel.</i>	153	<i>Trichosanthes tricuspidata</i> Lour.	72	<i>Wrightia</i> R. Br.	91
<i>Smilax wallichii</i> Kunth	138	<i>Tephrosia candida</i> DC.	58	<i>Trichosporum parviflorum</i> D. Don	101	<i>Xanthium</i> L.	87
SOLANACEAE	96	<i>Tephrosia</i> Pers.	58	<i>Tridax</i> L.	86	<i>Xanthium strumarium</i> L.	87
<i>Solanum</i> L.	97	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight &		<i>Triumfetta procumbens</i> L.	86	<i>Xeromphis Rafin.</i>	80
<i>Solanum nigrum</i> L.	97	Arn.	66	<i>Triumfetta annua</i> L.	40	<i>Xeromphis spinosa</i> (Thunb.) Keay	80
<i>Solanum sisymbriifolium</i> Lam.	97	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	66	<i>Triumfetta</i> L.	40	<i>Zeuxine Lindl.</i>	133
<i>Solanum torvum</i> Sw.	97	<i>Terminalia crenulata</i> Roth	66	<i>Triumfetta pilosa</i> Roth	40	<i>Zeuxine nervosa</i> (Wall. ex Lindl.) Benth. ex	
<i>Solena amplexicaulis</i> (Lam.) Gandhi	72	<i>Terminalia</i> L.	65	<i>Triumfetta rhomboidea</i> Jacq.	40	C.B. Clarke	133
<i>Solena</i> Lour.	72	<i>Terminalia myriocarpa</i> Van Heurck & Mull.		<i>Tropidia angulosa</i> (Lindl.) Blume	133	<i>Zingiber nigrum</i> Gaertn.	134
SONNERATIACEAE	69	Arg.	66	<i>Uraria</i> Desv.	58	ZINGIBERACEAE	133
<i>Spergula arvensis</i> L.	33	<i>Tetradenia obovata</i> Nees	119	<i>Uraria lagopus</i> DC.	58	<i>Ziziphus Adans.</i>	45
<i>Spergula</i> L.	33	<i>Tetranthera salicifolia</i> Roxb. ex Nees	120	<i>Uraria rufescens</i> (DC.) Schindl.	58	<i>Ziziphus mauritiana</i> Lam.	45
<i>Spermocoe hispida</i> L.	79	<i>Tetrastigma</i> (Miq.) Planch.	47	<i>Urena</i> L.	37	<i>Zornia diphylla</i> (L.) Pers.	59
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ABOUT THE BOOK

India is one of the rich countries in terms of biodiversity. The country has wide diversity in plants, animals, ecosystems etc. Presently, there are 567 existing Wildlife Sanctuaries in India covering an area of 3.73 percent of total geographical area of the country and 16 in West Bengal covering 1.62 percent of state area (National Wildlife database, Jan. 2023).

The state of West Bengal geographically divided into five distinct regions (Darjeeling Himalayan region; Terai-Duars region; Western undulating uplands and extension of Chotanagpur plateau; Gangetic plains; and Gangetic delta of Sundarbans). The Mahananda Wildlife Sanctuary is situated on the West bank of the River Tista in the Terai region of Darjeeling district, West Bengal.

The book "Flora of Mahananda Wildlife Sanctuary, Darjeeling, West Bengal" dealt with 558 plant taxa belong to 378 genera and 126 families. Authors discussed the maximum diversity in terms of species richness in the area along with rare, endangered & threatened species. Authors are also listed Pteridophytes and Gymnosperms found in the sanctuary. The book is the comprehensive data for the future workers, plant lovers, ecologists, policy makers, students and teachers.



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