

A CONTRIBUTION TO THE BOTANY OF ORISSA

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ABSTRACT

This paper presents the essential features of geology, topography, soil, climate, vegetation and floristic composition of the tropical deciduous and tropical semi-evergreen/evergreen forests occurring in parts of Cuttack district, Keonjhar district, Mayurbhanja district and Bolangir-Sambalpur districts of Orissa. An enumeration of about 868 species of angiosperms, gymnosperms, pteridophytes and fungi representing 1845 field numbers collected between 1957-1959 is appended. It includes 34 species and ten genera found as new records for Bihar and Orissa and 60 species found as new records for Orissa only.

While describing 183 species of angiosperms and ferns as new records for Orissa, Mooney (1950) in his Supplement to Haines' (1921-1925) Botany of Bihar and Orissa cited a few localities as virtually unexplored botanically and recommended their exploration not only for botanising the areas concerned but for discovering additional new records of species for Orissa. In pursuance of a well-planned 5 years programme of work emphasising botanical survey of the unexplored and under-explored regions in Eastern India (cf. Rao and Panigrahi 1959) and bearing in mind Mooney's suggestions on the subject, three botanical exploration tours were undertaken by the senior author

between 1957-1959 in the forest tracts of the Rebna Reserve Forest (bordering upon Meghanada Parbat, 1053 m) in the Keonjhar district, of the Simlipal Reserve Forest (bordering upon Meghasini Peak, 1250 m) in the Mayurbhanja district and the Reserve Forest in the Gandhamardan Parbat (975 m) forming the boundary between Sambalpur and Bolangir districts of Orissa.

The details of the localities surveyed, periods of visit, duration of visit, and the total field numbers of species collected in each of these tours are tabulated in the Table I and the exact route followed and the localities surveyed are indicated in the Map below.

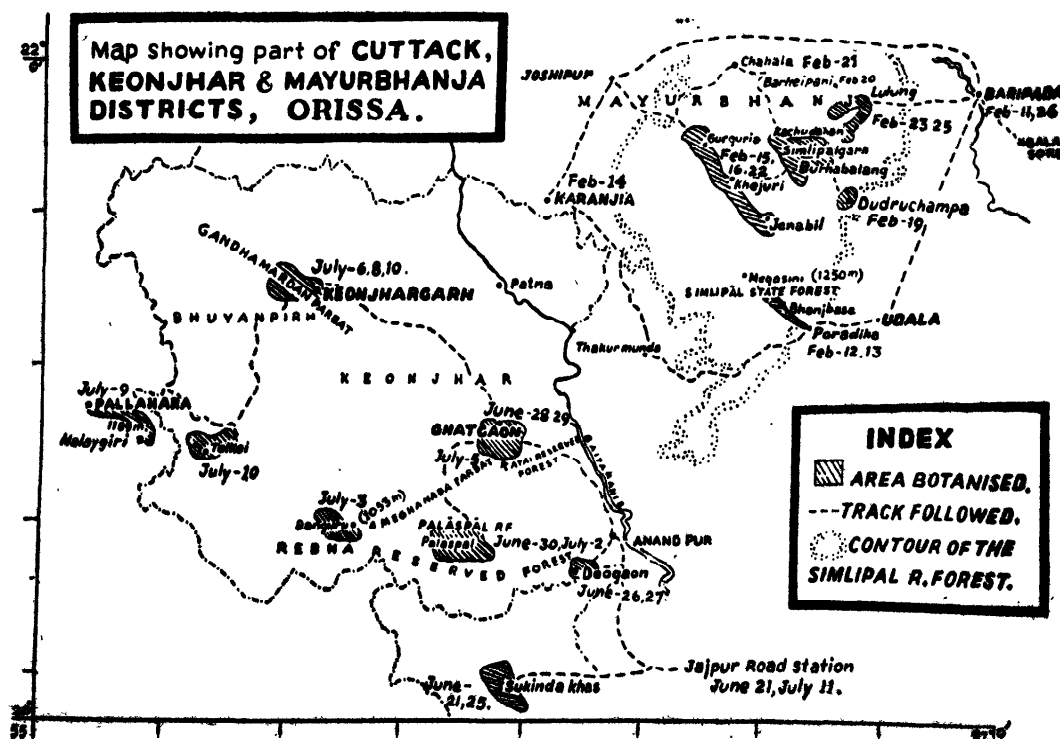


TABLE I

Localities	Period and duration	Field Nos. collected
1. Sukinda (Anchal Forest)—Deogaon-Ghatgaon (Atai Reserve Forest)—Palaspal-Rebna Reserve Forest—Banguru-Bankura (Meghanada Parbat), Telkoi-Pallahara (Malyagiri Reserve Forest). (20° 55'–21° 40' N and 85° 15'–85° 55' E).	21st June to 10th July 1957	597
2. Simlipal Reserve Forest (1100 sq. miles) bounded by Udala-Bhanjabasa (Meghasini Parbat) Karanjia, Gurguria-Jenabil, Garh Simlipal, Nigirda-Dudruchampa. Burhabalang, Bangiriposi-Baripada-Lulung and Kachudahan. (21° 30'–22° 10' N and 85° 45' E).	8th February to 1st March, 1958	613
3. Sambalpur-Padampur-Malda-Batipathar-Amarakhhol-Brahmani-Khandijharan-Lergaon-Paikmal-Manbhang-Narsinghnath-Satyamba-Bhim Pat-Harishankar-Harishankar Road. (21°–21° 45' N and 82° 45'–83° 5' E).	29th October to 10th Nov., 1959	635

While the first two tours undertaken entirely at our own initiative, the timing of the third tour to the Gandhamardan Hills was expedited and decided upon at the request of the Orissa State Government to explore the rich indigenous medicinal plants of the Gandhamardan Hills of the "Ramayana" epic fame.

Although the three exploration tours were undertaken in three different years in five different districts of Orissa, the whole are covered may be taken as constituting a single phytogeographical unit with similar vegetation types and floristic compositions. This paper, therefore, summarises all available data on topography, vegetation and floristic composition of the areas covered, together with a critical analysis of the species distribution both within and without Orissa. Enumeration of the species of angiosperms, gymnosperms, ferns and fungi is appended together with the collection numbers, locality, important notes on habitat abundance and flowering and fruiting seasons for each species.

GEOLOGY, TOPOGRAPHY AND SOIL

Geologically speaking, Meghanada Parbat in the Keonjhar district, Simlipal hills in the Mayurbhanja district as also the Gandhamardan ranges in the borders of the Sambalpur-Bolangir districts, belong to the southern tract, one of the three topographical divisions to which Bihar and Orissa is conveniently divided (cf. Haines 1925). It contains a confused and broken mountain system, only a small part of which is in direct connection with the Central table land. The hills of Sukinda Anchal (100 m), Rebna (300 m), Atai (350 m), Gandhamardan (1000 m) attain the high-

est point in Meghanada Parbat (1053 m), whereas the Simlipal hills represent a compact block of mountain system ranging between 300 m to 1250 m, the highest being attained at Meghasini (1250 m). Similarly, the Gandhamardan ranges delimited by Borasambar, Malda, Paikmal and Manbhang in the north and Amarakhol-Batipathar-Brahmini-Harishankar and Chandil in the south comprise of low undulating hills ranging from 220 m to 1060 m, the highest point being attained at the "Satyamba Pat". Pyramidal mounds are frequent in Bolangir area. The high plateau consists of gneiss with lateritic caps. The entire hills ranges except Gandhamardan Parbat referred to above lie north of the Mahanadi river and essentially comprise of Dharwar formation and typically consist of shales, phyllites, haematite and other iron schists with quartz veins, siliceous clay slates, quartzites or hard sand stones which are very wide-spread. Exposures of archaen gneiss are frequent towards the northern boundary. Haematite, chromite and granite are available in low mountains and steep hills in Malyagiri and Keonjhar areas. The soils in the Gandhamardan ranges are derived from metamorphic rocks, called "Khandalite" and contain quartz schists, flakes of aluminium near Batipathar and graphite at Harishankar. Reddish brown lateritic caps and ferruginous clays cover the hills and "Pat" which is a flat plain of about 1½–2 miles broad at Satyamba Pat. Black cotton soil and lateritic soils of high fertility occur in the foot hills, plains and valleys. China clay is met with in Karanjia.

The Keonjhar district is beset with rivers, like Baitarani, Musal and Kosai (the last one originating from Meghanada Parbat) whereas the Simlipal hills are traversed by Burhabalang, Palpala, Bandan and Korai. Perennial streams like Brahmini, Kapildhar, Suktel and Harishankar flow down the hills of the Gandhamardan range cutting their way through hard core of gneiss. Water of the Suktel river near Harishankar is of pH 7.3 and is, therefore, alkaline. There is one hot spring at Moka-bari, 4 miles from Simlipalgarh where water is bubbling up in the bed of one rice field. There is a big water fall at Barheipani, which runs down 1308 ft through naked bare rocks in two stages, one upper flat horizontal portion and the second vertical fall. There is a rivulet running through the valley, which is covered with evergreen forest.

CLIMATE

The areas enjoy a typical monsoon climate with variations in annual rainfall as given below:

Harishankar	2200 mm
Keonjhar (Sukinda)	1000–1250 mm
Sambalpur (Borasambar)	1250–1500 mm
Baripada (Simlipal)	1500–2000 mm

During these three tours the scanty temperature and relative humidity data collected are in agreement with the climatic pattern referred to above. The average maximum temperature at Sukinda in June, 1957 was 28°C with 83% relative humidity (on 21.6.57 maximum temperature was 37°C with 51% relative humidity). At Simlipalgarh maximum temperature was 23.3°C and minimum 10.5°C and the relative humidity was 34% during the day but 84% at night, these striking differences being due to heavy frost at night in the area in February. At Gandhamardan Parbat the maximum temperature was 30.5°C with 88% relative humidity on 3.11.1959 although in May temperature goes upto 40°C.

VEGETATION

Consistent with the climatic and biotic factors operating in the region, the forests of Rebna, Simlipal and Gandhamardan areas explored, present 2 or 3 stages of succession.

SUKINDA-REBNA-KEONJHARGARH FORESTS

(a) The vegetation of Sukinda Anchal forests may be classified as TROPICAL DRY DECIDUOUS FOREST (Rao & Panigrahi 1961) with *Shorea-Terminalia-Diospyros* association. *Shorea robusta* Gaertn. f. is the predominant element in



Fig. 1. Sal forest floor with *Millettia auriculata* spiralling on Sal.

open areas and on flat ridges of hills associated with *Terminalia tomentosa* (Sahaj or Asana-Oriya), *T. arjuna*, *Diospyros melanoxylon* (Kendu-Oriya),

Anogeissus latifolia, *Madhuca indica*, *Aegle marmelos* and *Adina cordifolia* (Halanda-Oriya), *Syzygium cumini* etc. Large number of thorny species viz. *Meyna laxiflora*, *Flacourtia cataphracta*, etc. are met with on the hill slopes.

(b) SEMI-EVERGREEN TYPE is met with in Atai Reserve, on Gandhamardan range near Keonjhar and Malyagiri Reserve near Pallahara whereas the forests near Banguru (900 m) on the belt of Meghanada Parbat almost borders upon tropical evergreen type. *Xylia-Callicarpa-Polyalthia* association with *Xylia xylocarpa*, *Callicarpa arborea*, *Polyalthia cerasoides* are associated with *Garcinia cowa*, *Pittosporum floribundum*, *Milusa velutina*, *Strychnos potatorum*, *Protium serratum*, *Dillenia aurea* and *Ficus* spp., form closed associations in moist-laden hills often giving the physiognomy of evergreen type. Several species like *Zizyphus rugosa*, *Casearia tomentosa*, *Woodfordia fruticosa*, *Millettia auriculata*, *Meyna laxiflora*, *Barringtonia acutangula*, *Grewia aspera*, *Ixora parviflora*, *Wendlandia tinctoria* frequently occur as shrubs in the middle layer whereas *Celastrus paniculata*, *Randia fasciculata*, *Bauhinia vahlii*, *Passiflora foetida* and *Gnetum ula*, etc. are present as climbers and lianes.

In addition to a rich herbaceous flora in the forest floor the epiphytic flora comprise of orchids viz. *Dendrobium herbaceum*, *D. crepidatum*, *Aerides multiflorum*, *A. odoratum*, *Rhyncostylis retusa* and of a few ferns and Piperaceae in the humid spots along the beds of streams and in sheltered valleys.

SIMLIPAL FOREST

Simlipal Reserve Forest of Mayurbhanja district comprising of a single compact block extends over about 1100 square miles. It represents a virgin semi-evergreen forest which expresses the climatic climax type of vegetation. The central core of the forest covers the ridges and valley of the hills and is yet undisturbed by any biotic factor. The forest growth is thick and impenetrable and is dominated by gigantic growth of a large number of tree species the chief amongst which is *Shorea robusta* Gaertn. f.

The region explored being rather vast (1100 sq. miles) and the altitudes covered being variable (30-1000 m) the semi-evergreen forest referred to above represents different facets of the vegetation from dry deciduous type with a number of xerophytic species accompanied by stunted growth of sal in areas adjoining Simlipalgarh Nigirda-Lulung section to mixed deciduous forest or semi-evergreen type over most of the areas of this forest. At times it borders upon the evergreen forest type found in pockets in the deep moist valleys on the way to Bhanjabasa and Meghasini and again at the Barheipani Falls and along the banks of the

Palpala river near Kachudahan. Depending upon the respective region the dominant sal species sometimes forms almost compact pure stands such as in the Karanjia-Gurguria sector of the Simlipal forest. But over the greater part of this forest area, the sal species may be classed to have a number of co-dominants or important species such as *Anogeissus latifolia*, *Terminalia tomentosa*, *Pterocarpus marsupium*, *Ougeinia dalbergioides*, *Syzygium jambolana*, *Michelia champaca*, *Dillenia aurea*, *Diospyros peregrina*, *Adina cordifolia*, *Schleichera oleosa*, *Bauhinia* spp. etc., this association of gigantic trees being more prominent in the Barheipani-Chahala-Talbandha area. In the Simlipalgarh area, however, although the sal forms almost pure stands, the vegetation is rather xeromorphic in type. Sal is of stunted growth standing on bare lateritic rock surfaces of hills, the ground vegetation being mostly a thick closely-set cover of *Phoenix acaulis*, which grows with sal saplings and grasses with an approach to thorn scrub aspect with *Flacourtia* sp., *Capparis zeylanica* and *Zizyphus*. Along the banks of rivers traversing the area, *Salix tetrasperma*, *Syzygium jambolana*, *Homoioia riparia* and *Hypericum* sp. among the trees and shrubs occur along with ferns viz. *Cyathea* spp., *Angiopteris evecta* and very many species of *Cyclosorus* and *Thelypteris*. Besides, shrubs viz., *Randia* sp., *Gardenia* sp., *Glochidion* and *Cleistanthus collinus* as also *Indigofera pulchella* (commonest under shrub with purple-pink flowers) forms the second storey in the forest associated with young plants of the tree species at various stages of development. Among the climbers and lianes *Bauhinia vahlii*, *Mucuna prurita*, *Gnetum ula*, *Millettia auriculata* together with *Ventilago calyculata* are the most important species at times giving a nettled appearance to the middle layer of the forest. Among the ground vegetation, a large number of Acanthaceae, Leguminosae and Labiatae are the commonest flowering species in altitudes between 300-1000 m. Among the epiphytes various species of orchids such as *Dendrobium*, *Oberonia*, *Vanda*, etc. are common in the forests of Bhanjabasa and Jenabil whereas *Luisia* is perhaps the only surviving orchid in the dry deciduous forests of Simlipal, Nigirda-Dudruchampa area. A few mosses and a small number of epiphytic ferns are found in February which is rather dry.

Below this altitude, however, sal is associated with *Diospyros melanoxylon*, *Terminalia arjuna*, *T. tomentosa*, *Madhuca indica*, *Schleichera oleosa* and *Ficus bengalensis* and a few other species of *Ficus*, *Butea monosperma* and *Woodfordia fruticosa* with their radiant glow of purple red flowers as also the crimson red young leaves of *Schleichera oleosa* colour the lower altitudes. *Melia composita* and *Mangifera indica* are also common in the lower altitudes along with a climber, *Combretum*

decandrum which covers tops of many trees and shrubs in the month of February.

GANDHAMARDAN PARBAT

The Gandhamardan ranges comprise of undulating hills and valleys with steep northern and southern slopes and represent four different types of vegetation between foot-hills (30 m) and the flat Pat (1000 m).

(1) **Dry deciduous forest:** Tracts of exposed hills near Harishankar and low hills of Malda and Bati-pathar are of secondary type due mainly to human interference. Sal is associated with various species of *Terminalia*, *Pterocarpus marsupium* (Bija-Oriya), *Madhuca indica* (Mahua-Oriya), *Anogeissus latifolia* (Dhaura-Oriya), *Chloroxylon swietenia* (Bheru-Oriya), *Bridelia retusa* (Khaisa-Oriya) and *Cleistanthus collinus* (Karada-Oriya) with a shrubby layer of *Zizyphus oenophia*, *Helicteres isora*, *Grewia hirsuta*, *Holarrhena antidysenterica*, *Trimfetta bartramia*, *T. rotundifolia* and *T. pilosa*. The middle layer often presents a tangled mass with twining stems of lianes and climbers comprising of *Mucuna prurita*, *Ampelocissus indica*, *Cissus repanda*, *Dioscorea anguina*, *D. hamiltoni*, etc.

(2) **Bamboo forest:** From the base of hills upto 700 m the dominant bamboo *Dendrocalamus strictus* Nees forms a consociation with a few deciduous elements viz., *Albizia procera*, *Shorea robusta*, *Diospyros melanoxylon*, *Chloroxylon swietenia*, *Lagerstroemia parviflora*, *Pterocarpus marsupium*, *Anogeissus latifolia* and *Terminalia* spp. The middle storey comprises of a shrubby layer with *Holarrhena antidysenterica* and *Helicteres isora* whereas the ground layer comprises mainly of *Trimfetta pilosa*, *Hedychium* spp., *Costus speciosus*, *Curculigo orchoides*, *Asparagus racemosus* and *Amorphophallus campanulatus*.

(3) **Semi-evergreen forest:** Although dry deciduous type characterises the plains and foothills and Bamboo forest ascends upto 700 m, the high altitudes from 700 m. 900 m as also the valley in Bati-pathar-Amarakhhol-Borasambar-Kapildhar areas present the physiognomy of evergreen type with thick growth of lianes covering the trees having buttressed trunks. The chief tree components of this formation are *Diospyros peregrina* (= *D. embryopteris*), *Mangifera indica* (wild mango), *Careya arborea*, *Mitragyna parviflora* (Haladu-Oriya), *Alstonia scholaris* mixed with *Murraya paniculata*, *Ardisia solanacea*, *Maesa indica* and *Antidesma diandrum* among the shrubs and *Millettia* and *Mucuna*, etc., among climbers. It occurs all along the course of streams upto the highest altitude (900 m).

GRASSLANDS

The extensive flat plateau running through the whole length of the Gandhamardan range presents a grassland formation with luxuriant growth of

various grass species attaining 2-3 m in height. The grassland comprises of *Cymbopogon martinii*, *Themeda laxa*, *Heteropogon contortus*, *Arthraxon lanceifolius*, *Microstegium petiolare*, *Chrysopogon lancearius*, *Capillipedium assimile* and is interspersed with stunted growth of *Lagerstroemia parviflora*, *Terminalia tomentosa*, *Pterocarpus marsupium*, *Woodfordia fruticosa*, *Albizia odoratissima*, *Terminalia tomentosa*, *Acacia catechu*, *Embllica officinalis*, *Bauhinia vahlii*, *Pimpinella heyneana* and *Peucedanum nagpurens* (Bansigopal-Oriya). The exposed haemitite rock surface with hardly any soil cover at places is inhabited by *Polycarpaea aurea* and *Cyanotis fasciculata* and a stunted grass *Dimeria connivens* which may be used for filling mattress etc. *Dendrobium herbaceum* is the only leafless orchid constituting the epiphytic flora on the Pat' and grows on *Pterocarpus marsupium*.

The low foot hills denuded of forest species and made up with alluvial soils is covered over by *Pogostemon plectranthioides* and grasses amongst which *Brachiaria reptans*, *Dicanthium annulatum*, *Heteropogon contortus*, *Apluda mutica* and *Themeda laxa*, *Eragrostis nutans*, *E. unioloides*, *Chrysopogon aciculatus*, *Ischaemum indicum*, *Echinochloa colonum*, *Paspalum scrobiculatum* (cultivated) are the more important species. Weeds such as *Mollugo pentaphylla*, *Lochnera pusilla*, *Cleome monophylla*, *Chrozophora prostrata*, *Borreria stricta*, etc. are common. *Celosia argentea* (introduced) is a weed of great nuisance in the abandoned fields near Borasambar, Paikmal and Harishankar.

The low-lying lands, on the other hand, comprising of tanks, ditches and swamps in the area are characterised by a lowland community consisting of hydrophytic species in permanent pools or swamps but of a hygrophytic flora in the borders of pools and dired up muddy places. The chief components of the lowland community are enumerated below:

HYDROPHYTES :

Aeschynomene indica, *Blyxa echinosperma*, *Ceratophyllum demersum*, *Chara* sp., *Hydrilla verticillata*, *Nehamandra alternifolia*, *Neptunia oleracea*, *Nymphaea pubescens*, *N. stellata*, *Ottelia alismoides*, *Potamogeton nodosus*, *Sagittaria guayanensis*, *Scirpus squarrosus*, *Tenagocharis latifolia*, *Utricularia stellaris*, *Vallisneria spiralis*.

HYGROPHYTES :

Alocasia fornicata, *Ammania caudata*, *Asteracantha longifolia*, *Caesulia axillaris*, *Coix lacryma-jobi*, *C. aquatica*, *Cyanotis axillaris*, *Eriocaulon quinqueangulare*, *Eulalia trispicata*, *Ipomoea aquatica*, *Isoetes coromandelina* (Padampur only), *Limnophylla indica*, *Ludwigia parviflora*, *Monochoria vaginalis*, *Polygonum glabrum*, *Sphaeranthus indicus*.

MEADOW VEGETATION :

Alternanthera sessilis, *Eclipta alba*, *Eragrostis unioloides*, *Evolvulus nummularius*, *Gisekia pharnaceoides*, *Polygonum hydropiper* var. *flaccidum*, *P. glabrum*, *Sachharum spontaneum*.

NEW RECORDS

It is significant to note that despite the reconnaissance nature of the tours undertaken in these three areas 94 species turned out as new records for Orissa only and 34 species both for Bihar and Orissa and two species viz. *Calanthe diploxiphion* Hk. f. and *Asplenium perakense* Matt. and Chr. for India. Additional data on distribution for 19 species out of the 183 species reported by Mooney (1950) as new records for Orissa, were also gathered from these areas visited by us. *Calanthe*, *Cyathula*, *Eryngium*, *Heterostemma*, *Pericampylus* amongst the angiosperms and *Coniogramme* and *Isoetes* amongst the Pteridophytes turned up as new records of genera for Bihar and Orissa. Again, *Angelonia*, *Osyris* and *Cryptomeria* are three new records of genera introduced as cultivated species to Orissa.

FLORISTIC ANALYSIS

A comparative study of the list of species collected reveals slight variation in the respective positions of the ten dominant families of our list with those of Mooney (1950). Total number of angiosperm species described both by Haines (1924-1935) and Mooney (1950) for Bihar and Orissa is 2700 species. Our collections numbering 770 species of angiosperms, therefore, forms a significant sample of the total flora of Bihar and Orissa. Despite variation in respective positions, the dominance of the 10 major families reported by them finds corroboration from our studies also. The variation in species content reflected in our three independent collections made in June-July, October-November and February, may be accounted for by the seasonal differences controlling the development of the annual herbaceous flora. The ten dominant families represented in our collections are: Gramineae (49G-81 spp.), Leguminosae (41G-81 spp.), Euphorbiaceae (22G-38 spp.), Acanthaceae (19G-37 spp.), Compositae (25G-35 spp.), Rubiaceae (23G-32 spp.), Cyperaceae (9G-31 spp.), Orchidaceae (15G-25 spp.), Malvaceae (9G-20 spp.) and Aspidiaceae (7G-23 spp.). Of these, eight families excluding Aspidiaceae, Malvaceae are also listed by Mooney as the ten dominant families in the flora of India, the other two families in order of dominance being Labiatae and Urticaceae. These two families, however, are represented by 15 spp. and 17 spp. respectively in our collections.

Accordingly, the tabular presentation of the floristic data for Bihar and Orissa (cf. Mooney 1950, pp. 16 & 245) is modified as follows:

TOTAL NUMBER OF FLOWERING PLANTS

Class	Genera	Indigenous or feral species	Cultivated species	Total Spp.
Dicotyledons	858	1704	281	1985
Monocotyledons	272	672	73	745
TOTAL	1130	2376	354	2730

Thus the total number of genera has risen from 1123 to 1130 and the species from 2700 to 2730.

DISTRIBUTION

An analysis of the distributional range of the species collected from Orissa and enumerated in the list enclosed brings out the following interesting data on their phytogeographical relationships. *Aeschynomena indica*, *Borreria stricta*, *Desmodium motorium*, *Rubus ellipticus* and *Sphaeranthus indicus* have a greater range of distribution extending from Kashmir to Assam in the north and Ceylon in the south, while *Canthium dicoccum*, *Cyathula prostrata*, *Diospyros montana*, *Hypericum japonicum*, *Meliosma simplicifolia*, *Micromelum integerrimum*, *Moghania strobilifera* and *Shuteria vestita* are common to Ceylon, Orissa and Assam Himalayas but are absent from Kashmir. Similarly, *Garcinia cowa*, *Microstylis congesta* are common to Orissa, Andamans and Khasia hills and *Gnaphalium luteo-album* and *Datura stramonium* are common to Assam, Orissa and Kashmir, but *Cephalostigma hirsutum* though found in Orissa, is absent from Assam. Again, only one species viz. *Dillenia aurea* extends its range to Andamans on the south east and Himalayas on the north, but *Harpullia arborea* and *Peltophorum pterocarpum* found in Ceylon and Andamans, have their northernly range limited by Orissa only.

Of the six endemics described by Haines for Orissa *Hypericum gaitii* Haines has now been collected from Nowna forest of Simlipalgarh at an altitude of 300 m.

RARE AND INTERESTING SPECIES

The road from Balasore to Baripada and again between Baripada to Podadiha is lined up, as it were, by pure stands of Sal, which provide a natural avenue of great interest.

Whereas bamboos are very uncommon and do not occur indigenously in the Simlipal forest (although a few introduced species are doing well in the vicinity of the villages and at Dukura, several clumps of *Dendrocalamus strictus* were in flower, *D. strictus* is the principal forest product of the Gandhamardan hills and serve as feeders to the Bengal Paper Mills Ltd., Calcutta, who maintain an Office, Godown and Experimental Station at Harishankar.

Various epiphytic orchids such as *Dendrobium*, *Vanda*, *Oberonia*, etc. are common in the forests of Bhanjabasa, Palaspal, Jenabil and Rebua Reserve

Forests whereas *Luisia* is perhaps the only surviving orchid in the dry deciduous forests of Simlipal, Nigirda-Dudruchampa area. *Vanda tessellata* is almost a weedy paste on all trees in Sukinda area. *Gnetum ula* occurs extensively as a liana on the way to Jenabil and to Banguru and *Salix tetrasperma* and *Homonoia riparia* along the course of rivers in the Simlipal area.

Eranthemum nervosum with its blue violet flowers and showy strobili-like bracts having whitish margin occurs in shady ravines throughout the Simlipal forest. Similarly, the tree fern *Cyathea* sp. with *Angiopteris evecta* occur along the stream near Nigirda, on the way to Dudruchampa and in other wet situations. *Cylosorus interruptus* (Willd.) Ching mixed with *Pteridium acuilinum* (L.) Kuhn forms extensive patches mixed with *Themeda laxa* A. Camus in open sunny situations at Bhanjabasa (2600 ft) whereas *Abacopteris multileneata* (Wall.) Ching—the most weedy fern species occurs in almost all shady humid situations throughout the whole range of Simlipal forest.

The insectivorous plant *Drosera burmanni* is found from Gurguria to Jenabil, *Dendrophthoe falcata* (= *Loranthus longiflorus*) which attracts attention with its reddish green flowers growing as a hemi-parasite on Sal and *Madhuca* in the plains, becomes rarer between 600 to 900 m, *Cassytha filiformis* which resembles *Cuscuta reflexa* in habit, is rather uncommon in Sukinda area only. *Alectra thomsoni* a root parasite found near Satyamba and again at Harishankar is a species of great medicinal value.

Occasionally, a few rare species are met with. At Dukura, one giant tree of *Strychnos nux-vomica* studded with ripe orange yellow fruits borne on leafless branches (Fig. 2) drew our immediate attention. After Taramara, 26 miles from Podadiha and again at Lulung, *Agave sessalana* Perr. ex Engl. with pale yellow spiny leaves and with flowers and bulbils borne on majestic pole-like peduncles provide an interesting change to the monotonous sal-forest in the area. *Cycas circinalis*, only one plant, is seen along the road from Podadiha to Dongadiha at 366 m although it is common in Sukinda and Ghatgaon areas. Similarly, a few plants of *Cochlospermum religiosum* with bright yellow attractive flowers are seen in the forest along the road sides at Bangriposi in the Mayurbhanja district, although it is very common in the forests south of Harishankar in the Bolangir district. *Podostemon wallichii* grows extensively on rock boulders and pebbles in the bed of swift-flowing Koroi river near Gurguria. *Isoetes coromandelina* form a big patch near the margin of a tank in front of Padampur I. B. and is a new record for Orissa. *Lycopodium squarrosum* Forst. with its drooping stems occurs in sheltered valleys with other epiphytes viz., orchids and ferns, whereas

Fomes pachyphaleus with its successively branched chocolate fruit-bodies on living sal tree and *Hexagonia sulcata* with its honey-comb-like hymenium offer interesting sights.

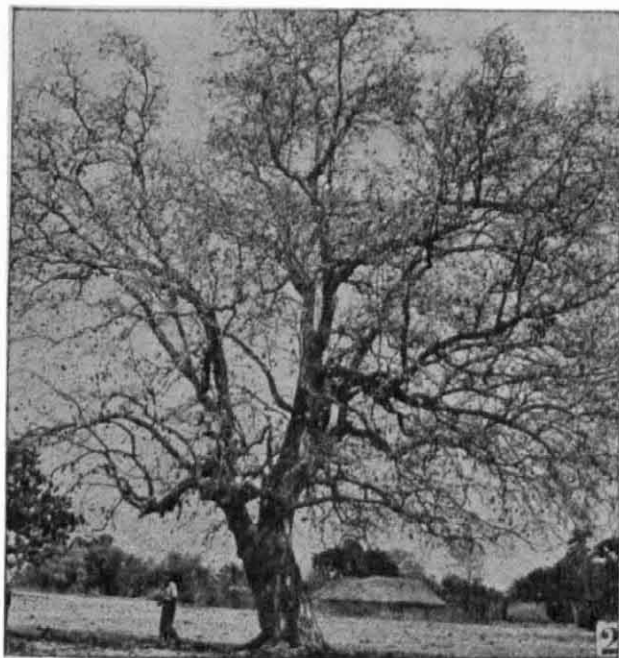


Fig. 2. *Strychnos nux-vomica* Linn.

At Lulung (167 m), 13 miles from Baripada the Forest Dept. is maintaining a survey of *Rauvolfia serpentina* over 3-4 acres of land and the total number of plants would now be of the order of 10,000 or so. The interesting point about this survey is that although *Rauvolfia* is rare in the wild state in this jungle, plants occurring sporadically in nature in the Simlipal Forest have been collected and planted at Lulung where further propagation is from the seeds whose percentage of germination is rather low. 32 miles from Keonjhar towards Telkoi, *R. serpentina* is common in scattered patches.

Cymbopogon martinii (Rosha grass) on the other hand, occurs in commercial quantities on the Satyamba "Pat" and may be exploited by the State Govt. for establishing a factory for the distillation of the famous essential oil, "Rosha grass oil", whose principal constituent is geraniol and which is used by Indian manufacturers in blending perfumes to the soaps and toilets.

Amongst introduced species *Pinus insularis* (= *Pinus khasya*), *Grevillea robusta* and *Eucalyptus* sp. are doing very well in the forests of Dudruchampa. *Eucalyptus* trees stand majestically in front of the Chahala I. B. whereas at Kachudahan, *Santalum album* and *Pinus insularis* also are doing well. About half a dozen plants of *Cryptomeria japonica* introduced to Dudruchampa are yet struggling for survival whereas in the same place *Pinus*

insularis planted originally over 40 acres of land, would now number to about 6000 plant.

ENUMERATION

Reference to page of either Haines' (1921-1925) Botany of Bihar and Orissa or for Mooney's (1950) Supplement is abbreviated by H or M respectively followed by a reference to the page immediately after the name of each species for enabling the reader to look for description and nomenclature of the species enumerated. At the end of field notes for each plant the Oriya names is given in brackets wherever available.

For reference as "Collector" senior author's name, viz. "PANIGRAHI" may be cited.

DILLENIACEAE

Dillenia aurea Smith (H 7). 8558 Palaspal, common; fruits: July.

MAGNOLIACEAE

Michelia champaca Linn. (M 20). 12464 Gurguria, occasional; a few trees of giant size met with; vegetative: February.

ANNONACEAE

Annona squamosa Linn. (H 9). 8209 Sukinda, 8426 Ghatgaon, 12223 Dukura; common in sandy soil, in open places; flowers: February-June.

Miliusa velutina Hook. f. & Th. (H 13). 8429 Ghatgaon, 8546 Buripada, 8583 Banguru; occasional; fruits: July.

Polyalthia cerasioides Hook. f. & Th. (H 12). 8292 Sukinda, frequent, on slopes of Sonajhar hill; flowers: June (*Burhi-Chamri*).

Uvaria hamiltoni Hook. f. & Th. (H 10). 8588 Banguru, 8733 Buripada, occasional along footpath; flowers: July.

MENISPERMACEAE

Cissampelos pareira Linn. (H 16). 20884 Lergaon, frequent, with perennial stock; fruits: November (*Akanbindi*).

Pericampylus glaucus (Lam.) Merr. 8499 Palaspal, 8751 Jagar-Gandhamardan, common on hill slopes; flowers: July. New record for Bihar and Orissa.

NYMPHAEACEAE

Nymphaea nouchali Burm. f. (= *N. pubescens* Willd.). (H 21). 8347 Deogaon, common in tank; flowers: June.

N. stellata Willd. (H 21). 8348 Deogaon, common; flowers: June.

PAPAVERACEAE

Argemone mexicana Linn. (H 23). 8541 Baripada, 12813 Lulung, 21066 Padampur, frequent; flowers and fruits: February-October (*Agora*, *Kantakusum*).

CAPPARIDACEAE

Capparis zeylanica Linn. non Hook. f. & Th. (= *C. horrida* Linn. f.). (H 31). 12229 Dukura, common; flowers and fruits: February (*Asadhua*).

Cleome monophylla Linn. (H 29). 20516 Padampur, common; flowers and fruits: October (*Hurhara-Santal*).

C. viscosa Linn. (H 29). 8528 Banguru, 20515 Padampur, 21051 Paikamal, very common; seeds used in flavouring curry; flowers and fruits: July—November (*Anasorisha*).

VIOLACEAE

Hybanthus enneaspermus (Linn.) F. v. Muell. (= *Ionidium suffruticosum* Ging.) (H 33). 8260 Sukinda, 8532 Palaspal, frequent; in sandy alluvial soil; flowers: June (*Madan-Mastak*).

BIXACEAE

Bixa orellana Linn. (H 34). Narsinghunath and Harishankar, cultivated; fruits: November. Native of America.

Cochlospermum religiosum (Linn.) Alston (= *C. gosypium* DC.). (H 34). 12721 Bangriposi Ghat, in the crevices of boulders on bare hill slopes, common in the forest near Harishankar; flowers: February.

FLACOURTIACEAE

Casaria graveolens Dalz. (H 39). 8223 Sukinda, 8573 Meghanada Parbat, frequent in the sal forest; fruits: June.

C. tomentosa Roxb. (H 39). 8293 Sukinda on Sonajhar hill, common; flowers: June.

Flacourtia jangomas (Lour.) Raeusch. (= *F. cataphracta* Roxb. ex Willd.) (M 22). 8660 Bankura, 12671 Barheipani, common; flowers: February—July.

F. indica (Burm. f.) Merr. (= *F. sepiaria* Roxb.). (H 36). 8217 Sukinda, 12518 Simlipal, common hedge plant; flowers: February—June (*Baincha*).

PITTOSPORACEAE

Pittosporum floribundum Wt. & Arn. (M 22). 8742 Keonjhar, on the bank of river; flowers: June—July.

POLYGALACEAE

Polygala chinensis Linn. (H 41). 8478 Palaspal, 20648 Malda, common in grassy fields; flowers: June.

P. crotalarioides Buch.-Ham. ex DC. (M 23). 8425 Palaspal, occasional; flowers: June. New record for Orissa (*Ajhaduagada*).

CARYOPHYLLACEAE

Polycarpaea aurea Wt. & Arn. (M 245). 20941a Satyamba pat (1000 m); common on bare rock; flowers: November (*Pasanavedi*).

Polycarpon indicum (Retz.) Merr. [= *P. loeflingii* (Wall.) Benth. & Hook. f.] (H 45). 8591 Meghanada Parbat, common; fruits: July.

PORTULACACEAE

Portulaca oleracea Linn. (H 47). 8276 Sukinda, 8516 Palaspal; frequent; fruits: June—July.

HYPERICACEAE

Hypericum gaitii Haines (M 26). 12539 Simlipalgarh, along the river bank, frequent; flowers: February.

H. japonicum Thunb. (M 26). 8777 Telkoi, common; fruits: July.

GUTTIFERACEAE

Garcinia cowa Roxb. (M 27). 8651 Banguru, common; fruits: July.

Mesua ferrea Linn. (M 27). 20915 Khandijharan and Manbhang, introduced; vegetative: November (*Nageshwar*).

DIPTEROCARPACEAE

Shorea robusta Gaertn. f. (H 56). 12212 Dukura, dominant forest species in Orissa forests; vegetative: February (*Sal*).

MALVACEAE

Abelmoschus moschatus Medic. (= *Hibiscus abelmoschus* Linn.). (H 65). 20614 Padampur, 21117 Harishankar, common; fruits: November.

A. esculentus (Linn.) Moench. (= *H. esculentus* Linn.). (H 65). 8359 Deogaon, cultivated; flowers: June.

Abutilon indicum G. Don (H 61). 8366 Deogaon, 20764 Amarakhol, common; flowers and fruits: June—November (*Pedi-Pedika*).

Gossypium barbadense Linn. (H 73). 12753 Kachudahan, cultivated; fruits: February.

Hibiscus cancellatus Roxb. (H 64). 20725 Batipathar, common along forest edge; fruits: November.

H. cannabinus Linn. (H 67). 20602 Malda, cultivated for fibre; flowers: November (*Kudruna*).

H. lobatus (Murr.) O. Ktze. (= *H. solandra* L. Herit.). (M 28). 20955 Narsinghnath, frequent, near the edge of forest; flowers: November.

H. pungens Roxb. (M 27). 12673 Barheipani, occasional in moist valley; flowers: February.

H. rosa-sinensis Linn. (H 69). 20866 Lergaon, cultivated; flowers: November (*Mandar, Parijat*).

H. schizopetalus Hook. f. (H 69). 8685 Ghatgaon, cultivated; flowers: November.

Kydia calycina Roxb. (H 73). 12676 Barheipani, 20888 Lergaon, common forest tree; fruits: November—February.

Pavonia odorata Willd. (H 63). 21120 Harishankar, frequent at low altitudes; fruits: November.

Sida acuta Burm. f. (H 61). 12307 Bhanjabasa, 12646 Barheipani, 20523 Padampur, common; flowers: November—February (*Bajramuli*).

S. glutinosa Cav. (H 59). 20794 Batipathar, common; flowers: November.

S. rhombifolia var. *obovata* Mast. (H 60). 20575 Padampur, frequent in open fields; flowers: November. New record for Orissa.

S. veronicaefolia Lamk. (H 59). 12750 Kachudahan, 12808 Lulung, 20524 Padampur, common

on road sides; flowers and fruits: November—February.

Thespesia lampas (Cav.) Dalz. & Gibs. (H 70). 8454 Palaspal, 20675 Batipathar, frequent near the edge of forest; flowers and fruits: June—November.

Urena lobata Linn. (H 62). 12800 Lulung, 20745 Bhojpurgarh, 21014 Saptadhar, common at the foot hills; flowers and fruits: November—February (*Chikiniamanji*, *Raktapheni*).

STERCULIACEAE

Buettneria herbacea Roxb. (H 83). 8509 Palaspal, 20661 Batipathar, occasional; flowers and fruits: July—November.

Helicteres isora Linn. (H 78). 8775 Telkoi, 12283 Bhanjabasa, 20757 Batipathar, common; flowers: November (*Petamuri*).

Pentapetes phoenicea Linn. (H 82). 20613 Malda, growing under shade on sandy soil; flowers: November. New record for Orissa.

Pterospermum heyneanum Wall. (M 28). 20902 Khandijharan, 12270 Bhanjabasa, common; flowers: February—November (*Muchukunda*).

Sterculia villosa Roxb. (H 76). 12718 Gurguria, common; flowers: February.

Waltheria indica Linn. (H 82). 20583 Harishankar Hills, growing in grass fields, common; flowers: November. New record for Orissa.

TILIACEAE

Corchorus aestuans Linn. (1759) non Forsk. (= *C. acutangulus* Lamk.) (H 87). 20519 Padampur, occasional; fruits: November. New record for Orissa.

Grewia aspera Roxb. (H 89). 8524 Palaspal, 8746 Keonjharagarh, 12681 Barheipani, 21105 Harishankar, common; flowers and fruits: July—November.

G. flavescens Juss. (H 89). 12797 Sukinda, 20677 Batipathar, frequent; flowers and fruits: February—November.

G. rothii DC. (H 95). 20719 Batipathar, 8235 Sukinda, 21028 Manbhang, 21110 Harishankar, common; flowers and fruits: June—November (*Banasuli*).

G. tiliaefolia Vahl (H 91). 8324 Sukinda, common; fruits: June.

Triumfetta rhomboidea Jacq. (= *T. bartramia* Linn.). (H 85). 12786 Kachudahan, 20599 Borasambar, common in open fields; flowers and fruits: February (*Bojoramuli*).

T. pilosa Roth (M 28). 12489 Kachudahan, 12789 Jenabil, 20941b Satyamba, 21008 Narsinghnath, common on grassy slopes; fruits: November—February (*Bachhua*).

T. rotundifolia Lamk. (H 86). 20610 Malda, common; flowers and fruits: November.

LINACEAE

Reinwardtia trigyna (Roxb.) Planch. (M 35). 12705 Barheipani falls, occasional; flowers: February.

MALPIGHIACEAE

Hiptage benghalensis (Linn.) Kurz (= *H. madab-lota* Gaertn.). (M 35). 12367 Lulung, 12731 Podadiha, frequent; flowers: February.

GERANIACEAE

Biophytum sensitivum DC. (H 156). 20508 Sambalpur, common; flowers: October (*Chhota Lajakuli*).

Impatiens balsamina Linn. (H 158). 21060 Manbhang, common; flowers: November. New record for Orissa.

Oxalis corniculata Linn. (H 157). 8642 Bankura, 8722 Keonjharagarh, 12787 Kachudahan, 20872 Lergaon, common in grassy fields; flowers and fruits: February—November (*Kumari*).

RUTACEAE

Aegle marmelos Corr. (H 167). 8242 Sukinda, 20777 Amarakhhol, frequent in plains of Orissa; flowers and fruits: June—November (*Bael*).

Citrus aurantium Linn. (H 166). 12629 Dudru-champa, 20897 Khandijharan, cultivated now naturalised; flowers: February, fruits: November.

C. medica Linn. (M 39). 12418 Gurguria, Cultivated; flowers and fruits: February.

Clausena excavata Burm. (H 165). 8410 Ghatgaon, 8490 Palaspal, 8793 Keonjharagarh, 12670 Barheipani, common in forest floor; flowers: July.

Feronia limonia (Linn.) Swingle (= *Limonia acidissima* Linn.). (M 39). 8284 Sukinda, common; fruits: July.

Micromelum integerrimum Wt. & Arn. (M 38). 8757 Gandhamardan, 12321 Bhanjabasa, 12771 Kachudahan, occasional, flowers and fruits: February.

Murraya koenigii (Linn.) Spreng. (M 38). 12453 Jenabil, common in forest; flowers: February.

M. paniculata (Linn.) Jack. (= *M. exotica* Linn.). (H 164). 20771 Amarakhhol, common; fruits: November (*Kamini*).

OCHNACEAE

Ochna pumila Buch.-Ham. (M 40). 8562 Palaspal, occasional; fruits: July.

O. squarrosa Linn. (M 40). 8402 Ghatgaon, common; fruits: June.

BURSERACEAE

Protium serratum (Wall. ex Coleb.) Engl. (M 40). 8285 Sukinda, common; fruits: July.

MELIACEAE

Azadirachta indica A. Juss. (H 176). 8201 Sukinda, 12204 Burhipada, frequent; flowers: February, fruits: June.

Cipadessa fruticosa Blume (H 177). 8208 Sukinda, 12700 Barheipani, 20772 Amarakhhol, 20923 Kapildhar, 21111 Harishankar, common; flowers: June, fruits: November.

Melia azedarach Linn. (H 177). 8269 Sukinda, occasional; fruits: June.

M. composita Willd. (H 177). 12365 Bhanjabasa, occasional; flowers and fruits: February.

Soymida febrifuga A. Juss. (H 175). 8310 Sukinda, 12228 Dukura, frequent on road sides; flowers: February, fruits: June.

OLACACEAE

Olex scandens Roxb. (H 183). 8305 Sukinda, 8414 Ghatgaon, 8700 Keonjhar, 20646 Borasambar; flowers: July, fruits: June—November (*Badabana*).

Natsiatum herpeticum Buch.-Ham. (H 182). Rebna Reserve Forest, occasional; flowers: July.

CELASTRACEAE

Celastrus paniculata Willd. (H 188). 8309 Sukinda, 8435 Ghatgaon, frequent; fruits: July.

Elaeodendron glaucum Pers. (H 189). 20977 Satyamba, occasional; fruits: November.

RHAMNACEAE

Helinus lanceolatus Brandis (M 43). 12653 Barheipani, common; flowers: November.

Ventilago calyculata Tul. (H 193). 12723 Gurguria, 20649 Borasambar, 20748 Batipathar, frequent; climber on Sal; fruits: November—February.

Zizyphus mauritiana Lamk. (= *Z. jujuba* Lamk. non Mill.) (H 194). 8694 Keonjhar, 12709 Lulung, 20780 Batipathar, common; flowers: November, fruits: July.

Z. oenoplia Mill. (H 196). 20901 Khandijharan, frequent; fruits: November (*Kanakoli Kantai-Koli*).

Z. rugosa Lamk. (H 196). 8657 Bankura, 12267 Bhanjabasa, 12660 Barheipani, 12776 Lulung, frequent; flowers: February, fruits: July.

Z. xylopyra Willd. (H 195). 8761 Gandhamardan Parbat, frequent along road sides; flowers and fruits: July.

VITACEAE

Ampelocissus indica (Linn.) Planch. (= *Vitis rugosa* Wall.) 20732 Batipathar, 20887 Lergaon, common; flowers and fruits: November (*Akata Brahmalata*). New record for Bihar and Orissa.

Cayratia pedata (Vahl) Gagnep. (= *V. pedata* Vahl ex Wall.) (H 206). 8211 Sukinda, frequent, flowers: June.

Cissus repanda Vahl (= *V. repanda* Wt. & Arn.) (H 203). 20911 Khandijharan, frequent; vegetative: November (*Pan-Bel*).

Leea edgeworthii Sant. (= *L. aspera* Edgew. 1841, non Wall. ex Roxb. 1824.) (H 208). 8237 Sukinda, 8520 Palaspal, 21005 Satyamba, common; fruits: June—November.

L. crispa Linn. (H 208). 20683 Batipathar, common; fruits: November (*Hatikanopatra*).

L. indica (Burm.) Merr. (= *L. sambusinga* Willd.).

(H 208). 8594 Meghanada parbat, 8631 Banguru, 20876b Lergaon, common; flowers: June.

SAPINDACEAE

Harpullia arborea (Blanco) Radlk. (= *H. imbricata* Thw.) (H 216). 8604 Bankura; fruits: July.

Litchi chinensis Sooner. (= *Nephelium litchi* Camb.) (H 214). 12678 Barheipani, cultivated; flowers: February.

Schleichera oleosa (Lour.) Oken (= *S. trijuga* Willd.) (H 213). 8306 Sukinda, 8463 Palaspal, 12382 Jenabil, 12477 Gurguria, common; flowers: February (*Kusum*).

SABIACEAE

Meliosma simplicifolia Walp. (M 44). 12565 Nigirda, occasional, along stream in a valley; flowers: February.

ANACARDIACEAE

Buchanania lanzan Spreng. (= *B. latifolia* Roxb.) (H 221). 12208 Podadiha, common along road sides; flowers and fruits: February.

Mangifera indica Linn. (H 220). 12699 Barheipani, common; flowers: February.

Semecarpus anacardium Linn. f. (H. 222). 8503 Palaspal, 20747 Batipathar, common; growing near edge of forest; fruits: July—November.

Spondias pinnata (Linn. f.) Kurz (= *S. mangifera* Willd.) (H 224). 8574 Meghanada Parbat, common in plains of Orissa; fruits: July (*Salama*).

MORINGACEAE

Moringa oleifera Lamk. (H 225). 12423 Gurguria, cultivated; flowers: February.

LEGUMINOSAE

Abrus precatorius Linn. (H 247). 8462 Palaspal, 12204 Dukura, 21048 Paikmal, frequent; fruits: February (*Lalgunja*).

Acacia arabica (Lamk.) Willd. (H 324). 12393 Gurguria, 20578 Malda, frequent; flowers: November.

A. catechu Willd. (H 329). 20717 Batipathar, common along the edge of forest; fruits: November.

A. lenticularis Buch.-Ham. (H 330). 12615 Burhabalang, 21146 Batipathar, occasional, in forest; fruits: February—November.

A. leucophaea Willd. (H 325). 12226 Dukura, occasional; spiny shrub, fruits: February.

A. pennata Willd. (H 326). 12250 Dukura to Udala, frequent; fruits: February. New record for Orissa.

A. torta (Roxb.) Craib (= *A. caesia* Wt. & Arn.) (H 328). 20984 Narsinghnath, frequent; flowers: November.

Aeschynomene indica Linn. (M 50). 20558 Padampur, common; flowers and fruits: November.

Albizia lebbeck (Linn.) Benth. (H 332). 20885 Lergaon, in outskirts of forests, frequent; fruits: November.

- Albizia odoratissima** (Linn. f.) Benth. (H 333). 20971 Satyamba pat, occasional; fruits: November.
- A. procera** (Roxb.) Benth. (H 331). 20643 Borasambar, 20839 Mahadevjharan, common; fruits: November.
- Bauhinia malabarica** Roxb. (H 308). 12735 Lulung, 20812 Batipathar, frequent; fruits: February—November.
- B. purpurea** Linn. (H 310). 12579 Nigirda, 20720 Batipathar, frequent; flowers: November, fruits: February.
- B. racemosa** Lamk. (H 308). 20807 Batipathar, frequent along footpaths; fruits: November.
- B. retusa** Buch.-Ham. (M 57). 12514 Simlipal, frequent; fruits: February.
- B. vahlii** Wt. & Arn. (H 310). 8400 Ghatgaon, 12581 Nigirda, common; flowers: June, fruits: February.
- B. variegata** Linn. (H 309). 12648 Barheipani, common; flowers: February.
- Butea monosperma** (Lamk.) Taub. (M 54). 8337 Sukinda, 12391 Bhanjabasa, common; flowers February, fruits: June (*Palash*).
- B. parviflora** Roxb. (H 281). 21101 Harishankar, common; fruits: November.
- Caesalpinia digyna** Rottl. (H 316). 12364 Karanjia, common; flowers and fruits: February.
- Canavalia gladiata** (Jacq.) DC. (M 54). 12427 Gurguria, river bank, occasional; fruits: February.
- Atylosia scarabaeoides** (Linn.) Benth. (M 52). 12634 Dudruchampa, 12672 Barheipani, 20609, Borasambar, common; flowers and fruits: November—February (*Kulthia*).
- Cassia fistula** Linn. (H 302). 8224 Sukinda, 12675 Barheipani, 20959 on Satyamba pat, common; flowers: June, fruits: November—February (*Sunari*).
- C. mimosoides** Linn. (M 57). 21002 Satyamba, occasional; fruits: November.
- C. occidentalis** Linn. (H 304). 8689 Ghatgaon, 21030 Manbhang, occasional; flowers and fruits: July—November.
- C. tora** Linn. (H 304). 12490 Jenabil, 20521 Padampur, frequent; flowers: November, fruits: February.
- Clitoria ternatea** Linn. (H 293). 20870 Lergaon; flowers and fruits: November (*Krishna aparajita*).
- Crotalaria albida** Heyne (H 231). 12483 Jenabil, 12567 Nigirda, 20916 Khandijharan; flowers: November—February.
- C. calycina** Schrank. (M 46). 20828 Mahadevjharan, rare; fruits: November.
- C. mysorensis** Roth (H 231). 12536 Simlipalgarh, 20883 Lergaon, frequent; flowers and fruits: November—February. New record for Orissa.
- C. prostrata** Roxb. (M 45). 12334 Bhanjabasa, 20883 Lergaon, frequent; flowers and fruits: November—February.
- C. saltiana** Anders. (M 46). 8720 Keonjharagar, common; flowers and fruits: July.
- C. sericea** Retz. (M 46). 12316 Bhanjabasa; flowers and fruits: February.
- Dalbergia lanceolaria** Linn. f. (H 296). 20809 Batipathar, common; fruits: November.
- D. volubilis** Roxb. (H 295). 12368 Karanjia, 12745 Kachudahan, frequent; flowers: February.
- Desmodium diffusum** DC. (M 51). 12282 Bhanjabasa, common; fruits: February.
- D. gangeticum** (Linn.) DC. (H 264). 8250 Sukinda, 12804 Lulung, 12755 Kachudahan, frequent; flowers: February, fruits: June (*Salapheni*).
- D. motorium** (Houtt.) Merrill (= *D. gyrans* DC.). (H 266). 20711 Batipathar, common; fruits: November.
- D. polycarpum** (Poir.) DC. (H 264). 12303 Bhanjabasa, 20918 Mahadevjharan, common; fruits: February.
- D. pulchellum** Benth. (H 261). 12302 Bhanjabasa, 20668 Batipathar, common; fruits: November.
- D. triflorum** (Linn.) DC. (H 266). 20541 Padampur, frequent; flowers: October.
- Dolichos biflorus** Linn. (H 292). 20921 Khandijharan, cultivated; flowers: November.
- D. lablab** Linn. (H 291). 20653 Borasambar, cultivated; flowers and fruits: November.
- Galactia longifolia** Benth. (M 54). 12798 Champagarh, occasional; fruits: February.
- G. tenuiflora** Wt. & Arn. (M 251). 21009 Narsingh-nath, frequent; fruits: November.
- G. tenuiflora** Wt. & Arn. var. *villosa* Baker (H 277). 21003 Harishankar, frequent; fruits: November (*Banaklata*). New record for Orissa.
- Indigofera linnaei** S. Ali (= *I. enneaphylla* Linn.). (M 47). 8376 Deogaon, 8677 Ghatgaon, frequent; flowers: July.
- I. glandulosa** Roxb. ex Willd. (M 237). 20586 Malda, occasional in rice fields; flowers and fruits: November. New record for Orissa.
- I. astragalina** DC. (= *I. hirsuta* Linn.) (M 48). 20713 Batipathar, occasional; flowers and fruits: November. New record for Orissa.
- I. linifolia** Retz. (H 237). 20605 Borasambar, cultivated; fruits: November.
- I. pulchella** Roxb. (H 240). *Swarbhang*, 12279 Bhanjabasa, 12616 Burhabalang, 12662 Barheipani, frequent; flowers and fruits: February—November.
- Leucaena leucocephala** (Lam.) de Wt. [= *L. glauca* (Willd.) Benth.]. (M 59). 8362 Deogaon, occasional; fruits: June.
- Mezoneuron cucullatum** Wt. & Arn. (H 315). 12733 Kachudahan, frequent; fruits: February.
- Millettia auriculata** Baker (H 246). 8602 Palaspal, 8497 Kholupal, 8670 Bankura, 12301 Bhanjabasa, 12682, 12683 Dudruchampa, common; flowers: July, fruits: February.

- Millettia racemosa** Benth. (H 246). 20960 Satyamba ; fruits: November.
- Mimosa himalayana** Gamble (H 322). 8227 Sukinda, 8690 Keonjhar, 12219 Dukura, 12778 Kachudahan, common ; flowers and fruits: June—July.
- M. pudica** Linn. (H 322). 12777 Kachudahan, 21084 Barheipani. common ; flowers and fruits: July—November.
- Moghania chappar** (Ham. ex Benth.) O. Ktze. (= *Flemingia chappar* Buch.-Ham.). (H 267). 8491 Palaspal, 12325 Bhanjabasa, frequent ; flowers: February, fruits: July (*Shyamlata*).
- M. macrophylla** (Willd.) O. Ktze. (H 270). 12272 Bhanjabasa, common ; inside forests, flowers: February.
- M. paniculata** (Wall.) H. L. Li (= *F. paniculata* Wall.). (H 268). 12298 Bhanjabasa, 12516 Simlipal forest, occasional ; flowers: February.
- M. stricta** (Roxb.) O. Ktze. (= *F. stricta* Roxb.). (H 269). 12268 Bhanjabasa, occasional ; flowers: February.
- M. strobilifera** (Linn.) St. Hil. ex Jacks. (= *F. strobilifera* R. Br. ex Ait.). (H 268). 20667 Batipathar, frequent on hills ; flowers: November. New record for Orissa.
- Mucuna prurita** Hook. (H 283). 20749 Batipathar, 20788 Malda, 20886 Lergaon, common ; flowers and fruits: November (*Bai-Bidong* or *Kalakan-cha*).
- Neptunia oleracea** Lour. (M 58). 20785 Batipathar, floating on water ; flowers and fruits: November.
- Ougeinia oojenensis** (Roxb.) Hochreut. (= *O. dalbergioides* Benth.) (H 259). 12462 Gurguria, frequent ; flowers: February.
- Peltophorum pterocarpum** (DC.) Backer ex K. Heyne (= *P. ferrugineum* Benth.) (H 314). 21070 Padampur, occasional ; fruits: November.
- Phaseolus adenanthus** G. F. W. Meyer (M 230). 12677 Barheipani, frequent ; flowers: February. New record for Orissa.
- Pithecellobium dulce** Benth. (H 335). 20577 Padampur, frequent ; flowers: November. Native of Mexico.
- Pongamia pinnata** (Linn.) Pierre (M 56). 20503 Hirakud, frequent throughout Orissa in plains ; fruits: November (*Karanja*).
- Pterocarpus marsupium** Roxb. (H 297). 12645 Barheipani, 20917 Khandijharan, common ; flowers and fruits: November (*Bija*).
- Sesbania bispinosa** (Jacq.) Faw. & Rendle (M 49). 20753 Batipathar, cultivated ; fruits: November.
- Shuteria vestita** Wt. & Arn. 12458 Gurguria, occasional ; fruits: February.
- Smithia conferta** Smith (M 49). 20555 Padampur, 20989 Satyamba, frequent amidst grasses ; flowers October, fruits: November.
- Sophora bakeri** Clarke (H 300). 8740 Keonjhar, occasional ; flowers and fruits: July.

- Tamarindus indica** Linn. (H 311). 8398 Ghatgaon, 12715 Karanjia, 20905 Khandijharan, common ; fruits: June—November (*Tentuli*).
- Tephrosia purpurea** Pers. (M 48). 12239 Dukura, 12795 Nigirda, 20520 Padampur, 20604 Malda, 20690 Batipathar, frequent on dry soil ; flowers and fruits: November—February (*Kulathia*).
- Teramnus labialis** Spreng. (M 53). 21144 Batipathar ; weed in cultivated fields ; fruits: November.
- Uraria lagopodioides** Merr. (H 256). 20726 Batipathar, occasional ; fruits: November.
- Vigna sinensis** (Linn.) Savi ex Hassk. (= *V. catjang* (Walp.). (M 56). 20879 Lergaon, cultivated ; flowers and fruits: November (*Bargudi*).
- Xylia xylocarpa** Taub. (M 57). 8234 Sukinda, common ; fruits: June.
- Zornia diphylla** (Linn.) Pers. (M 49). 20581 Malda, common in dry open fields ; flowers: November.

ROSACEAE

- Pyrus communis** Linn. (H 341). 12388 Malda, cultivated ; flowers: February.
- Rubus ellipticus** Smith (M 61). 12617 Burhabalang, occasional ; along river banks ; flowers: February.

CRASSULACEAE

- Bryophyllum pinnatum** (Lamk.) Oken (M 64). 8370 Deogaon, 12419 Gurguria, 21102 Harishankar ; flowers: February.

DROSERACEAE

- Drosera burmanni** Vahl (M 64). 8259 Sankarpur, 12435 Jenabil, frequent in swampy fields ; flowers: June.

COMBRETACEAE

- Anogeissus latifolia** Wall. (H 355). 8230 Sukinda, 8549 Majhisahi, 12225 Dukura, frequent ; fruits: February—June.
- Calycotris floribunda** Lamk. (H 356). 8231 Sukinda, common in sal forest ; flowers: June.
- Combretum decandrum** Roxb. (H 357). 8244 Sukinda, 12203 Podadiha, 20706 Bhojpurgarh, common ; on the banks of streams ; flowers: November—February, fruits: June (*Banajui*).
- Terminalia arjuna** Wt. & Arn. (H 353). 12221 Sukinda, 12373 Podadiha, 21040 Paikmal, frequent ; fruits: November—February.
- T. bellirica** (Gaertn.) Roxb. (H 352). 8233 Sonajhar hill, 8787 Kanjipani, 12207 Podadiha, frequent ; fruits: November—July (*Baheda*).
- T. chebula** Retz. (H 352). 8321 Sukinda, 8544 Dukura, 8697 Keonjhar, common ; flowers: June, fruits: July.
- T. tomentosa** Wt. & Arn. (H 353). 8219 Sukinda, 8710 Keonjhar, common ; fruits: July (*Asana*).

MYRTACEAE

- Barringtonia acutangula** Gaertn. (M 231). 8328 Sukinda, common ; flowers: June.

- Careya arborea** Roxb. (H 357). 8437 Sukinda, 20680 Batipathar, frequent; fruits: June—November.
Cleistocalyx operculatus (Roxb.) Merr. & Perry (M 66). 8783 Kanjipani, occasional; fruits: July.
Eucalyptus terminalis F. v. M. 12632 Dudruchampa, cultivated; flowers: February. Introduced.
Psidium guyava Linn. (H 364). 8765 Keonjhargarh, 21123 Harishankar, 20898 Khandijharan, common, cultivated; flowers and fruits: November.
Syzygium cumini (Linn.) Skeels (M 65). 8213 Sukinda, common; fruits: June.
S. jambos (Linn.) Alston (M 66). 21122 Harishankar, frequent; flowers: November.

MELASTOMACEAE

- Melastoma malabathricum** Linn. (H 371). 8575 Meghanada Parbat, 8639 Bankura, 12476 Gurguria, 21126 Harishankar, occasional along streams; flowers: June—February.
Memecylon umbellatum Burm. (= *M. edulae* Roxb.) (M 67). 8434 Ghatgaon, occasional; flowers: June.
Sonerila tenera Royle (M 67). 20699 Batipathar, frequent along paths on moist soil; fruits: November.

LYTHRACEAE

- Ammannia baccifera** Linn. (H 379). 12708 Barheipani, occasional; common near falls; flowers: February.
A. cordata Wt. & Arn. (= *A. salicifolia* Monti) (H 379). 21097 Harishankar, frequent; flowers: November. New record for Orissa.
A. rotundifolia Buch.-Ham. (H 377). 12434 Jenabil, common in alluvium; flowers: February.
Lagerstroemia parviflora Roxb. (H 375). 8220 Sukinda, 8752 Gandhamardan, 12642 Barheipani, 20808 Batipathar, 20968 Satyamba pat (very stunted), frequent; flowers and fruits: November—February (*Sidha*).
Lawsonia inermis Linn. (H 374). 21067 Manbhang, hedge plant; flowers and fruits: November.
Rotala indica (Willd.) Koehne (= *A. indica* Lamk.) (H 327). 21097 Harishankar, common in marshy fields; flowers: November.
Woodfordia fruticosa (Linn.) Kurz (M 67). 8246 Sukinda, 8756 Gandhamardan parbat, 12230 Dukura 12725 Lulung, 20895 Khandijharan, on open dry soil; flowers and fruits: November—February (*Dhataki*).

ONAGRACEAE

- Ludwigia parviflora** Roxb. (H 382). 20563 Padampur, 20774 Amarakhol, common in drying puddles; flowers: November (*Bada-Pani Dhataki*).

PASSIFLORACEAE

- Passiflora foetida** Linn. (H 334). 8346 Sukindagarh, occasional; flowers: June.

CUCURBITACEAE

- Bryonopsis amplexicaulis** Lamk. (M 67). 20896

- Khandijharan, common; climber, fruits: November (*Sibalingi, Kau-dia*).
Coccinia cordifolia (Linn.) Cogn. (= *Cephalandra indica* Naud.). (H 399). 12249 Barheipani, common on hedges; flowers: November.
Melothria maderaspatana (Linn.) Cogn. (= *Mukia maderaspatana* Kurz) (H 391). 20694 Batipathar, frequent; fruits: November.
M. heterophylla (Lour.) Cogn. (H 389). 8249 Sukinda, 8784 Kanjipani; flowers: July.
Trichosanthes bracteata (Lamk.) Voigt. (= *T. palmata* Roxb.). (H 387). 12627 Dudruchampa, occasional; fruits: February.

BEGONIACEAE

- Begonia picta** Smith (M 68). 8737 Keonjhargarh, 20662 Batipathar, 20947 Satyamba, frequent, in moist situations and in shade; fruits: June—November.

FICOIDACEAE

- Glinus oppositifolius** (Linn.) A. DC. (= *Mollugo oppositifolia* Linn.). (M 25). 8275 Sukinda, frequent; flowers: June.
Mollugo pentaphylla Linn. (= *M. stricta* Linn.) (H 48). 8430 Ghatgaon, 8530 Palaspal, 20532 Padampur, very common in open fields; flowers: July—November.

UMBELLIFERACEAE

- Centella asiatica** (Linn.) Urban (M 68). 20871 Leragaon, common along roadsides; fruits: November (*Thalkudi, Brahmi*).
Eryngium foetidum Linn. 8716 Keonjhargarh, 12630 Dudruchampa, frequent; flowers: July. New record for Bihar and Orissa.
Peucedanum nagpureense Prain (H 413). 20966 Satyamba Pat, occasional; fruits: November (*Banshigopal*).
Pimpinella heyneana Wall. (M 69). 12394 Gurguria, 20698 Batipathar, 20951 Satyamba Pat, frequent; flowers: November—February (*Banshibuti*).

RUBIACEAE

- Adina cordifolia** (Roxb.) Hook. f. ex Brandis (H 421). 12713 Gurguria, 20642 Borasambar, common; fruits: November (*Kurum*).
Anthocephalus cadamba (Roxb.) Miq. (H 421). 8658 Bankura; flowers: July.
Borreria articularis (Linn. f.) F. N. Will. (= *Spermacoce hispida* Linn.). (H 451). 8477 Palaspal, 20506 Hirakud dam site, very common; flowers: June—November.
B. stricta (Linn. f.) Schum. (= *S. stricta* Linn. f.). (H 460). 20607 Borasambar, occasional on rocky soil; flowers: November.
Canthium dicoccum (Gaertn.) Merr. (= *C. didymum* Gaertn.). (H 438). 8340 Sukinda, 12655 Barheipani, occasional; flowers and fruits: June (*Dolsingh*).

- Chasalia ophioxylodes** (Wall.) Craib. (= *C. curviflora* Thw.). (H 441). 12600 Dudruchampa, occasional; flowers: February.
- Dentella repens** (Linn.) Forst. (M 71). 8257 Sukinda, 8354 Deogan, frequent in cultivated fields; flowers and fruits: November–February.
- Gardenia latifolia** Aiton (H 431). 8288 Sukinda, cultivated; fruits: June.
- Hedyotis hispida** Retz. (H 445). 12574 Nigirda, occasional; fruits: February. New record for Orissa.
- Hymenodictyon excelsum** Wall. (H 425). 12232 Dukura, 12618 Burhabalang, 20746 Batipathar, common; fruits: November–February.
- Ixora arborea** Roxb. ex Smith (= *I. parviflora* Vahl). (H 435). 8236 Sukinda, 8790 Malaygiri, 12209 Podadiha, frequent; flowers: February, fruits: June–July.
- I. undulata** Roxb. (H 434). 8693 Telkoi, occasional; flowers: July.
- Knoxia brachycarpa** R. Br. ex Hook. f. (M 73). 20691 Batipathar, 20925 Satyamba Pat, occasional; flowers: November.
- Lasianthus tubiferus** Hook. f. 12326 Bhanjabasa, 12421 Gurguria, 12664 Barheipani, frequent; in moist valley; fruits: February. New record for Bihar and Orissa.
- Meyna laxiflora** Robyns (= *Vangueria spinosa* Roxb.). (H 439). 8222 Sukinda, 8432 Ghatgaon, 8648 Banguru, abundant; fruits: July (*Kanta-Mushulia*). New record for Orissa.
- Mitragyna parvifolia** (Roxb.) Korth. (H 422). 8228 Sukinda, 8543 Barheipani, common; fruits: June–July (*Kelikadamba*).
- Morinda coreia** Buch.-Ham. (= *M. tinctoria* Roxb.). (H 423). 8226 Sukinda, occasional; fruits: June (*Aachhu*).
- Oldenlandia affinis** (R. & S.) DC. [= *O. dichotoma* (Koen. ex Roth) Hook. f.]. (H 448). 20939 Kapildhar, frequent; flowers: November. New record for Orissa.
- O. diffusa** Roxb. (H 447). 8449 Palaspal, occasional; near water edge of Kosai river, flowers: July. New record for Orissa.
- O. herbacea** (Linn.) Roxb. (H 447). 8714 Keonjhar, 20529 Padampur, frequent; flowers: June–November.
- O. umbellata** Linn. (M 72). 8387 Deogaon, frequent; flowers: June.
- Paederia foetida** Linn. (M 71). 20907 Khandijharan, occasional, common, in sandy stream side; fruits: November (*Prasaruni*).
- Pavetta crassicaulis** Bremek. (= *P. indica* non Linn.). (H 435). 8302 Sukinda, frequent; flowers: June.
- P. tomentosa** (Haines) Bremek. (= *P. indica* Linn. var. *tomentosa* Haines). (H 435). 8436 Ghatgaon, 12469 Gurguria, 20936 Kapildhar, frequent along foot-paths through the forest; flowers: June, fruits: November–February.

- Psychotria adenophylla** Wall. (H 440). 12273 Bhanjabasa, occasional; fruits: February.
- P. denticulata** Wall. (H 441). 20813 Batipathar, occasional; fruits: November.
- Randia fasciculata** DC. (H 433). 8580 Banguru, 12318 Bhanjabasa, common all along the way; fruits: February–June. New record for Orissa.
- Rubia cordifolia** Linn. (M 73). 12659 Barheipani, rare, in moist valley; flowers: February.
- Spermadietyon suaveolens** Roxb. (= *Hamiltonia suaveolens* Roxb.). (H. 442). 20942 Satyamba, 20973 Narsinghnath, occasional; flowers: November.
- Wendlandia tinctoria** DC. (M 70). 8492 Palaspal, common; flowers and fruits: July.
- Xeromphis spinosa** (Thunb.) Keay [*Randia dumentorum* (Retz.) Poir.]. (H 432). 8230 Sukinda, 8412 Ghatgaon, 8444 Rebna, 12369 Karanjia, occasional; flowers: February, fruits: June, (*Karhada*).

COMPOSITAE

- Acanthospermum hispidum** DC. (M 77). 20527 Padampur, abundant, in wet open places; flowers and fruits: October (*Gokhura*). Introduced from S. America.
- Adenostemma lavenia** (Linn.) Kuntze (= *A. viscosum* Forst.). (M 74). 20806 and 20831 Batipathar, 20953 Satyamba, 21016 Kapildhar, occasional; along banks of streams; flowers: November.
- Ageratum conyzoides** Linn. (H 462). 8445 Rebna, 8715 Baitarani source (Keonjhar), 12304 Bhanjabasa, 12765 Kachudahan, 20582 Malda, abundant near water edge; flowers: February–July (*Pokasunga*).
- Bidens pilosa** Linn. (M 78). 8788 Kanjipani, 20652 Borasambar, 20937 Kapildhar, occasional; flowers: July, fruits: November.
- B. biternata** (Lour.) Merr. & Sherff. 20824 Mahadevjharan, abundant in rice fields; Flowers and fruits: November.
- Blumea flava** DC. (H 472). 13566 Nigirda, in the dry soil associated with *Phoenix acaulis*, occasional; flowers: February.
- B. fistulosa** (Roxb.) Kurz (= *B. glomerata* DC.; *B. nodiflora* Hook. f.). (H 569). 12259 Bhanjabasa, 12511 Simlipal, 12686 Chahala, 12785 Kachudahan, occasional; flowers and fruits: February.
- B. lacera** DC. (= *B. subcapitata* DC.). (H 470). 12543 Balarampur, 12622 Burhabalang, frequent, along river bank; flowers: February.
- B. lanceolaria** (Roxb.) Druce (= *B. myriocephala* DC.; *B. spectabilis* DC.). 12457 Jenabil, 12633 Dudruchampa, occasional; flowers: February. New record for Bihar and Orissa.
- Caesulia axillaris** Roxb. (H 475). 20562 Padampur, abundant; flowers: October.
- Centipeda orbicularis** Lour. (H 488). 8534 Palaspal, 12767 Kachudahan, occasional; rooting, in sand of the brick floor; flowers: February–July.

Centratherum anthelminticum (Willd.) Kuntze (= *Vernonia anthelmintica* Willd.). (M 73). 20765 Amarakhol, abundant; flowers: November.

Cyathocline purpurea (Don) Ktze. (= *C. lyrata* Cass.). (M 74). 12459 Jenabil, occasional; next to water edge of the streams, in moist shady places also; flowers: February.

Eclipta prostrata (Linn.) Linn. (= *E. alba* Hassk.). (H 480). 8353 Deogaon, 8701 Keonjhar, 20569 Padampur, frequent, along bundhas of rice fields; flowers and fruits: June—October (*Bhrungaraj*).

Elephantopus scaber Linn. (H 461). 20590 Malda, frequent, in grassland under shade of mango gardens, Manbhang; flowers and fruits: October (*Chhota-Rasna*). Medicinal.

Emilia sonchifolia DC. (H 489). 20595 Malda, 20912 Khandijharan, abundant in grass fields; flowers: October—November.

Glossocardia bosyalaea (Linn. f.) DC. (= *G. linearifolia* Cass.). (H 485). 20505 Hirakud area, frequent; flowers: October.

Glossogyne pinnatifida DC. (M 78). 8405 Ghatgaon, occasional; fruits: June.

Gnaphalium indicum Linn. (H 474). 12385 Podadiha, 21078 Harishankar, abundant, in muddy banks also in grass fields; flowers: November—February.

G. luteo-album Linn. (M 76). 12482 Jenabil, 12769 Kachudahan, occasional; flowers: February.

G. purpureum Linn. (M 76). 12806 Lulung, abundant, in wet soil; flowers: February.

Grangea maderaspatana Poir. (M 74). 8552 Buripada, occasional; Flowers: July.

Laggera alata Schult.-Bip. (M 75). 20963b Satyamba Pat, occasional; flowers: November (*Gota-Khadaka*).

Sonchus oleraceus Linn. (H 498). 8718 Baitarani source-Keonjhar, occasional; flowers: July.

Sphaeranthus indicus Linn. (H 473). 12361 Bhanjabasa, 20769 Amarakhol, 21055 Paikmal, abundant in marshy places; flowers: February—November (*Bokashungi*, *Gurakmundi*, *Bhuinkadamba*).

Tagetes patula Linn. (H 487). 21135 Harishankar road, cultivated; flowers: November.

Tridax procumbens Linn. (M 79). 8374 Deogaon, 8431 Anandpur, 12726 Lulung, 20606 Borasambar, frequent on dry soil; flowers: February—November (*Bishalyakarani*).

Vernonia patula (Dryand.) Merr. (M 73). 8277 Sukinda, 8378 Deogaon, 8407 Anandapur, 8550 Buripada, 20531 Padampur, 20969 Harishankar, 21063 Manbhang, abundant; flowers and fruits: June—November.

V. divergens (Roxb.) Edgew. (M 73). 12496 Jenabil, 20957 Satyamba, abundant; flowers: November—February (*Pitkamal*).

V. roxburghii Less. (H 459). 12327 Bhanjabasa,

12363 Karanjia, 20686 Batipathar, frequent; flowers: November—February.

Vicoa cernua Dalz. (M 76). 20940 Satyamba, abundant; flowers: November, Haines did not record this species, Mooney reported it from Kalahandi State at its northernmost limit.

V. indica (Willd.) DC. (H 476). 12309 Bhanjabasa, 12509 Simlipal, 12811 Lulung, 20762 Batipathar, 20931 Saptadhar, abundant along roadsides; flowers: February—November (*Banasebati*).

Wedelia wallichii Less. (M 77). 21061 Manbhang, abundant, in rice fields; flowers and fruits: November (*Parbatjeera*).

Xanthium strumarium Linn. (H 478). 20768 Amarakhol, abundant; fruits: November.

Youngia japonica (Linn.) DC. (M 81). 12311 Bhanjabasa, 12754 Kachudahan, - occasional; flowers: February.

CAMPANULACEAE

Campanula canescens Wall. (M 82). 12621 Burhabalang, abundant, in sandy soil; flowers: February.

Cephalostigma hirsutum Edgew. (H 502). 20995 Patna, abundant; fruits: November. New record for Orissa.

Lobelia alsinoides Lamk. (= *L. trigona* Roxb.). (H 500). 12201 Podadiha, 21097 Harishankar, abundant in marshy places; flowers: November—February. New record for Orissa.

L. heyneana Roem. & Sch. (= *L. trialata* Buch.-Ham.). (H 501). 20988 Patna, occasional amidst grasses; flowers: November. New record for Orissa.

Sphenoclea zeylanica Gaertn. (H 503). Ravenshaw College compound, Cuttack; fruits: June.

PLUMBAGINACEAE

Plumbago zeylanica Linn. (M 83). 20869 Lergaon, cultivated; flowers: November (*Chintamula*).

MYRSINACEAE

Ardisia solanacea (Poir.) Roxb. (H 509). 8484 Palaspal, 8638 Banguru, 12467 Jenabil, 12598 Dudruchampa, 12654 Barheipani, 20840 Mahadev-jharan, abundant, in alluvial soil; flowers and fruits: February—July.

Embelia tsjeriam-cottam (R. & S.) A. DC. (M 83). 8493 Palaspal, 8654 Bankura, 12643 Barheipani, 21006 Satyamba, frequent along forest path; flowers and fruits: February—July (*Baibidanga*).

SAPOTACEAE

Madhuca indica Gmel. (= *Bassia latifolia* Roxb.). (H 511). 8229 Sukinda, 8545 Burhipada, 12214 Dukura, occasional; flowers and fruits: June—February (*Mahula*).

Mimusops elengi Linn. (H 513). 21012 Saptadhar, cultivated; fruits: November.

EBENACEAE

Diospyros peregrina (Gaertn.) Gurke (= *D. embryo*)

pteris Pers.). (H 517). 8329 Sukindagarh, 8459 Palaspal, 12697 Barheipani, 20803 Batipathar, along course of rivers, abundant; fruits: June—November (*Mankada-Kendu*).

Diospyros montana Roxb. (H 516). 8233 Sukinda, occasional; fruits: June.

D. sylvatica Roxb. (H 518). 8202 Sukinda, 8485 Palaspal, 12698 Barheipani, frequent; flowers and fruits: February—June.

D. melanoxylon Roxb. (H 519). 8225 Sukinda, 12213 Dukura, abundant; flowers and fruits: February—June (*Kendu*). Leaves used for making 'bidi' (country cigarette).

STYRACACEAE

Styrax serrulatum Roxb. (H 522). 12559 Nigirda stream, occasional; fruits: February.

SYMPLOCACEAE

Symplocos spicata Roxb. (M 84). 12491 Jenabil, frequent; fruits: February.

S. racemosa Roxb. (H 521). 8511 Palaspal, frequent; fruits: July (*Mudha*).

OLEACEAE

Jasminum arborescens Roxb. (H 525). 8327 Sukindagarh, 8433 Ghatgaon, frequent; flowers and fruits: June (*Bonomalli*).

J. sambac Aiton (M 84). 8206 Sukinda, 8596 Meghanada parbat, 8662 Bunkura, frequent; flowers and fruits: June—July.

J. scandens Vahl (H 524). 12278 Bhanjabasa, frequent, next to a stream; flowers: February.

Linociera ramiflora (Roxb.) Wall. ex G. Don (= *L. intermedia* Wt.). (M 85). 8669 Burhipada, 12508 Simlipalgarh, 12701 Barheipani, occasional; flowers: February—July.

L. malabarica Wall. (M 85). 12374 Karanjia, abundant; flowers and fruits: February.

Nyctanthes arbortristis Linn. (H 526). 12504 Nigirda, 20759 Batipathar, abundant at edge of forest; flowers: November (*Ganga-Siuli*).

APOCYNACEAE

Aganosma dichotoma (Roth) K. Schum. (M 225). 12720 Lulung, rare; fruits: February (*Malati*).

Allamanda cathartica Linn. (H 532). 8795 Kanjipani, 20867 Lergaon, cultivated; flowers: July—November (*Kanakchampa*). American species.

Alstonia scholaris Brown (H 539). 12217 Dukura, 21023 Kapildhar, frequent on roadsides; tree, flowers: November, fruits: February (*Chatiana*).

A. venenata R. Br. (M 86). 8521 Palaspal, 8750 Gandhamardan Parbat, occasional; flowers and fruits: June—July.

Catharanthus pusillus G. Don (= *Lochnera pusilla* Schum.; *Vinca pusilla* Murr.). (M 85). 8531 Palaspal, 8678 Ghatgaon, 20513 Padampur, abundant, in open soil; flowers and fruits: July—November.

Holarrhena antidysenterica Wall. (H 538). 8215

Sukinda, 8404 Ghatgaon, 12220 Dukura, 12376 Podadiha, 12674 Barheipani, 20787 Batipathar, frequent, in dry sandy places; flowers and fruits: February—November (*Korai*).

Ichnocarpus frutescens R. Br. (H 546). 12426 Jenabil, occasional; flowers: February.

Lochnera rosea (Linn.) Reichb. (= *V. rosea* Linn.). (H 537). 21099 Harishankar, cultivated; flowers: November (*Sadabihari*).

Nerium odorum Soland. (H 541). 8672 Harichandpur, cultivated; flowers: July.

Rauvolfia serpentina Benth. (H 539). 8625 Palaspal, 12454 Gurguria, 12799 Lulung, 20743 Borasambar, scarce but cultivated at Lulung; flowers and fruits: February—November (*Sarpagandha*).

Tabernaemontana divaricata (Linn.) R. Br. (= *T. coronaria* Willd.). (H 537). 20900 Khandijharan, abundant, on the river bank; flowers: November (*Tagar*).

Thevetia peruviana (Pers.) K. Schum. (= *T. nerifolia* Juss.). (H 535). 8270 Sukinda, 8686 Ghatgaon, 20859 Lergaon, frequent; flowers and fruits: June—November (*Raktakatha Champa*).

Wrightia tomentosa Roem. & Sch. (H 541). 8589 Meghanada parbat, 20814 Batipathar, occasional; flowers and fruits: June—November.

ASCLEPIADACEAE

Calotropis gigantea (Linn.) Br. (H 550). 8303 Sukinda, 12901 Lulung, 20722 Batipathar, abundant; flowers: February—November (*Arak*).

Cryptolepis buchanani Roem. & Sch. (H 549). 8300 Sonajhar hill-Sukinda, 8419 Ghatgaon, 20908 Khandijharan, frequent; flowers: June, fruits: November (*Gopakahnulata*).

C. elegans Wall. (H 549). 8319 Deogaon, occasional; vegetative: June (*Bansha Khapuri*).

Cynanchum callialata Buch.-Ham. (H 555). 20962 Satyamba, occasional; fruits: November (*Sorpaketan-Gada*). New record for Orissa.

Dregea volubilis (Linn. f.) Benth. ex Hook. f. (H 559). 8688 Ghatgaon, occasional; flowers: July. New record for Orissa.

Hemidesmus indicus (Linn.) Br. (H 548). 8408 Ghatgaon, 20909 Khandijharan, abundant; vegetative: June, flowers: November (*Anantamula*).

Heterostemma tanjorensis Wt. & Arn. 20963 Satyamba, occasional; fruits: November (*Bada Bhulen*). New record Bihar and Orissa.

Hoya fusca Wall. 12417 Gurguria, frequent; floral parts fallen off: February. New record for Bihar and Orissa.

Marsdenia tenacissima Wt. & Arn. (H 558). 8773 Telkoi, 21136 Harishankar, rare; flowers: July—November.

Tylophora fasciculata Buch.-Ham. (M 87). 8989 Malyagiri, 20967 Satyamba, occasional; flowers and fruits: July—November (*Sahasravadi*).

LOGANIACEAE

- Strychnos nux-vomica** Linn. (H 564). 12211 Sukinda, common, in open ground; fruits: February (Kochila).
S. potatorum Linn. f. (H 564). 8289 Sukinda, 8465 Rebna, 12315 Bhanjabasa, 20755 Batipathar, frequent along slopes of hill; fruits: February—November.

GENTIANACEAE

- Canscora decussata** Roem. & Sch. (M 89). 20639 Borasambar, occasional, in open fields; flowers: November.
C. diffusa R. Br. (H 569). 8599 Palaspal, 20710 Batipathar, abundant near water's edge; flowers: July—November.
Centaurium roxburghii (Don.) Druce (M 89). 12387 Podadiha, 12544 Balarampur, 12752 Lulung, abundant, in the muddy black soil of the river bank and also in the crevices of rocks and boulders; flowers: February.
Exacum pedunculatum Linn. (H 567). 20657 Batipathar, 20934 Kapildhar, frequent; flowers and fruits: November. New record for Orissa.
Nymphoides cristatum (Roxb.) O. Kuntze [= *Limnanthemum cristatum* (Roxb.) Griseb.]. (H 571). 20564 Padampur, abundant, rooting in sandy bed of tank; flowers: November.
N. indicum (Linn.) O. Kuntze [= *L. indicum* (Linn.) Griseb.]. (H 570). 8264 Sukinda, abundant; flowers and fruits: June (*Panisimuli*).

HYDROPHYLLACEAE

- Hydrolea zeylanica** (Linn.) Vahl (H 571). 21033 Manbhang, abundant; flowers: November.

BORAGINACEAE

- Coldenia procumbens** Linn. (H 577). 8798 Keonjhar, occasional, on roadsides; flowers: July.
Cynoglossum furcatum Wall. (M 256). 20950 Satymba pat, rare amidst grasses; fruits: November.
C. glochidiatum Wall. (= *C. denticulatum* A. DC.) (M 90). 12264 Bhanjabasa, rare; fruits: February.
Ehretia laevis Roxb. (H 576). 8417 Ghatgaon, Gurguria, occasional; flowers: February.
Heliotropium indicum Linn. (M 90). 8597 Palaspal, occasional; flowers and fruits: June.
H. ovalifolium Forsk. (M 90). 8391 Deogaon, 8476 Rebna, 8796 Telkoi, frequent; flowers: June.
Trichodesma indicum R. Br. (H 580). 20910 Khandijharan, frequent; flowers: November (*Turki*).

CONVOLVULACEAE

- Argyreia nervosa** (Burm. f.) Boj. (= *A. speciosa* Sweet). (H 586). 20857 Lergaon, cultivated; fruits: November (*Brudha-Daruk*).
Erycibe paniculata Roxb. (H 605). 8245 Sukinda, 12770 Kachudahan, 20924 Kapildhar, frequent; flowers and fruits: November—February (*Kari*).

Evolvulus alsinoides Linn. (H 585). 8281 Sukinda, 8365 Deogaon, 20517 Padampur, 20956 Satymba, abundant; flowers and fruits: June—November (*Krishna-Ankaranti*).

E. nummularius Linn. (M 91). 8330 Sukindagarh, 12802 Lulung, 21082 Harishankar, abundant, in paddy fields and in open ground; flowers: November—July.

Ipomoea angulata Lamk. (= *I. coccinea* Clarke). 20721 Batipathar, cultivated, flowers: November.

I. aquatica Forsk. (= *I. reptans* Poir.). (M 93). 20754 Batipathar, abundant; flowers: November.

I. bona-nox Linn. var. **grandiflora** (Roxb.) Hook. 20611 Borasambar, frequent (cultivated); flowers and fruits: November.

I. cairica (Linn.) Sweet (= *I. palmata* Forsk.). (H 601). 21115 Harishankar, occasional; flowers: November. ("Flowers occasionally entirely white", see Flora Malesiana 4(1): 478, 1953).

I. carnea Jacq. (H 600). 21071 Padampur, abundant; flowers: November.

I. nil (L.) Roth (= *I. hederaceae* auct non Jacq.). (M 93). 21032 Manbhang, occasional; flowers: November.

I. pes-tigridis Linn. (H 595). 20572 Padampur, 21031 Manbhang, abundant, in cultivated fields; fruits: November.

I. pilosa Sweet (H 595). 20640 Borasambar, 20798 Batipathar, 20913 Khandijharan, abundant; flowers and fruits: November. New record for Orissa.

Lettsomia bella Clarke (M 91). 12297 Bhanjabasa, abundant; fruits: February.

Merremia emarginata (Burm. f.) Hallier f. (= *Ipomoea reniformis* Chois.). (H 596). 20608 Malda, 21069 Manbhang, abundant in rice fields; flowers: November. New record for Orissa.

M. hederacea (Burm. f.) Hallier f. (= *I. chryseides* Ker.). (M 92). 20782 Borasambar, frequent; flowers: November.

M. umbellata (Linn.) Hallier f. (= *I. cymosa* Roem. & Sch.). (H 598). 8709 Baitarani source-Keonjhar, 12722 Lulung, frequent; flowers and fruits: February—July.

M. vitifolia (Burm. f.) Hallier f. (= *I. vitifolia* Sweet). (M 93). 12332 Bhanjabasa, 12742 Kachudahan, frequent; flowers: February.

Rivea hypocrateriformis Chois. (H 586). 12233 Sukinda, frequent on grassy hill sides; fruits: February.

SOLANACEAE

Capsicum frutescens Linn. (H 609). 20860 Lergaon, cultivated; flowers and fruits: November (*Dhanualanka*).

Datura stramonium Linn. (H 614). 20858 Lergaon, cultivated; fruits: November.

Physalis minima Linn. (H 607). 21052 Manbhang, occasional; flowers and fruits: November.

Solanum indicum Linn. (M 94). 8661 Bankura.

12305 Bhanjabasa, 12471 Gurguria, frequent; flowers and fruits: February—July.

Solanum khasianum Clarke, 12485 Gurguria, abundant; fruits: February—July. New record for Bihar and Orissa.

S. torvum Swartz (M 94). 20865 Lergaon, frequent; flowers: November (*Dengabheji*).

S. surattense Burm. f. (= *S. xanthocarpum* Schrad. & Wendl.). (H 613). 8278 Sukinda, 8363 Deogaon, 8540 Burhipada, 20551 Sambalpur, abundant; flowers and fruits: June—November.

SCROPHULARIACEAE

Alectra thomsoni Hook. f. (M 101). 20945 Satyamba, 21108 Harishankar, frequent; root parasite on *Barleria*; flowers and fruits: November (*Krushan-Jubara*).

Angelonia salicariaefolia Humb. & Bonpl. 8392 Deogaon, 21142 Harishankar, cultivated; flowers: June.

Bacopa monnieri (Linn.) Pennell (M 95). Ravensaw College Compound, cultivated; flowers: June.

Centranthera cochinchinensis (Lour.) Merr. (M 100). 20601 Borasambar, 21133 Harishankar, frequent; flowers: November.

Linnophila indica (Linn.) Druce (= *L. gratioloides* R. Br.). (H 628). 8263 Sukinda, 12248 Dukura, 20540 Padampur, abundant, in muddy places; flowers and fruits: February—November.

L. rugosa (Roth) Merrill (M 97). 20856 Lergaon, 21043 Manbhang, abundant; flowers: November (*Bhrungara*).

Lindenbergia indica (Linn.) O. Ktze. (= *L. ruderalis* Voigt.). (M 96). 20946 Satyamba, abundant; flowers: November.

Lindernia anagallis (Burm.) Pennell (M 100). 8265 Sukinda, 20792 Batipathar, abundant in rice fields; flowers: June—November.

L. anagallis var. *grandiflora* (Retz.) Mukerjee (= *Vandellia grandiflora* Spreng.). (H 633). 8475 Rebna, common, near water edge; flowers: June.

L. ciliata (Colsm.) Pennell (M 99). 20594 Malda, occasional, in grass fields, on red soil; flowers: November.

L. cordifolia (Colsm.) Merrill (M 99). 8725 Baitarani source-Keonjhar, abundant in muddy rice fields near water's edge; flowers: July.

Mecardonia dianthera (Sw.) Pennell (M 95). 12386 Podadiha, 12805 Lulung, frequent in the moist soil; flowers: February.

Scoparia dulcis Linn. (H 637). 8452 Rebna, 12488 Gurguria, 20588 Malda, frequent in roadsides; flowers: February—November.

Sopubia delphinifolia G. Don (H 638). 20842 Malda, abundant in rice fields and in swamps; flowers and fruits: November.

OROBANCHACEAE

Aeginetia indica Roxb. (H 642). 12447 Gurguria,

20724 Batipathar, occasional; root parasite; fruits: February—November (*Kalakutamahura*).

LENTIBULARIACEAE

Utricularia stellaris Linn. f. (M 102). 20560 Padampur, abundant in swamps, rice fields and tanks; flowers and fruits: November.

GESNERIACEAE

Didymocarpus pygmaeus Clarke (M 257). 20689 Borasambar, occasional; flowers and fruits: November.

Rhynchosoglossum obliquum Blume (M 257). 20837 Mahadevjharan, occasional, in moist wall of rocks; flowers: November.

Trichosporum grandiflorum D. Don (M 103). 8637 Bankura, 12422 Gurguria, frequent, epiphytic; fruits: February—July.

BIGNONIACEAE

Oroxylum indicum (Linn.) Vent. (M 104). 8500 Palaspal, 8769 Talkoi, 21058 Manbhang, frequent; fruits: July (*Phanaphana*).

Radermachera xylocarpa (Roxb.) K. Schum. (M 105). 21025 Manbhang & Satyamba Pat, occasional; fruits: November (*Akash Garuda*).

Stereospermum personatum (Hassk.) Chatterjee (= *S. chelonoides* of F.B.I.). (M 105). 20796 Borasambar, frequent; fruits: November.

S. suaveolens DC. (M 257). 12377 Podadiha, rare; fruits: February.

PEDALIACEAE

Martynia annua Linn. (= *M. diandra* Glox.). (H 662). 8794 Keonjhar, 20587 Malda, occasional; in grasslands; flowers and fruits: July—November (*Baghanakhi*). Introduced.

Sesamum indicum Linn. (H 661). 20518 Sambalpur, abundant, in fields; flowers: November.

ACANTHACEAE

Adhatoda vasica Nees (H 694). 12512 Simlipal, 21050 Paikmal, frequent; flowers and fruits: February—November (*Vasak*).

Andrographis echinoides Nees (M 119). 20525 Padampur, 20770 Amarakhol, abundant in dry open soil; fruits: November.

A. ovata Benth. (M 118). 12460 Gurguria, occasional; flowers: February.

A. paniculata Nees (H 699). 8778 Keonjhar, 21038 Manbhang, common; flowers: July—November (*Chiraita*, *Bhuilimba*).

Asteracantha longifolia (Linn.) Nees (M 108). 8382 Deogaon, 12243 Dukura, 20784b Amarakhol, common in rice fields and swamps; flowers: November—June.

Barleria cristata Linn. (H 683). 20695 Batipathar, 20990 Patna, 21027 Manbhang, abundant, in swampy floor; flowers: November.

B. prionitis Linn. (H 681). 21010 Narsingnath, scarce; flowers: November (*Kantajati*).

B. strigosa Willd. (H 682). 12306 Bhanjabasa,

- 20664 Batipathar, abundant; flowers: November (*Madhumalati*).
- Blepharis boerhaviaefolia** Pers. (M 119). 20786 Batipathar, frequent; flowers: November.
- Dicliptera micranthes** Nees (M 258). 12300 Bhanjabasa, occasional; flowers: February.
- D. roxburghiana** Nees (M 118). 12503 Jenabil, occasional, next to stream; flowers: February.
- Dipteracanthus prostratus** (Poir.) Nees (= *Ruellia prostrata* Poir.). (H 673). 8218 Sukinda, 8384 Deogaon, 20904 Khandijharan, occasional on alluvial soil; flowers and fruits: November.
- D. suffruticosus** Voigt. (= *R. suffruticosa* Roxb.). (M 108). 8457 Palaspal, occasional; flowers and fruits: June.
- Eranthemum fastigatum** (Lamk.) O. Kuntze (M 116). 12335 Bhanjabasa, 12758 Kachudahan, frequent; flowers and fruits: February.
- E. nervosum** R. Br. (M 115). 12254 Bhanjabasa, frequent; flowers: February.
- E. pulchellum** Roxb. (M 116). 20744 Batipathar, occasional; flowers: November.
- Hemigraphis latebrosa** Nees (M 108). 12336 Bhanjabasa, abundant; flowers: February.
- Hygrophila polysperma** T. Anders. (M 108). 8797 Keonjharagarh, occasional; flowers: July.
- H. angustifolia** R. Br. (M 231). 12456 Gurguria, occasional; fruits: February. New record for Orissa.
- H. salicifolia** var. *assurgens* Clarke 21041 Manbhang, abundant, in swamp; flowers: November. New record for Orissa and Bihar.
- Justicia betonica** Linn. (M 117). 12295 Bhanjabasa, 20987 Patna, abundant; flowers and fruits: November—February.
- J. diffusa** var. *orbiculata* Clarke (H 693). 12803 Lulung, occasional; flowers: February.
- J. quinqueangularis** Koen. (M 117). 12749 Kachudahan, frequent; flowers: February.
- J. peploides** T. Anders. (H 693). 20507 Sambalpur, abundant; flowers: October.
- J. procumbens** Anders. (M 231). 20974 Satyambapat, occasional; flowers: November. New record for Orissa.
- Lepidagathis fasciculata** Nees (H 688). 12757 Kachudahan, occasional; fruits: February.
- L. hyalina** Nees (H 688). 12299 Bhanjabasa, abundant in moist forest floor; flowers: February.
- L. purpuricaulis** Nees (H 687). 12487 Gurguria, abundant in the shade of trees; flowers: February. New record for Orissa.
- Nelsonia campestris** Br. (H 667). 12455 Gurguria, occasional; flowers: February. New record for Orissa.
- Peristrophe bicalyculata** Nees (H 696). 20793 Batipathar, abundant; flowers: November.
- Petalidium barlerioides** Nees (H 677). 12296 Bhanjabasa, abundant, forming sometime large patches; flowers: February.
- Rhinacanthus nasuta** (Linn.) Kze. (M 118). 12256 Bhanjabasa, occasional; flowers: February.
- Rungia parviflora** Nees (H 690). 20528 Padampur, common; flowers: November.
- R. pectinata** (Linn.) Nees (= *R. parviflora* Nees var. *pectinata* Clarke). (H 690). 12234 Udala, 12782 Kachudahan, 20514 Padampur, 20999 Patna, abundant in dry sandy soil, in open fields; flowers: October—February.
- Perilepta auriculata** (Nees) Bremek. (= *Strobilanthes auriculatus* Nees). (M 113). 12637 Barheipani, abundant in the forest floor; vegetative: February.
- Sericocalyx scaber** (Nees) Bremek. (= *S. scaber* Nees) (M 114). 12743 Kachudahan, occasional; flowers: February.
- Thunbergia laevis** Nees (= *T. fragrans* Roxb.). (M 106). 20954 Satyambapat, occasional; flowers and fruits: November (*Banalata*).

VERBENACEAE

- Callicarpa arborea** Roxb. (M 120). 8655 Bankura, 8774 Telkoi, abundant; flowers and fruits: July.
- C. macrophylla** Vahl (M 120). 12466 Gurguria, common; fruits: February.
- Clerodendrum fragrans** (Vent.) R. Br. (M 122). Gandhamardan, frequent; flowers: November. New record for Orissa.
- C. viscosum** Vent. (= *C. infortunatum* Gaertn.). (H 721). 12242 Udala, occasional in sandy humid spots; flowers: February (*Sweta Bhaunarmala*, *Badarasna*).
- C. indicum** (Linn.) Ktze. (= *C. siphonanthus* Br.). (M 121). 8770 Telkoi, 20903 Khandijharan, occasional in moist banks; fruits: July (*Bhaunarmal*).
- C. serratum** (Linn.) Moon (H 722). 20684 Batipathar, common; flowers: November.
- Duranta repens** Linn. (= *D. plumieri* Jacq.). (H 709). 8207 Sukinda, abundant; flowers: June.
- Lantana camara** Linn. var. *aculeata* (Linn.) Mold. (= *L. camara* auct. non Linn.). 12556 Simlipalgarh, occasional, at edge of stream; flowers: February.
- L. indica** Roxb. (H 705). 20868 Lergaon, occasional; flowers: November (*Deb-Ari*).
- Premna herbacea** Roxb. (H 718). 8438 Ghatgaon, occasional; fruits: June.
- P. integrifolia** Linn. (H 715). 8522 Palaspal, occasional; fruits: July.
- P. scandens** Roxb. (H 714). 8760 Gandhamardan Parbat, occasional; fruits fallen off: July.
- Stachytarpheta indica** Vahl (M 120). 8717 Baitarani source-Keonjharagarh, 12684 Chahala, abundant; flowers: July.
- Vitex glabrata** R. Br. (M 121). 8323 Jampasi village, occasional; flowers: June.
- V. quinata** (Lour.) F. N. Will. (M 121). 8216 near the bridge in front of Sukinda I. B., abundant; flowers: June.
- V. negundo** Linn. (H 711). 8372 Deogaon, 8721 Baitarani source-Keonjharagarh, 21040 Manbhang,

abundant on river bank; flowers and fruits: July—November.

Vitex peduncularis Wall. (H 712). 8644 Bankura, rare; flowers and fruits: July.

LABIATAE

Ajuga macrosperma Wall. (M 126). 12636 Dudruchampa, occasional in moist soil; flowers: February.

Colebrookea oppositifolia Smith (M 125). 12308 Bhanjabasa, 12392 Gurguria, 12738 Kachudahan, occasional; flowers: February.

Dysophylla myosuroides Benth. 8786 Kanjipani, rare; flowers: February. New record for Bihar and Orissa.

D. quadrifolia Benth. (M 124). 12794 Nigirda road; flowers: February.

Gomphostemma parviflorum Wall. 8584 Banguru, 12292 Bhanjabasa, common, fruits: February—July. New record for Bihar and Orissa.

Hyptis suaveolens Poir. (H 736). 20585 Malda, frequent; flowers: November.

Lavandula bipinnata (Roth) O. Ktze. (M 124). 20665 Satyamba, occasional; flowers: November (*Bhojraj*).

Leucas biflora R. Br. 20778 Amarakhol, frequent; flowers: November. New record for Bihar and Orissa.

L. lavandulaefolia Sm. (= *L. linifolia* Spreng.). (H 751). 8356 Deogaon, occasional; flowers: June.

L. montana Spreng. var. *scaberula* Hook. f. (H 749). 12333 Bhanjabasa, occasional; flowers: February. New record for Orissa.

Ocimum basilicum Linn. (M 122). 8357 Deogaon, 20801 Batipathar, cultivated; flowers: November—June (*Dahana*).

Orthosiphon rubicundus Benth. (H 730). 8253 Ghatgaon, 8441 Anandapur, 8704 Keonjhar, occasional; flowers: June—July.

O. rubicundus Benth. var. *rigida* Benth. 20881 Batipathar, flowers: November.

Plectranthus coetsa Buch.-Ham. (M 123). 12468 Gurguria, Jenabil, abundant; fruits: February.

Pogostemon plectranthioides Desf. (M 124). 8785 Bokua, 12257 Bhanjabasa, in flat open ground, occasional; flowers and fruits: February—July.

NYCTAGINACEAE

Boerhavia diffusa Linn. (H 757). 8273 Sukinda, 20526 Padampur, abundant, in open ground, in sandy soil; flowers: June—October (*Punarnava*).

AMARANTHACEAE

Achyranthes aspera Linn. (H 767). 20522 Padampur, abundant, in open ground; flowers: October.

Aerva lanata (Linn.) Juss. (H 766). 20533 Padampur, occasional; flowers: October.

A. sanguinolenta (Linn.) Blume (= *A. scandens* Wall.). (H 765). 21011 Narsinghnath, 21127 Harishankar, 20718 Batipathar, occasional; flowers: November (*Chauladhu*).

Amaranthus sessilis (Linn.) DC. (M 129). 20546 Padampur, occasional in muddy bank and amidst grasses, flowers: October.

A. spinosus Linn. (H 761). 12502 Jenabil, occasional; flowers: February.

Celosia argentea Linn. (M 127). 12474 Khejuri, 20509 Sambalpur, 20996 Patna, abundant, under shady places; flowers: November.

Cyathula prostrata Blume 12290 Bhanjabasa, occasional in moist brown wet soil; fruits: February. New record for Bihar and Orissa.

Gomphrena celosioides Mart. (M 129). 8681 Ghatgaon, occasional; flowers: July. New record for Orissa.

Pupalia lappacea Moq. (H 765). 20847 Malda, scarce; fruits: November. New record for Orissa.

CHENOPODIACEAE

Basella alba Linn. (= *B. rubra* Linn.). (M 129). 21044 Manbhang, abundant; flowers: November.

PHYTOLACCACEAE

Giseckia pharnaceoides Linn. (M 29). 8352 Deogaon, rare, on sandy bank of river; fruits: June.

POLYGONACEAE

Antigonon leptopus Hook. & Arn. (H 783). 21124 Harishankar, occasional; tender climber on fences; flowers: November.

Polygonum barbatum Linn. (M 130). 12370 Podadiha, 21077 Harishankar, abundant, on marshy soil, along river bank; fruits: February.

P. hydropiper Linn. var. *flaccidum* (Meisn.) Steward (= *P. rotleri* Roth). (M 130). 12764 Lulung, in the bank of Palpala river, rare; flowers: February.

P. glabrum Willd. (H 776). 12329 Bhanjabasa, 12730 Lulung, 20844 Mahadevjharan, in the sandy rocky bank of river, occasional; flowers: November—February.

P. minus Huds. (H 777). 8598 Banguru, occasional, near whater's edge; flowers: July. New record for Orissa.

PODOSTEMONACEAE

Podostemon wallichii R. Br. Gurguria, common; on rock along bed of stream: February.

ARISTOLOCHIACEAE

Aristolochia indica Linn. (M 259). 8290 Sukinda, occasional; fruits: June (*Pana-Ari*).

PIPERACEAE

Paperomia heyneana Miq. 12493 Jenabil, rare; spike of about 10 cm: February. New record for Bihar and Orissa.

P. reflexa Dietr. (M 131). 12612 Palpala river bank, 12472 Jenabil, occasional, on mossy bark; flowers: February.

LAURACEAE

- Cassytha filiformis** Linn. (H 798). 8343 Sukindagarh, rare; flowers: June.
Litsea monopetala Roxb. (M 132). 12688 Chahala, 12734 Kachudahan, occasional; flowers: February.
Machilus villosa Hook. f. (H 795). 12274 Bhanjabasa, occasional; flowers: February.

PROTEACEAE

- Gravillea robusta** A. Cunn. (H 800). 12647 Dudruchampa, introduced; vegetative: February.

LORANTHACEAE

- Macrosolen cochinchinensis** (Lour.) v. Tieghem (= *Loranthus globosus* Roxb.). (H 802). 8649 Banguru, 8702 Keonjhargarh, 8766 Gandhamardan Parbat, occasional; flowers: July.
Dendrophthoe falcata (Linn. f.) Ettings. (= *Loranthus longiflorus* Desr. var. *falcata*). (H 801). 8243 Sukinda, 8502 Palaspal, 8696 Keonjhargarh, 1223 Dukura, 12644 Barheipani, 20894 Khandijharan, abundant on trees; flowers: November (*Modanga*).
Scurrula philippensis (Cham. & Schlecht.) G. Don (= *Loranthus scurrula* Hook. f.). 8241 Sukinda, 12685 Chahala, common; fruit: February—June.
Viscum nepalense Spreng. (= *V. articulatum* Hook. f. non Burm.). (H 804). 8282 Sukinda, 12711 Gurguria, 21113 Harishankar, occasional; flowers: November. New record for Orissa.
V. monoicum Roxb. (H 803). 8342 Sukindagarh, 8451 Palaspal, 8600 Bankura, 8703 Keonjhargarh, 12265 Bhanjabasa, 12689 Chahala, occasional; fruits: July.
V. orientale Linn. (H 803). 8287 Sukinda, 8413 Ghatgaon, occasional; flowers: June.

SANTALACEAE

- Osyris wightiana** Wall. ex Wt. (= *O. arborea* Wall.). 12537 Simlipal, frequent; flowers and fruits: February.
Santalum album Linn. (M 133). 12628 compound of the I. B. of Dudruchampa, 12760 Kachudahan, occasional; fruits: February.

EUPHORBIACEAE

- Acalypha alnifolia** Klein. 8406A Anandapur, occasional, on sandy soil; flowers: June. New record for Bihar and Orissa.
A. indica Linn. (H 113). 20750 Batipathar; fruits: November.
Antidesma acuminatum Wall. (H 138). 8650 Banguru, abundant; flowers: July.
A. bunius Spreng. (M 34). 8727 Baitarani source—Keonjhargarh, 8736 Keonjhargarh, abundant; fruits: July.
A. diandrum Roth (H 138). 8411 Ghatgaon, 12286 Bhanjabasa, 12525 Bankura, 20841 Mahadev-

jharan, 21022 Kapildhar, occasional; fruits: November—June (*Nunununia*, *Bidanga*).

- A. ghaesembilla** Gaertn. (H 139). 8781 Malyagiri, 8308 Sukinda, abundant; flowers: June—July.
Aporosa dioica Muell. (H 137). 8577 Banguru, 12277 Bhanjabasa, occasional; flowers: February, fruits: July.
Baliospermum montanum (Willd.) Muell.-Arg. (H 115). 12693 Chahala, 12739 Lulung, 20773 Amarakhol, 21125 Harishankar, in the humid valley, rare, flowers: November—February.
Melanthesa retusa Kostel. Allg. (= *Breynia patens* Benth.). (M 34). 8210 Sukinda, 8551 Burhipada, 8755 Gandhamardan Parbat, abundant; flowers: June—July.
Bridelia squamosa Gehrm. (= *B. retusa* Hook. f.). (H 119). 12791 Kachudahan, 20810 Batipathar, abundant; fruits: November—February.
Chrozophora prostrata Dalz. (H 103). 8304 Sukinda, 21062 Manbhang, occasional, on moist soil in cultivated fields; flowers: November.
Cleistanthus collinus Benth. (H 121). 8221 Sukinda, 8403 Ghatgaon, 12293 Bhanjabasa, 12744 Kachudahan, 20641 Borasambar, very common, in open fields; flowers: June; fruits: November—February (*Karada*).
Croton caudatus Geisel. (H 105). 12492 Jenabil, occasional; fruits: February.
C. oblongifolius Roxb. (H 104). 12206 Podadiha, abundant in the edge of forest amidst Sal; flowers: February.
C. bonplandianum Baill. (= *C. sparsiflorus* Morong.). (H 105). 8271 Sukinda, 8360 Deogaon, 8683 Ghatgaon, 21081 Harishankar, very common; flowers and fruits: November.
Euphorbia hirta Linn. (H 147). 8274 Sukinda, 8377 Deogaon, 8682 Ghatgaon, 12807 Lulung, 20512 Padampur, 20890 Lergaon, abundant, in dry soil; flowers: June—November (*Denga-Bichhuati*).
E. hypericifolia Linn. (H 146). 8539 Burhipada, abundant in open ground; flowers: July.
E. nivulia Buch.-Ham. (H 142). 12577 Nigirdah, 12695 Barheipani, below the waterfall, occasional; flowers: February (*Siju*).
E. pycnostegia Boiss. (H 146). 20650 Borasambar, occasional; fruits: November. New record for Orissa.
E. thymifolia Linn. (M 35). 8275 Sukinda, 8375 Deogaon, 8557 Madhupur, 20530 Padampur, in open cultivated fields, abundant; flowers: June—October.
Securinega virosa (Roxb. ex Willd.) Pax & Hoffm. (= *Flueggea obovata* Baill.). (H 123). 8272, 8286 Sonajhar-Sukinda, 8415 Ghatgaon, 8601 Bankura, 8772 Telkoi, occasional; flowers and fruits: June—July.
Embllica officinalis Gaertn. (H 128). 12372 Podadiha, 20645 Borasambar, occasional; fruits: November—February.

Glochidion assamicum Hook. f. (M 34). 21083 Harishankar, frequent, flowers and fruits green: November.

G. lanceolarium Dalz. (H 131). 8247 Sukinda, 12202 Podadiha, 12520 Simlipalgarh, 12727 Lulung, occasional; flowers and fruits: February—June.

G. zeylanicum A. Juss. (H 132). 21088 Harishankar, occasional; flowers and fruits: November.

Homonoia riparia Lour. (H 110). 8446 Palaspal, 8767 Telkoi, 12724 Lulung, 20918 Khandijharan, very common in the crevices of boulders and gravel in sandy river bed; flowers and fruits: February—July (*Godamala*).

Jatropha curcas Linn. (H 201). 8299 Sonajharhili-Sukinda, 12584 Nigirda; flowers: June, fruits: February (*Jahaji*).

J. gossypifolia Linn. (H 101). 8204 Sukinda, 8383 Deogaon, occasional; flowers: June (*Kalajahaji*).

J. heterophylla Heyne ex Hook. f. (M 247). 8479 Rebna, occasional; fruits: June.

Kirganella reticulata (Poir.) Baill. (H 129). 8409 Ghatgaon, 8776 Telkoi, occasional; flowers and fruits: June—July.

Mallotus philippensis Muell. (H 106). 12746 Lulung, 20880 Lergaon, frequent; flowers: November, fruits: February.

Pedilanthus tithymaloides Poir. (H 149). 8203 Sukinda, 20862 Lergaon, common; vegetative both in June and November (*Khirkanchan*).

Phyllanthus debilis Buch.-Ham. (H 126). 20964 Satyamba, frequent; flowers: November.

P. maderaspatensis Linn. (H 124). 20593 Padampur, frequent in grasslands; flowers and fruits: November.

P. simplex Retz. (H 125). 8254 Sukinda, 8529 Rebna, abundant; fruits: June.

Sebastiania chamaclea Muell. (H 118). 20781 Bora-sambar, frequent; flowers and fruits: November.

Tragia involucrata Linn. (H 115). 8679 Ghatgaon, occasional; flowers and fruits: July.

Trewia nudiflora Linn. (M 29). 12740 Kachudahan; abundant, flowers: February.

URTICACEAE

Artocarpus heterophyllus Lamk. (= *A. integrifolius* auct., non Linn. f.) (M 137). 12216 Udala, occasional; fruits: February (*Panasa*).

Boehmeria platyphylla Don. (H 815). 12380 Podadiha, 20958 Satyamba, abundant; fruits: November.

Ficus bengalensis Linn. (H 834). 9440 Ghatgaon, 12580 Nigirdah, common; fruits: February—June.

F. concinna Miq. (= *F. glabella* Blume). (M 137). 21029 Manbhang, frequent; fruits: November (*Jalapaket*).

F. concinna Miq. var. **dasycarpa** Corner (= *F. glabella* Blume). (M 137). 20790 Batipathar, scarce; fruits: November.

F. hispida Linn. f. (H 837). 8759 Gandhamardan, 12519 Bankura, occasional; fruits: February—July.

F. mollis Vahl (= *F. tomentosa* Roxb.). (H. 834). 20811 Malda, frequent; vegetative: November.

F. nervosa Roth (H 830). 8743 Gandhamardan, rare; fruits: July.

F. benjamina Linn. var. **comosa** (Roxb.). Kurz (H 828). 8458 Palaspal, 12716 Gurguria, abundant; fruits: February—June.

F. semicordata J. Smith (= *F. cunia* Ham.). (H 836). 8117 Palaspal, 12510 Bankura, 20681 Batipathar, 21100 Harishankar, occasional; fruits: November—February (*Kharsal*).

F. tinctoria Forst. f. subsp. **parasitica** (Willd.) Corner (= *F. parasitica* Koen). (H 835). 12524 Simlipal, 12712 Lulung, rare; fruits: February (*Udambar*).

Holoptelea integrifolia (Roxb.) Planch. (H 807). 12205 Podadiha, occasional; fruits: February.

Morus indica Linn. (H 821). 12507 Bankura, 20855 Lergaon, occasional; fruits: February (*Tud-Gachha*).

M. laevigata Wall. (H 821). 12389 Gurguria, occasional; fruits: February.

Streblus asper Lour. (H 820). 12224 Dukura, occasional; flowers: February.

Trema orientalis (Linn.) Blume (H 809). 8691 Keonjharagarh, occasional; flowers: July.

T. politoria Planch. (H 809). 12542 Bankura, rare; flowers: February.

SALICACEAE

Salix tetrasperma Roxb. (M 139). 12614 Burhabalang, 12759 Kachudahan, abundant in river bank; fruits: February.

CERATOPHYLLACEAE

Ceratophyllum demersum Linn. (H 841). 21073 Padampur, abundant; fruits: November.

HYDROCHARITACEAE

Blyxa echinosperma (Clarke) Hook. f. (H 854). 20542 Padampur, common; flowers and fruits: November.

Hydrilla verticillata (Linn. f.) Royle (H 852). 20559 Padampur, abundant; flowers: October.

Nechamandra alternifolia (Roxb.) Thw. (= *Lagarsiphon roxburghii* (Planch.) Benth. (M 141). 20511 Padampur, occasional; flowers: October.

Ottelia alismoides (Linn.) Pers. (M 141). 8266 Sukinda, 20843 Batipathar abundant; flowers and fruits: June—November.

Vallisneria spiralis Linn. (M 141). 12523 Gurguria, abundant; flowers: February.

ORCHIDACEAE

- Aërides multiflorum** Roxb. (H 1182). 8468 Barheipani, 12656 Dudruchampa, occasional; flowers: June, fruits: February. New record for Orissa.
- A. odoratum** Lour. (M 215). 8240 Sukinda, 12227 Dukura, occasional; flowers: February.
- Calanthe diploxiphion** Hook. f. 8526 Kohlapal-Palaspal, occasional; flowers: July. New record for India.
- Cleisostoma micranthum** King & Pantl. (M 215). 8619 Palaspal, 12601 Dudruchampa, occasional; flowers and fruits: July—February.
- Dendrobium crepidatum** Lindl. (M 213). 8620 Sukinda, occasional; fruits: July.
- D. formosum** Roxb. (M 212). 8665 Palaspal, frequent; flowers: July.
- D. herbaceum** Lindl. (M 212). 8616 Bankura, 21024 Satyamba Pat, common; fruits: July.
- D. macraei** Lindl. 12448 Jenabil, common; fruits: July. New record for Bihar and Orissa.
- D. moschatum** Wall. (M 213). 8623 Bankura, 12338 Bhanjabasa, occasional; flowers: July.
- D. nobile** Lindl. 8624 Bankura, 12337 Bhanjabasa, rare; flowers: July, fruits: February. New record for Bihar and Orissa.
- Eulophia flava** Hook. f. (M 211). 8729 Keonjhargarh, rare, amidst bushes; vegetative: July.
- E. nuda** Lindl. (M 211). 8771 Telkoi, 20692 Batipathar, frequent; flowers: July, fruits: November.
- Geodorum dilatatum** Br. (M 211). 8427 Ghatgaon, Narsinghnath, common in sandy soil; flowers: June (*Tejra*).
- Habenaria marginata** Coleb. (M 207). 20889 Lergaon, in blackish alluvium and bamboo groves; vegetative: November.
- Luisia trichorhiza** Blume (M 214). 8421 Ghatgaon, 12576 Modabari, frequent; flower: February—June.
- Malaxis latifolia** Smith (= *Microstylis congesta* Reichb.). (H 1165). 8708 Keonjhargarh, rare; flowers: July. New record for Orissa.
- Oberonia ensiformis** Lindl.? 12431 Gurguria, occasional, epiphytic on *Eugenia*; vegetative: February.
- O. falconeri** Hook. f.? (H 1164). 12432 Barheipani, occasional; vegetative: February.
- Peristylus goodyeroides** Lindl. (= *Habenaria goodyeroides* D. Don) (M 207). 12774 Kachudahan, 20679 Batipathar, rare; fruits: November.
- P. plantagineus** Lindl. (= *H. plantaginea* Lindl.). (M 206). 8747 Gandhamardan Parbat, frequent; flowers: July.
- Nervilia plicata** (Andr.) Schlecht. (= *Pogonia plicata* Andr.) 20728 Borasambar, vegetative: November.
- Spiranthes sinnensis** (Pers.) Ames (= *S. australis* Lindl.). (H 1161). 12445 Gurguria, occasional on ground; flowers and fruits: February.

- Tropidia curculigoides** Lindl.? (M 208). 12687 Barheipani, rare; vegetative: February.
- Vanda parviflora** Lindl. (H 1181). 12449 Gurguria, common; epiphytic, flowers: February. New record for Orissa.
- V. tessellata** Hook. (H 1181). 8470 Rebna, 12222 Podadiha, frequent; flowers: June.

SCITAMINEAE

- Canna indica** Linn.? (H 1147). 20861 Lergaon, 21128 Harishankar, occasional; flowers and fruits: November (*Krishnakedar* or *Ramkedar*).
- Costus speciosus** (Koenig) Smith 20876 Lergaon, abundant; flowers: November (*Keuana*).
- Curcuma amada** Roxb. (H 1135). 20716 Batipathar, abundant; flowers: November.
- C. reclinata** Roxb. (H 1136). 8566 Bankura, 8791 Kanjipani, abundant; flowers: July.
- Globba bulbifera** Roxb. (H 1130). 20707b Batipathar, common; flowers: November.
- G. racemosa** Smith (H 1129). 8567 Buripada, scarce, flowers: July.
- Hedychium coccineum** Ham. ex Smith (H 1139). 12420 Gurguria, 20919 Khandijharan, 20948 Satyamba, abundant, amidst grasses; flowers and fruits: February. New record for Orissa (*Kedar*).
- Kaempferia angustifolia** Rosc. 8461 Rebna, occasional; perennial, in sandy soil, flowers: June. New record for Bihar and Orissa.
- Zingiber casumunar** Roxb. (H 1143). 20704 Batipathar, frequent, in forest; flowers: November (*Bana Ada*).
- Z. roseum** Rosc. (H 1142). 20875 Lergaon, 20705 Batipathar, abundant; flowers: November (*Kedar*). New record for Orissa.

HAEMODORACEAE

- Sarasevieria cylindrica** Boj. 8369 Deogaon, cultivated; fruits: June.

AMARYLLIDACEAE

- Agave sisalana** Perr. ex Engl. (H 1106). 12914 Lulung, introduced; flowers: February.
- Crinum defixum** Ker. (M 203). 8393 Deogaon, 12381 Podadiha, occasional on muddy river banks; fruits: February.

HYPOXIDACEAE

- Curculigo orchiioides** Gaertn. (M 203). 20817 Mahadevjharan, frequent; flowers: November (*Talmuli*).

DIOSCOREACEAE

- Dioscorea anguina** Roxb. (H 1113). 12320 Bhanjabasa, 20708 Batipathar, common; fruits: November—February.
- D. bulbifera** Linn. (H 1122). 12513 Bankura, 20877 Lergaon, 20899 Khandijharan, occasional at edge of forest, on sandy soil; fruits: November (*Pitakanda*, *Bhatkanda*).

- Dioscorea glabra** Roxb. (H 1119). 12251 Dukura, abundant, on every bush and on hedges; fruits: February.
- D. hamiltoni** Hook. f. (H 1121). 12784 Kachudahan, 20682 Batipathar, occasional; flowers and fruits: November—February.
- D. oppositifolia** Linn. (H 1118). 8232 Sukinda, 20666 Batipathar, occasional; fruits: June—November.
- D. pentaphylla** Linn. (H 1123). 12772 Kachudahan, occasional; fruits: February.
- D. pentaphylla** Linn. var. *rumphii* Pr. & Burk. (H 1123). 20975 Patna, abundant; fruits: November.

LILIACEAE

- Asparagus racemosus** Willd. (H 1088). 8547 Burhipada, common; July (*Chhata-Ari*).
- A. racemosus** Willd. var. *subacerosus* Baker 20688 Bhojapurgarh, abundant; fruits: November. New record for Bihar and Orissa.
- Chlorophytum arundinaceum** Baker (M 203). 8318 Sukinda, 8420 Ghatgaon, 8565 Palaspal, 8606 Bankura, 8792 Kanjipani, 20730 Batipathar, abundant; flowers and fruits: June—November (*Saphed Musali*).
- Disporum pullum** Salisb. (M 202). 8572 Buripada, 12517 Simlipal, occasional; flowers: July.
- Gloriosa superba** Linn. (H 1093). 20693 Batipathar, 20932 Saptadhar, occasional; fruits: November (*Chota-Mohra* or *Kundariphool*).
- Urginea indica** (Roxb.) Kunth (= *Scilla indica* Baker). (M 202). 8255 Kohla village-Sukinda, rare; flowers: June.
- Smilax zeylanica** Linn. (= *S. macrophylla* Roxb.). (H 1086, 1087). 8501 Palaspal, 8695 Keonjhar-garh, 8768 Telkoi, 12463 Jenabil, abundant; flowers: July, fruits: February.
- S. prolifera** Roxb. (H. 1087). 12271 Bhanjabasa, 12425 Jenabil, 20802 Batipathar, common in the crevices of rocks in river bank; flowers and fruits: February.

PONTEDERIACEAE

- Monochoria vaginalis** (Burm. f.) Presl ex Kunth. (H 1101). 8480 Palaspal, 20751 Batipathar, occasional in swampy rice fields; flowers and fruits: July—November.

COMMELINACEAE

- Commelina benghalensis** Linn. (M 199). 21054 Paikmal, common; flowers: November.
- C. diffusa** Burm. f. (= *C. nudiflora* Linn.). (M 199). 20550 Padampur, 20603 Malda, frequent; flowers: November.
- C. kurzii** Clarke (H 1077). 20612 Malda, occasional; flowers: November. New record for Orissa.
- C. paludosa** Blume (= *C. obliqua* Buch.-Ham. non Vahl). (M 199). 12486 Gurguria, 20829 Brahmani, occasional; fruits: November.
- C. suffruticosa** Blume (M 199). 20687 Batipathar, occasional; fruits: November.

- Cyanotis fasciculata** Sch. f. (M 200). 20981 Satyamba Pat, occasional; fruits: November.
- C. axillaris** Roem. & Sch. (H 1081). 20549 Padampur, 20638 Borasambar, common; flowers: November.
- Murdannia nudiflora** (Linn.) Brenan (= *Aneilema nudiflorum* Br.). (H 1080). 20647 Borasambar, common; fruits: November.
- M. spirata** (Linn.) Brückner (= *Aneilema spiratum* Br.). (H 1079). 20537 Padampur, frequent; flowers: November.

JUNCACEAE

- Juncus prismatocarpus** R. Br. (M 201). 12245 Dukura, 12557 Mokabari, frequent; flowers: February.

PALMAE

- Caryota urens** Linn. (M 143). 8762 Gandhamardan, 21143 Harishankar, occasional; fruits: July.
- Phoenix acaulis** Buch.-Ham. (M 143). 8397 Ghatgaon, 12569 Nigirda, abundant; fruits: June.

ARACEAE

- Alocasia fornicata** (Roxb.) Schott. (M 142). 8607 Bankura, 12424 Jenabil, 21107 Harishankar, abundant, in the crevices between rocks and boulders, in the sandy bed of streams; flowers: July—November.
- A. macrorrhiza** Schott. (H 869). 20835 Mahadevjharan, occasional; flowers: November.
- Amorphophallus campanulatus** (Roxb.) Blume ex Decne (H 861). 8455 Rebna, 8542 Majhisahi, rare; flowers: June—July (*Olakunda*).
- Arisaema tortuosum** (Wall.) Schott. (M 142). 20675 Batipathar, 20776 Amarakhol, 20961 Satyamba, 21047 Manbhang, occasional, in humus covered floor; fruits: November (*Bhairabimula*).
- Lasia spinosa** (Linn.) Thw. (M 142). 8578 Bankura, 12530 Simlipal, common, in muddy swamps; fruits: February—July.
- Pothos scandens** Linn. (M 141). 8663 Bankura, abundant; flowers: July.
- Scindapsus officinalis** (Roxb.) Schott. (H 859). 8394 Ghatgaon, common; flowers: June.

ALISMACEAE

- Tenagocharis latifolia** (D. Don) Buchen. [= *Buto-mopsis lanceolata* (Roxb.) Kunth.]. (M 140). 8692 Sukati, 21034 Manbhang; flowers: July.
- Sagittaria guayanensis** H. B. & K. (H 845). 20557 Padampur, common in muddy banks; flowers and fruits: October.

POTAMOGETONACEAE

- Potamogeton nodosus** Poir. (= *P. indicus* Roxb.). (H 847). 21064 Manbhang, abundant; fruits: November.

ERIOCAULACEAE

- Eriocaulon melaleucum** Mart. 12436 Jenabil, 12619 Burhabalang, occasional, on sandy rocky bed of

rivers; flowers: February. New record for Bihar and Orissa.

Eriocaulon quinquangulare Linn. (M 198). 20775 Amarakhol, 21098 Harishankar, abundant, in fields; flowers: November.

E. sieboldianum Sieb. & Zucc. (M 196). 20579 Malda, common; flowers: October.

CYPERACEAE

Carex baccans Nees (M 155). 12484 Jenabil, occasional, under shade; fruits: February.

Courtoisia cyperoides (Roxb.) Nees (M 147). 20616 Borasambar, occasional; flowers: November.

Cyperus diffusus Vahl (M 144). 12323a Kachudahan, 12788 Bhanjabasa, 2119 Harishankar, frequent; flowers and fruits: February.

C. iria Linn. (M 144). 8365 Deogaon, 8561 Palaspal, abundant in river bed; flowers: June—July.

C. exaltatus Retz. (M 145). 21079 Harishankar, occasional; flowers: November.

C. haspan Linn. (H 894). Sukinda, 8726 Baitarani source, 12558 Nigirda, 20637 Borasambar, occasional, on wet soil; flowers: June—February. New record for Orissa.

C. kyllinga Endl. (= *Kyllinga monocephala* Rottb.). (M 147). Ravenshaw College compound, Cuttack; fruits: June.

C. malaccensis Lamk. (H 899). 12323 Bhanjabasa, 12428 Jenabil; flowers and fruits: February.

C. niveus Retz. (M 144). 8251 Sukinda, 8401 Ghatgaon, abundant, on sandy soil; flowers: June, ("abundant on the Pats of Jashpur and Surguja but not so common in the southern tract"—Mooney 1950).

C. rotundus Linn. (H 903). 8368 Deogaon, 8563 Palaspal, occasional; on sandy river bed; flowers: June.

Eleocharis congesta (Spreng.) Don (M 148). 12554 Mokabari, abundant; flowers: February.

E. fistulosa Schult. (M 147). 20544 Padampur, rare on marshy banks and rice fields; flowers: October.

Fimbristylis aestivalis (Retz.) Vahl (M 149). 8466 Palaspal, occasional, in sandy river bank; flowers: June.

F. argentea Vahl (H 942). 8379 Deogaon, common; fruits: June.

F. dichotoma (Linn.) Vahl (M 149). 8261 Sukinda, 8367 Deogaon, occasional, on wet soil; fruits: June.

F. diphylla (Retz.) Vahl (M 149). 21094 Harishankar, rare, in marshes; flowers: November.

F. junciformis Kunth (M 148). 8311 Sukinda, abundant, on moist soil; fruits: June.

F. miliacea (Burm.) Vahl (H 915). 8473 Palaspal, 20552 Padampur, occasional; on dry grasslands; flowers: June—October. New record for Orissa.

F. schoenoides (Retz.) Vahl (M 149). 20539 Padampur, common, on open fields and in muddy places; flowers: October—November.

F. tenera Roem. & Schult. (M 148). 20655 Batipathar, abundant; flowers: November.

F. tetragona R. Brown (M 149). 21095 Harishankar, abundant; flowers: November.

Lipocarpa argentea Br. (M 151). 8484 Palaspal, 8724 Baitarani source—Keonjhar, 21096 Harishankar, abundant; flowers: June—November.

Scirpus articulatus Linn. (M 150). 8680 Ghatgaon, 12244 Udala, 21065 Manbhang, 21093 Harishankar, occasional, in dry rice fields near water's edge; flowers: July—February.

S. maritimus Linn. var. *affinis* Clarke (M 150). 8593 Meghanada Parbat, rare; flowers: June.

S. erectus Poir. (M 150). 21075 Padampur, common; flowers: November.

S. squarrosus Linn. (M 150). 20596 Malda, occasional, in grass fields; flowers: October.

S. supinus Linn. (M 150). 20655 Batipathar, abundant; flowers: November.

Scleria cochinchinensis (Lour.) Druce (M 154). 8734 Keonjhar, 20816 Batipathar, common, on sandy alluvial banks; fruits: November.

S. tessellata Willd. (M 153). 21013 Saptadhar, common; fruits: November (*Chhuria*).

Cyperus cyperoides (Linn.) Kuntze (M 146). 8439 Ghatgaon, abundant; flowers: June.

C. hyalinus Vahl (= *Pycnus pumilus* Nees) (H 905). 20597 Malda, common, on banks of ponds and fields; flowers: November.

GRAMINEAE

Apluda mutica Linn. (= *A. aristata* Linn.). (M 192). 12535 Bankura, 12010 Champagarh, 20502 Hirakud area, 20556 Padampur, common on muddy banks of rice fields; flowers: October—January.

Aristida setacea Retz. (H 977). 20629 Borasambar, occasional in dry fields; flowers: November.

Arthraxon lanceolatus (Roxb.) Hochst. (M 188). 12479 Gurguria, common; flowers: February.

A. lancifolius (Trin.) Hochst. (M 189). 20976b Patna, on slopes; flowers: November.

A. echinatus (Nees) Hochst. (M 264). 12810a Lulung, occasional; flowers: February.

Arundinella setosa Trin. (M 168). 12572 Nigirda, abundant; flowers: February.

A. pumila (Hochst.) Steud. (M 168). 20994 Patnagarh, frequent; flowers: November.

Bambusa arundinacea Willd. (H 950). 20929 Kapildhar, abundant; flowers: November.

B. nutans Wall. (H 949). 12269 Bhanjabasa, rare; flowers: February.

B. tulda Roxb. (H 948). 12527 Simlipalgarh, cultivated; vegetative: February.

- Bothriochloa intermedia** (R. Br.) A. Camus forma **punctata** A. Camus (M 187). 8667 Madhupur, abundant, on sandy bunds; flowers: July.
- B. pertusa** (Linn.) A. Camus (M 187). 12762 Kachudahan, common; flowers: February.
- Brachiaria eruciformis** (J. E. Sm.) Griseb. (M 177). 20634 Sambalpur, occasional; flowers: November.
- B. reptans** (Linn.) Gard. et Hubb. (M 177). 20619 and 20635 Malda, frequent, in open fields; flowers: November.
- Capillipedium assimile** (Steud.) A. Camus (H 1028). 12317 Bhanjabasa, 12475 Gurguria, 20836 Mahadevjharan, 20986 Patna, common, on the forest floor; flowers: November, fruits: February. New record for Orissa.
- Centotheca lappacea** (Linn.) Desv. (M 158). 20832 Mahadevjharan, 21101 Harishankar, common in sandy soil; flowers: November.
- Chionachne koenigii** (Spreng.) Thw. (M 194). 12640 Dudruchampa, common on grassy forest floor; flowers: February.
- Chloris barbata** Swartz. (H 969). Ravenshaw college compound, Cuttack; flowers: June.
- Chrysopogon aciculatus** (Retz.) Trin. (H 1035). 8559 Burhipada, common; flowers: July. New record for Orissa.
- C. lancearius** (Hook. f.) Haines (H 1036). 20930 Saptadhar, 20970 Satyamba, 20892 Narsinghnath, abundant; flowers: November.
- C. fulvus** (Spreng.) Chiov. (= *C. montanus* Trin. ex Spreng.). (H 1037). 21019 Kapildhar, abundant; flowers: November.
- Coix aquatica** Roxb. (H 1064). 21036 Manbhang, occasional; flowers: November.
- C. gigantea** Koenig ex Roxb. (H 1064). 12465 Jena-bil, occasional in swamp; fruits: February.
- C. lachryma-jobi** Linn. (M 194). 20783 Borasambar, frequent; flowers: November.
- Cymbopogon caesius** (Nees) Stapf. 12809 Lulung, common on dry top of hill; flowers: February. New record for Bihar and Orissa.
- C. martinii** (Roxb.) Watson (H 1046). 20936b Satyamba Pat, abundant; flowers: November (*Magarlata*).
- Cynodon dactylon** (Linn.) Pers. (H 966). 20573 Padampur, common, on alluvial soil; flowers: October (*Dubaghass*).
- Dendrocalamus strictus** Nees (H 947). 12215 Gangahar river bank, 20678 Batipathar, 21026 Manbhang, common, in the outskirts of forests; flowers and fruits: November—February.
- Dichanthium annulatum** (Forsk.) Stapf. (M 188). 20620 Malda, common; flowers: November.
- D. caricosum** (Linn.) A. Camus (M 188). 12531 Simlipal, occasional, on dry soil; flowers: February.
- Digitaria sanguinalis** (Linn.) Scop. var. **ciliaris** Hook. f. (H 1008). 20920 Khandijharan, common; flowers: February.
- D. granularis** (Trin.) Henr. (= *D. pedicellaris* Prain). (M 172). 20636 Malda, rare, in open fields; flowers: November.
- Dimeria connivens** Hack. (M 192). 20952 Satyamba, common; flowers: November.
- Echinochloa colonum** (Linn.) Link. (H 997). 20632 Malda, frequent; fruits: October.
- Eragrostiella brachyphylla** (Stapf) Bor (M 161). 8560 Palaspal, rare; flowers: July.
- E. leioptera** (Stapf) Bor (= *Eragrostis leioptera* Stapf). 20978 Patna, common; fruits: November.
- Eragrostis cilianensis** (All.) Vignolo-Lutati (= *E. major* Host.) (H 959). 21076 Harishankar, frequent on the roadside; flowers: November.
- E. coarctata** Stapf apud Hook. f. (H 956). 12237 Dukura, occasional; flowers: February.
- E. gangetica** (Roxb.) Steud. (M 160). 12478 Gurguria, 12555 Mokabari, 20543 Padampur, 20624 Borasambar, frequent, on sandy bed of river; flowers: October—January.
- E. pilosa** (Linn.) P. Beauv. (H 960). 8684 Ghatgaon, rare; flowers: July.
- E. nutans** (Retz.) Nees ex Steud. (= *E. stenophylla* Hochst.). (H 959). 20591 Malda, common, in open fields; flowers: October.
- E. tenella** (Linn.) Beauv. ex Roem. & Sch. (H 956). 12236 Dukura, 20570 Padampur, occasional; flowers: October—February.
- E. unioloides** (Retz.) Nees ex Steud. (= *E. amabilis* Linn.). (H 958). 8572 Palaspal, 8713 Baitarani source-Keonjhar, 12247 Dukura, 20580 Malda, frequent; flowers: February—July.
- Eulalia trispicata** (Schant.) Henr. (M 185). 12571 Nigirda, common; flowers: February.
- Garnotia stricta** Brongn. (M 165). 21021 Kapildhar, rare; flowers: November.
- Hackelochloa granularis** (Linn.) O. Kuntze (M 193). 12540 Bankura, 20617 Borasambar, occasional, on the bank of rivers; flowers and fruits: November—July.
- Heteropogon contortus** (Linn.) P. Beauv. ex Roem. et Schult. (H 1040). 12210 Podadiha, 12288 Bhanjabasa, 20598 Malda, 21080 Patna, common, on brown porous soil; flowers: November—February.
- Ichnanthus vicinus** (F. M. Bail.) Merr. 12586 Nigirda, occasional; flowers: February. New record for Bihar and Orissa.
- Imperata cylindrica** (Linn.) P. Beauv. (= *I. arundinacea* Cyrill.). (H 1015). 8554 Palaspal, 21091 Harishankar, common; flowers: November, fruits: July.

- Isachne albens** Trin. (M 171). 12494 Gurguria, occasional; flowers: February. New record for Orissa.
- I. elegans** Dalz. (M 170). 20554 Padampur, common; flowers: November.
- Ischaemum indicum** (Houtt.) Merrill (= *I. aristatum* Linn.). (M 192). 20534 Padampur, 20633 Malda, 20892 Khandijharan, 21080 Patna, 20998 Hari-shankar, common in dry fields; flowers: October—November.
- I. rugosum** Salisb. (H 1021). 20548 Padampur, 20621 Malda, rare; flowers: October—November.
- Microstegium petiolare** (Trin.) Bor (= *Ischaemum petiolare* Hack.). 21001 Patna, abundant; flowers: November. New record for Bihar and Orissa.
- Oryza sativa** Linn. (H 980). 8711 Baitarani source, 20510 Sampalpur, 20622 Borasambar, common; flowers: October—November.
- Panicum austroasiaticum** Ohwi (= *P. humile* Nees ex Steud.). (M 174). 20623 Malda, 20992 Patna, common; flowers: November.
- P. montanum** Roxb. (H 996). 12529 Simlipal, 20685 Batipathar, 20928 Satyamba, occasional; flowers: November—February. New record for Orissa.
- Paspalum scrobiculatum** Linn. (M 176). 20534 Padampur, 20846 Mahadevjharan, common; flowers: October—November.
- Pennisetum hordeoides** (Lamk.) Steud. (*P. parviflorum* Trin.). (H 986). 20626 Malda, common; flowers: November. New record for Orissa.
- P. polystachyon** (Linn.) Schult. 20501 Hirakud Dam, on hill slopes; frequent; flowers: October. New record for Orissa.
- Phragmites karka** (Retz.) Trin. ex Steud. (M 159). 12532 Simlipal, occasional; flowers: February.
- Pogonatherum paniceum** (Lamk.) Hack. (M 185). 8706 Baitarani source—Keonjharagarh, 12541 Bankura, abundant; flowers: February—July. New record for Orissa.
- P. rufobarbatum** Griff. 12706 Barheipani, common; flowers: February.
- Pseudosorghum fasciculare** (Roxb.) A. Camus (M 186). 20709 Batipathar, frequent; flowers and fruits: November.
- Saccharum bengalense** Retz. (= *S. munja* Roxb.). (H 1213). 20663 Batipathar, 20933 Saptadhar, common; flowers: November (*Kainsha Lata*).
- S. spontaneus** Linn. (M 183). 12522 Simlipal, 12761 Lulung, occasional on banks of river; flowers: February.
- Sacciolepis indica** (Linn.) A. Chase (M 172). 20536 Padampur, occasional; flowers: October.
- S. interrupta** (Willd.) Stapf (M 172). 12246 Dukura, occasional; flowers: February.
- S. myosuroides** (R. Br.) A. Camus (M 172). 20618 Malda, occasional; flowers: November.
- Schizachyrium brevifolium** (Sw.) Nees (M 190). 20976a Patna, common; flowers: November.

- Setaria glauca** (Linn.) Beauv. (H 988). 20845 Batipathar, common, in rice fields; flowers: November.
- S. pallide-fusca** (Schumach) Stapf et Hubbard (= *S. glauca* Hack.) (H 988). 8712 Baitarani source 12570 Nigirda, common; flowers: February—July.
- S. verticillata** P. Beauv. (M 177). 20846 Mahadev-garh, commonly cultivated in moist fields; flowers: November.
- Sorghum vulgare** Pers. (H 1033). 12499 Jenabil, 20628 Malda, frequent; flowers: November.
- Sporobolus diander** (Retz.) Beauv. (H 973). 12812 Lulung, occasional; flowers: February.
- Themeda caudata** (Nees) A. Camus (M 191). 12500 Jenabil, frequent; flowers: February.
- T. arundinacea** (Roxb.) Ridl. (M 191). 12578 Nigirda, rare, on the bank of stream and at the edge of the Sal forest; flowers: February.
- T. laxa** (Anderss.) A. Camus (M 191). 12266 Bhanjabasa, 12481 Gurguria, 20997 Patna, abundant; flowers: November—February.
- T. quadrivalvis** (Linn.) O. Ktze. (H 1050). 8710 Baitarani source, 20615 Malda, common; flowers: November.
- Thysanolaena maxima** (Roxb.) O. Ktze. (= *T. agrostis* Nees). (H 982). 12324 Bhanjabasa, occasional, in shady places; flowers: February.

GYMNOSPERMS

GNETACEAE

- Gnetum ula** Brongn. (H 1232). 8640 Bankura, 12430 Jenabil, common; flowers: February, fruits: July.

CYCADACEAE

- Cycas circinalis** Linn. (M 229). 8294 Sukinda, occasional; male sporophylls: June.

CONIFERAE

- Cryptomeria japonica** Don. 12635 Dudruchampa, 12790 Lulung, cultivated; cones formed: February. Introduced.
- Pinus insularis** Endl. 12631 Dudruchampa, cultivated; vegetative: February. Introduced.

PTERIDOPHYTES

OPHIOGLOSSACEAE

- Botrychium daucifolium** Wall. (H 1215). 12409 Gurguria, occasional, in moist sandy bed of mountain stream; vegetative: February.
- Ophioglossum reticulatum** Linn. (M 226). 20723 Borasambar, 20878 Lergaon, occasional, on moist soil in shade; spike fertile: November.

SCHIZAEACEAE

- Lygodium flexuosum** (Linn.) Swartz (H 1211). 8504 Palaspal, 20659 Batipathar, common, in crevices or rocks; fertile: November (*Kala Mahajal*).

GLEICHENIACEAE

Dicranopteris linearis (Burm.) Underwood (= *Gleichenia linearis* Clarke). (H 1210). 12793 Lulung, frequent, on dry rocky soil; vegetative: February.

HYMENOPHYLLACEAE

Mecodium exsertum (Wall.) Copel. (= *Hymenophyllum exsertum* Wall. ex Hook.). 12285 Bhanjabasa, occasional; epiphytic on mossy stems, fertile: February. New record for Orissa.

PTERIDACEAE

Adiantum caudatum Linn. (H 1201). 8518 Palaspal, 8745 Gandhamardan Parbat, 12652 Barheipani, 12748 Kachudahan, 20821 Mahadevjharan, common, in alluvial soil and in crevices of rocks; fertile: November–February.

A. philippense Linn. (H 1201). 8301 Sukinda, 8469 Rebna, 20670 Batipathar, 20891 Lergaon, common, on moist slopes and in crevices of rocks; fertile: November.

Aleuritopteris anceps (Blanford) Panig. (= *Cheilanthes farinosa* Kaulf.). (M 221). 8739 Keonjhar, 20669 Batipathar, frequent, on wet porous soil mounds, in the shade of bushes; fertile: July.

A. grisea (Blanford) Panig. 20935a Kapildhar, frequent, on bare rock crevices; fertile: November.

Cheilanthes tenuifolia (Burm.) Swartz (M 211). 8467 Rebna, 12528 Simlipal, occasional, in sandy soil; fertile: June.

Coniogramme fraxinea (Don) Diels (= *Syngamme fraxinea* Bedd. p.p.). 12403 Gurguria, occasional, in porous soil; fertile: February. New record for Bihar and Orissa.

Microlepia speluncae (Linn.) Moore var. **pubescens** Sledge. 12330 Bhanjabasa, occasional; fertile: February. New record for Bihar and Orissa.

Pteridium aquilinum Linn. (M 222). 8633 Bankura, common; fertile: July.

Pteris blaurita Linn. (M 222). 12294 Bhanjabasa, 21112 Harishankar, frequent; in sandy soil, in shade of forest, fertile: February.

P. cretica Linn. (H 1203). 12408 Gurguria, occasional; fertile: February.

P. pellucida Presl (M 222). 12287 Bhanjabasa, common; in brown porous soil, fertile: February.

P. quadriaurita Retz. (M 222). 8608 Bankura, 12562 Chahala, 12525 Burhabalang, 12691 Chahala, common; fertile: February–July.

P. vittata Linn. (= *P. longifolia* non Linn.) (M 222). 12658 Barheipani, frequent on greyish brown moist soil, in the crevices of rock boulders; fertile: February.

PARKERIACEAE

Ceratopteris thalictroides (Linn.) Brongn. (H 1210). 21035 Batipathar, common; in marshy places, fertile: November.

CYATHACEAE

Cyathea gigantea (Wall.) Holtt. (= *Alsophila glabra* Hook.). (H 2183). 12563 Nigirda, frequent on banks of river, fertile: February.

C. spinulosa Wall. (M 216). 8590 Palaspal, frequent; fertile: July.

ASPIDIACEAE

Ampelopteris prolifera (Retz.) Copel. (= *Goniopteris prolifera* Retz.). 12400 Gurguria, 12505 Simlipal, frequent in black alluvium; fertile: February.

Cyclosorus acuminatus (Houtt.) Ching (= *Nephrodium molle* Desv.). (H 1186). 8613 Bankura, occasional in black loam; fertile: July.

C. callosus (Blume) Copel. 8698 Baitarani source-Keonjhar, occasional in dry rocky crevices; fertile: February.

C. dentatus (Forsk.) Ching. 12395 Gurguria, 12521 Simlipal, 12638 Burhabalang, 20758 Batipathar, 20820 Mahadevjharan, common near water edge; fertile: February.

C. gongyloides (Schkuhr.) Link. (= *Dryopteris gongyloides* O. Ktze.). (M 217). 21086 Harishankar, frequent in marshy, swampy places; fertile: November.

C. interruptus (Willd.) Ching. (= *D. pteroides* O. Ktze.). (M 217). 12260 Bhanjabasa, 12679 Barheipani, occasional, plants in the shelter of old tree trunks in open sunny ground on humus covered soil; fertile: February.

C. megaphyllus (Mett.) Ching. 12564 Nigirda, frequent in crevices of rock boulders and also in shady swampy places; fertile: February–July.

C. parasiticus (Linn.) Farwell (= *Nephrodium molle* Desv.). (H 1186). 8610 Palaspal, frequent in moist shady places; fertile: February–July.

C. sagittifolius (Blume) Copel. 8668 Burhipada, 12573 Nigirda, 21020 Kapildhar, occasional in the humus covered soil; fertile: July.

C. subpubescens (Blume) Ching non sensu Ching (= *Nephrodium molle* Desv.). (H 1186). 12534 Bankura, 12080 Brahmini, 20827 Mahadevjharan, occasional in the shelter of rock boulders; fertile: February.

C. truncatus (Poir.) Farwell. 8609 Palaspal, occasional; fertile: July.

Diplazium dilatatum Blume (= *D. latifolium* Moore). 12331 Bhanjabasa, 12736 Lulung, common in leafy litter; fertile: July.

D. esculentum (Retz.) Swartz (= *Anisogonium esculentum* Presl). 12405 Jenabil, 12736 Lulung, common in crevices of rock boulders, in the banks of running streams; fertile: February.

D. polypodioides Blume. 12526 Simlipalgarh, frequent in the shade next to stream; fertile: February. New record for Bihar and Orissa.

Dryopteris cochleata (Don.) C. Chr. (M 218). 8753 Gandhamardan Parbat, 12289 Bhanjabasa, 12404 Gurguria, 20826 Mahadevjharan, 21018 Kapildhar,

- common in rocky wall, fertile: February—November (*Bada-Mahajal*).
- Dryopteris sparsa** (Don.) O. Kze. (M 218). 12597 Nigirda, occasional in sandy soil, next to a stream; fertile: February.
- Heterogonium saxicolum** (Blume) Holtt. (= *Pleocnemia megalocarpa* Hook.). 8611 Bankura, 12263 Bhanjabasa, 12410 Gurguria, common in humid valleys; fertile: February—July.
- Byrsopteris aristata** (Forst.) Morton (= *Lastrea aristata* Bedd.). 12596 Nigirda, frequent, along bank of river; fertile: February. New record for Bihar and Orissa.
- Thelypteris ciliata** (Wall.) Ching (= *Lastrea calcarata* Blume var. *ciliata* Wall.). 12397 Gurguria, frequent; fertile: February.
- T. extensa** (Blume) Morton (= *Nephrodium extensum* Moore). 12396 Gurguria, 12533 Simlipal, common in rocky soil on forest floor; fertile: February.
- T. falciloba** (Hook.) Ching (= *L. calcarata* var. *falciloba* Clarke). (H 1191). 12624 Burhabalang, frequent, along the bank of stream; fertile: February.
- T. multilineata** (Wallich ex Hook.) Morton (= *Dryopteris moulmeinensis* C. Chr.). (M 217). 8612 Bankura, 12262 Chahala, common in shady forest floor; vegetative: February—July.
- T. unita** (Linn.) Morton (= *Nephrodium cucullatum* Baker). 12398 Gurguria, 12401 Jenabil, 12505 Bankura, 12626 Burhabalang, common in moist alluvium soil; fertile: February.

BLECHNACEAE

- Blechnum orientale** Linn. (M 220). 12406 Gurguria, 12560 Nigirda, 20944 Satyamba, frequent in shelter of river bank; fertile: November—February (*Rakta-mahajal*).
- Woodwardia radicans** (Linn.) Smith. 20804a Batipathar, occasional in crevices of rocks; fertile: November. New record for Bihar and Orissa.

ASPLENIACEAE

- Asplenium laciniatum** var. *depauparatum* Clarke (H 1196). 12310 Bhanjabasa, occasional on mossy bark; epiphytic, fertile: February. New record for Orissa.
- A. perakense** Mathew and Christ. 8653 Bankura, 12411 Gurguria, frequent on mossy bark, epiphytic; fertile: February—July. New record for India.

POLYPODIACEAE

- Drynaria quercifolia** (Linn.) J. Smith (H 224). 8428 Ghatgaon, 8731 Keonjhar, occasional; epiphytic on marble rock boulders, fertile: June—July.
- Lepisorus nudus** (Hook.) Ching (= *Pleopeltis linearis* Moore). (H 1205). 8645 Bankura, frequent, epiphytic on mossy trees; fertile: February—July.

- L. thunbergianus** (Kaulf.) Ching (= *P. linearis* Moore). (H 1205). 12253 Podadiha, 12280 Bhanjabasa, frequent, epiphytic on mossy bark of trees; fertile: February.
- Leptochilus decurrens** Blume (= *Gymnopteris variabilis* Bedd.). 8614 Bankura, 12506 Simlipalgarh, frequent, adhering to wet boulders; fertile: February.
- Microsorium membranaceum** (Don.) Ching (= *Polypodium membranaceum* Don.). (M 223). 20935b Kapildhar, occasional on mossy covered rocks and boulders; vegetative: November.
- M. punctatum** (Linn.) Copel. 8615 Bankura, 12291 Bhanjabasa, frequent, epiphytic on mossy bark of trees; fertile: February—July.
- Pyrrosia adnascens** (Swartz) Ching (= *Cyclophorus adnascens* Desv.). (M 223). 8471 Rebnia, frequent, epiphytic on trees; fertile: June.
- P. stigmosa** (Swartz) Ching (= *C. stigmus* Desr.). (M 224). 8592 Meghanada Parbat, common, epiphytic on trees; fertile: July.

VITTARIACEAE

- Antrophyum reticulatum** (Forst.) Kaulf. 12284 Bhanjabasa, 12416 Jenabil, epiphytic on mossy bark of trees, in sheltered valleys; fertile: February.

MARSILEACEAE

- Marsilea quadrifolia** Linn. (H 1218). 8388 Deogaon, frequent, in marshy places; vegetative: June.
- M. minuta** Linn. (H 1218). 8262 Sukinda, 20561 Padampur, common in wet muddy soil; fertile: November.

EQUISETACEAE

- Equisetum debile** Roxb. (M 227). 12415 Gurguria, common, in sandy bank of river; fertile: February.

SELAGINELLACEAE

- Selaginella repanda** (Desv.) Spring (M 228). 20658 Batipathar, 20712 Bhojpurgarh, frequent on moist soil, on rock boulders in shady places; fertile: November.
- S. subdiaphana** (Wall.) Spring. 12538 Bankura, frequent in the bank of stream; fertile: February. New record for Bihar and Orissa.
- S. ciliaris** (Retz.) Spring (M 228). 12706 Barheipani, occasional in muddy places; fertile: February.

LYCOPODIACEAE

- Lycopodium cernuum** Linn. (M 227). 12582 Nigirda, frequent; creeping on brown soil; fertile: February.
- L. hamiltonii** Forst. (H 1221). 12312 Bhanjabasa, 12429 Jenabil, frequent, on mossy bark of trees; epiphytic, fertile: February.
- L. squarrosum** Forest. (H 1221). 12312 Bhanjabasa, frequent, epiphytic on mossy bark of trees; fertile: February.

ISOETACEAE

Isoetes coromandelina Linn. 20553 Padampur, common in the muddy bank of the tank in front of I. B.; fertile: November. New record for Bihar and Orissa.

FUNGI

Daedalea flavida Lev. 8486 Palaspal, 12349, 12353 Bhanjabasa, 12548, 12549 Simlipal, growing in a concentric manner on fallen log in a flowing stream.

Fomes pachyphaleus Pat. 12348 Bhanjabasa, forming successive stout masses on Sal tree; scarce.

F. senex Nees et Mont. 12442 Jenabil, on a living tree of *Eugenia*; common.

Fomes sp. 12443 Jenabil, woody mushroom on living trees; rare.

Geaster sp. 8555 Burhipada, in sandy forest floor; common.

Hexagonia apiaria Pers. 8495 Palaspal, on dead twig; scarce.

H. discopoda Pat. et Har. 8313 Sukinda, on the bark of dead twigs of trees; common.

H. sulcata Berk. 12603 Gopinathpur, asymmetrically growing in a line along dead log, lying across the river Palpala; common.

Hexagonia sp. 12692 Chahala, on dead log; scarce.

Hymenochaete sp. 12356 Bhanjabasa, 12551 Simlipalgarh, on dead log; frequent.

Lentinus praerigidus Berk. 12350 Lulung, stalked on dead log; frequent.

Lentinus sp. 8332 Sukinda, 8488 Palaspal, 8513 Palaspal, 8782 Malaygiri, on dead log; common.

Lycopordon sp. puffballs, 8385 Deogaon, on wet soil; frequent.

Polyporus arcularius Batch. & Fries. 12575 near Nigirda stream, on fallen twigs; scarce.

P. gilvus Schw. 12589 Burhabalang, on bark of log; occasional.

P. sulphureus (Bull) Fr. 8632 Bankura, on old tree trunk; rare.

Polyporus sp. 8514 Palaspal, on dead wood; frequent.

Polyporus sp. 8317 Sukinda, on dead trunk of a tree; frequent.

Polystictus cinnabarinus (Jacq.) Fr. 8316 Sukinda, on dead trunk of a tree; frequent.

P. pergamenus Fr. 12552 Simlipalgarh, on dead log; scarce.

P. sanguineus (Linn.) May. 8527 Palaspal, 12792 Kachudahan, on dead log; frequent.

P. labacinus Mont. 12590 Nigirda, on the bark of dead trees; scarce.

P. xanthopus Fr. 12355 Burhabalang, 12666 Barheipani, on dead log and twig in the moist floor; common.

Schizophyllum commune Fr. 12358 Lulung, on dead wood; frequent.

Trametes cingulata Berk. 12352 Bhanjabasa on dead log; scarce.

T. cubensis (Mont.) Sacc. 12604 Palpala river bank, on moist log lying near bank of a river; scarce.

Xylaria sp. 8487 Palaspal, on the sandy mound of white ants; frequent.

ACKNOWLEDGEMENTS

The three junior authors, in collaboration with the Keeper, Central National Herbarium, Sibpore, have been mainly responsible for the basic identification of the angiosperms, while D.C.S. Raju participated in the Survey of the flora of Gandhamardan hills in November, 1959 and S. Chowdhury compiled data from fair field note books for presentation in the enumeration, analysed floristic data. The senior author alone has been responsible for the collection of plants, field data, photographic illustrations, identification of pteridophytes and finally in the preparation of the text of this paper and enumeration with correct nomenclature for publication. Dr. Bakshi of the Forest Research Institute, Dehra Dun has identified the fungi to whom the authors are indebted.

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